

1.1 Introduction

The California Department of Water Resources (DWR or the Applicant) is proposing to construct new conveyance facilities in the Sacramento-San Joaquin Delta (Delta) (project). As the lead agency for this project, or proposed action under the National Environmental Policy Act (NEPA), the U.S. Army Corps of Engineers Sacramento District (USACE) is preparing an Environmental Impact Statement (EIS) for construction of the project. The EIS will analyze the Applicant's proposed action, which includes intake facilities on the Sacramento River, tunnel reaches and tunnel shafts, a southern forebay and pumping plant, and south Delta Conveyance facilities that would connect to the existing State Water Project (SWP) infrastructure.

As stated, the EIS will be prepared by USACE, Sacramento District, as the federal lead agency under NEPA. The U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, and U.S. Bureau of Reclamation are NEPA Cooperating Agencies for this EIS.

This scoping report presents scoping activities that occurred for the Draft EIS and is organized as outlined below.

- Chapter 1, *Introduction*, presents the Proposed Action and NEPA scoping requirements.
- Chapter 2, *Public Involvement Process*, presents the public involvement process used for the EIS.
- Chapter 3, *Public Comments*, identifies parties submitting comments during scoping.
- Attachment A, *Public Notification Materials*, includes Cooperating Agency invitation and acceptance letters, the NEPA Notice of Intent (NOI), and tribal consultation project notification letters.
- Attachment B, *Comments Received during Scoping*, presents the written letters and emails received during scoping.

1.1.1 Proposed Action

The proposed action includes the construction of new intake facilities, a tunnel, and a forebay. Two new intake facilities would be located in the north Delta along the east bank of the Sacramento River between the communities of Clarksburg and Courtland. The new conveyance facilities would include a tunnel to convey water from the new intakes to a pumping plant and new southern forebay on Byron Tract, immediately west of the existing Clifton Court Forebay. A dual tunnel would connect the new facilities to the existing SWP Banks Intake Canal in the south Delta. The new facilities would provide the SWP with an alternate location for diversion of water from the Delta and would be operated in coordination with the existing SWP south Delta pumping facilities, resulting in a system also known as “dual conveyance” because there would be two complementary methods to divert and convey water. Under the project, the new north Delta facilities would be sized to convey up to 6,000 cubic feet per second (cfs) of water from the Sacramento River to the SWP facilities in the south Delta.

1.1.2 National Environmental Policy Act Scoping Requirements

NEPA (40 Code of Federal Regulations [CFR] § 1501.7) provides the following description of the scoping process.

There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This process shall be termed scoping. As soon as practicable after its decision to prepare an EIS and before the scoping process, the Federal lead agency shall publish a notice of intent (Sec. 1508.22) in the Federal Register except as provided in Sec. 1507.3(e).

As part of the NEPA scoping process, the federal lead agency may hold an early scoping meeting(s) but it is not required. As part of the scoping process, the federal lead agency shall do the following.

- Invite the participation of affected federal, state, regional, and local agencies; any affected or Culturally Affiliated Native American Tribe; the proponent of the action (DWR or the “Requestor” for this project), and other interested persons.
- Determine the scope of the EIS, including significant issues to be analyzed in depth.
- Identify and eliminate from detailed study, the issues that are not significant or that have been covered by prior environmental review, narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere.

The NOI, which is published in the *Federal Register*, the United States Government’s official noticing and reporting publication, begins the NEPA scoping process. The NOI notifies the affected federal agencies, stakeholders, and interested parties that an EIS will be prepared, and if applicable, when a scoping meeting will be held. The NOI solicits input from these entities as to the scope and content of the information to be included in the EIS.

1.2 Public Involvement Process

1.2.1 Public Notices

1.2.1.1 Notice of Intent

In compliance with requirements set forth in NEPA, USACE prepared an NOI describing the intent to prepare an EIS under the authority of Section 14 of the Rivers and Harbors Act of 1899 (RHA) (Title 33 of the United States Code [USC], Section 10 of the RHA; and Section 404 of the Clean Water Act. The NOI described the proposed action (the project) and included information regarding the Applicant, and contact information for submitting public comments. The NOI was posted in the *Federal Register* on August 20, 2020. Although there is no mandated time limit to submit comments in response to an NOI, USACE set a 60-day comment period. The 60-day comment period for the NOI was August 20, 2020 to October 20, 2020. The NOI is provided as Attachment A, *Public Notification Materials*, of this document.

1.2.1.2 Website Postings

The NOI was published on the USACE website at:
<https://www.spk.usace.army.mil/Missions/Regulatory/Delta-Conveyance/>.

1.2.2 Next Steps and Recommendations

Significant environmental written comments received during the scoping period on the Delta Conveyance Project, project alternatives, and the scope of the EIS assisted in determining the issues and project alternatives that were evaluated in detail in the EIS.

Upon the release of the Draft EIS, agencies, stakeholders, and the public will have a minimum of 45 days to comment on the document. Additionally, at least one public meeting will be held so the public, stakeholders, and agencies can learn more about the Draft EIS; ask questions regarding the EIS and the NEPA process; and provide comments on significant environmental issues. The alternatives and significant findings regarding environmental impacts will also be presented.

When the public comment period on the Draft EIS has concluded, USACE will consider and respond to all significant environmental comments and prepare a Final EIS. USACE will consider all written comments in deciding which alternative to approve for implementation. USACE will document its decision in a Record of Decision, no sooner than 30 days following publication of the Final EIS.

1.3 Public Comments

USACE received written comments in response to the NOI for the proposed Delta Conveyance Project. Table 1-1 lists the federal, state, and regional and local agencies; nongovernmental organizations; and individuals who submitted written comments.

Table 0-1. Agencies, Organizations, and Individuals Who Submitted Comments

Name	Organization
Amy Bohlman	
Amy Mckenzie	
Anna Marie Bermudez	
B Yah-Diaz	
Carrie Tully	
Casey Clements	
Caty Wagner	
Chairman Byron Nelson, Jr.	Hoopa Valley Tribal Council
Charles Tracy, Executive Director	Pacific Fishery Management Council
Charning Evelyn	
Cheri Johnson	
Cheryl and Jon Cox	
Chrissy Hoffman	
Cody Ellis	
Colin Maloney	United States Bureau of Reclamation

Name	Organization
Daniel Fonseca/Kara Perry	Shingle Springs Bank of Miwok Indians
Danielle Frank	
Dante J. Nomellini, Jr (legal representative)	Central Delta Water Agency/South Delta Water Agency
Dante J. Nomellini, Jr	Nomellini, Grilli & McDaniel
David M. Mooney	United States Bureau of Reclamation
David Olson	
Deanna Sereno	Contra Costa Water District
Deanna Sereno	Contra Costa Water District
Dennis Eisenbeis	
Diedre Des Jardins	California Water Research
Don Nottoli, Skip Thomson, Karen Mitchoff, Oscar Villegas, Chuck Winn	Delta Counties Coalition
Dorreen Oxford	
Doug Obegi	Natural Resources Defense Council
Doug Obegi	Natural Resources Defense Council
Dr. Tom Williams, Snr	Citizens Coalition for A Safe Community
Eileen Sobeck	California State Water Resources Control Board
Emily Pappalardo	
Erik Vink, Executive Director	Delta Protection Commission
Ethan Hirsch-Tauber	
Eva Iglesias	
Grace Brahler	
Greg Gallegos	
Hazel Goode	
Heather Lynn Cheesman	
Holly Christiansen	
J. Michael Norris	United States Geological Survey
Jack Hanna	
Jeff Henderson, AICP, Deputy Executive Officer	Delta Stewardship Council
Jennifer Pierre	State Water Contractors
Jeremy Shannon	Contra Costa Mosquito & Vector Control District
Jess O'Brien	
John Abrew, Director of Municipal Utilities	City of Stockton Municipal Utilities Department
Jose Setka	East Bay Municipal Utilities District
Judith Richey	
Karen Huss, Associate Air Quality Planner/Analyst	Sacramento Metropolitan Air Quality Management District
Kelly Taber (legal representative)	County of Sacramento and Sacramento County Water Agency
Kelsey Reedy	
Kerry Reynolds	Trees Foundation

Name	Organization
Lisa Kirk	
Lynne Singfook	
Mari Cam	
Mari Cam	
Marina Marr	
Mark Pruner, Bob Webber, Joe Gomes, Nancy Kirchhoff, Steve Pylman, Richard Bagby, Craig Hamblin	Clarksburg Fire Protection District
Martin Harris	Terra Land Group, LLC.
Meg Frisbie	National Park Service
Melinda Terry, Executive Director	California Central Valley Flood Control Association
Melinda Terry, Manager	North Delta Water Agency
Michael Brodsky	Law Offices of Michael A. Brodsky
Michael Brodsky (legal representative)	Save the California Delta Alliance
Michael DeSpain and Emily Moloney	Buena Vista Rancheria of Me-Wuk Indians
Misty Kaltreider	County of Solano Department of Resource Management
Nancy Kuykendall	
Neara Russell	
Norbert H. Dall (legal representative)	Dall & Associates
Osha Meserve (legal representative)	Local Agencies of the North Delta
Pat McSwain	
Pilar Burgos	Los Angeles County Sanitation Districts
Priscilla Vazquez	
Regina Cuellar	Shingle Springs Band of Miwok Indians
Richard Denton	Richard Denton & Associates
Robert C. Ferrante	
Robert Wright, Kathryn Phillips, Barbara Barrigan-Parrilla, Conner Everts John Buse, Carolee Krieger, Barbara Vlamis, Bill Jennings, Jonas Minton	AquAlliance, California Water Impact Network, California Sportfishing Protection Alliance, Center for Biological Diversity, Environmental Water Caucus, Planning and Conservation League, Restore the Delta, and Sierra Club California
Ryan Hernandez	County of Contra Costa and Costa County Water Agency
Samuel Ziegler	United States Environmental Protection Agency
Sarah Springfield	
Shelley Ostrowski	Westlands Water District
Sherri Norris	California Indian Environmental Alliance
Stephan Volker (legal representative)	North Coast Rivers Alliance, California Sportfishing Protectino Alliance, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, San Francisco Crab Boat

Name	Organization
	Owners Association, the Winnemem Wintu Tribe and Save California Salmon
Stephanie Gordon	United States Environmental Protection Agency
Stephen Arakawa	The Metropolitan Water District of Southern California
Stephen Arakawa	The Metropolitan Water District of Southern California
Stephen Ware	
Steve/Laurie Ware	
Susann Lucero	
Terrie Mitchell, Manager, Legislative & Regulatory Affairs	Sacramento Regional County Sanitation District
Thomas P. Schlosser (legal representative)	Hoopa Valley Tribe of California
Todd M. Ravazza	

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Each comment letter received by USACE in response to scoping is provided as Attachment B, *Comments Received during Scoping*, of this document. All public comments were reviewed and carefully considered in the preparation of this EIS, especially when applicable to the scope of the project, and where comments raise significant environmental issues. Comments on the merits of the project, or comments beyond the scope of the EIS, were not addressed.

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Attachment A
Public Notification Materials

**Cooperating Agency Agreement
between the
U.S. Army Corps of Engineers, Sacramento District and the
National Marine Fisheries Service
for the Delta Conveyance Project
Environmental Impact Statement**

I. INTRODUCTION

The U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) to evaluate the effects of the Delta Conveyance Project on the quality of the human environment. The EIS is being prepared in accordance with the Council on Environmental Quality's 1978 NEPA regulations (43 Fed. Reg. 55978 (Nov. 29, 1978) as amended by 44 Fed. Reg. 873 (Jan. 3, 1979) and 51 Fed. Reg. 15618 (Apr. 25, 1986)). As the lead Federal agency, the Corps is responsible for ensuring the EIS complies with NEPA, as well as other applicable statutes, regulations, and executive orders. The Corps has authority over the Delta Conveyance project under Section 404 of the Clean Water Act (33 U.S.C. 1344), which regulates the discharge of dredged or fill material into Waters of the United States, including wetlands, Section 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. 403), which regulates work or structures in navigable waters of the U.S., and Section 14 of the RHA (33 U.S.C. 408) (Section 408), which regulates alterations to a federal flood control project or federal navigation project. The National Marine Fisheries Service (NMFS) has accepted the role of cooperating agency in the EIS preparation because it has jurisdiction and/or special expertise over the proposed action due to the evaluation of the direct, indirect and cumulative impacts of the proposed action and other alternatives on threatened and endangered species listed and critical habitat designated under the Endangered Species Act (16 U.S.C. 1531 et seq.), marine mammals protected under the Marine Mammal Protection Act (16 U.S.C. 1361 et seq.), and essential fish habitat identified under the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1855(b)). The purpose of this agreement is to outline the roles and responsibilities of the Corps and NMFS with respect to preparation of the EIS for the proposed action.

II. AGENCY DESIGNEE

The Corps and NMFS will designate a liaison to act as the point of contact for the EIS. If any changes are made to the liaison(s), the Corps or NMFS will ensure the other agency is notified of the change in writing.

Corps Liaison: Zachary Simmons, 916-557-6746, Zachary.M.Simmons@usace.army.mil

NMFS Liaison: Evan Sawyer, 916-930-3656, Evan.Sawyer@noaa.gov

III. LEAD AGENCY RESPONSIBILITIES

A. The Corps will be responsible for the preparation, overall direction, and content of the EIS, including determining the scope of the EIS and the significant issues to be analyzed in the EIS. The Corps will be responsible for approving the Draft and Final EIS, and for making the final decision on the content of all information contained within the Draft and Final EIS.

B. The Corps will be responsible for issuing the Notice of Intent (NOI) and for conducting the scoping process in accordance with 40 CFR 1501.7.

C. The Corps will be responsible for identifying other environmental review and consultation requirements so that any required analyses and studies can be prepared concurrently with, and integrated with, the EIS.

D. The Corps will identify NMFS in the EIS as a cooperating agency and summarize its roles and responsibilities as a cooperating agency.

E. The Corps will invite NMFS to appropriate interagency and/or cooperating agency meetings and will be available to discuss any questions or issues related to EIS documents pertaining to the NMFS' special expertise/jurisdiction.

F. The Corps will use the environmental analyses and proposals developed by NMFS, when appropriate and practical. The Corps will confer with NMFS on technical studies when NMFS has jurisdiction by law or special expertise associated with the issue being studied.

G. The Corps will provide relevant products to NMFS for review and comment, including, at a minimum, the following:

(1) Purpose and Need: The Corps will provide the draft purpose and need to NMFS for review and comment prior to publishing the public Draft EIS. The Corps will allow NMFS 20 calendar days to review and comment on the purpose and need.

(2) Alternatives: The Corps will provide the draft alternatives to be evaluated in the EIS, including any preferred alternative, to NMFS for review and comment prior to publishing the public Draft EIS. The Corps will allow NMFS 20 calendar days to review and comment on the alternatives. If substantial changes are made to the alternatives, or additional alternatives are developed after NMFS review, the Corps will provide NMFS another opportunity to review and comment on the alternatives prior to publishing the Draft EIS, in accordance with the timelines in this section.

(3) Administrative Draft and Final EIS: The Corps will provide NMFS with at least one electronic copy of relevant portions of the Administrative Draft and Final EIS for review and comment prior to the issuance of the public Draft and Final EIS. Relevant portions will consist of the introduction, purpose and need, alternatives, and those chapters related to NMFS' jurisdiction and/or special expertise. The Corps will provide NMFS 30 calendar days to review and comment on the Administrative Draft and Final EIS.

H. The Corps will evaluate and consider all written comments provided by NMFS. The Corps will provide NMFS a description and justification of the comments that will or will not result in changes to the EIS.

I. The Corps is responsible for directing and overseeing the work of ICF International Inc. (ICF), the third-party contractor assisting the Corps in preparing the EIS, including data collection, preparation of technical reports, alternatives preparation, impact analysis, response to public comments, and publication of the Draft and Final EIS. NMFS will work through the Corps' designated liaison when corresponding with ICF. Exceptions may be made on a case-by-case basis when approved in advance by the Corps.

J. The Corps will ensure any products forwarded to NMFS for its preparation, review, or comment, contain specific time frames depending on the complexity of the request. The specific time frames will be subject to agreement by NMFS, unless specified in this agreement. If NMFS does not respond to any requests for review or comment within an agreed upon time frame, or if there is no agreed upon time frame despite good faith efforts to reach agreement and if necessary to meet other timelines, the Corps may proceed to the next step in the process.

K. The Corps will provide NMFS with at least 10 calendar days advance notice for any meetings in which the Corps requests NMFS to participate, and to the extent possible, an agenda with at least 5 calendar days advance notice.

L. The Corps will be responsible for preparing its ROD.

IV. COOPERATING AGENCY RESPONSIBILITIES

A. NMFS will participate, to the extent appropriate and practical, in meetings and provide information as requested by the Corps. Virtual meetings (e.g. teleconference, video conference) may be used in place of in-person meetings. NMFS will provide input and analyses on issues specific to NMFS during such meetings, as appropriate.

B. NMFS will provide timely reviews and comments to the extent possible on relevant documents provided by the Corps. NMFS comments will address the information needs and requirements associated with the NMFS' jurisdiction or special expertise.

C. NMFS will provide recommendations to the Corps in those areas for which NMFS has jurisdiction or special expertise. NMFS will provide comments or information to the Corps within the prescribed time frames agreed upon by NMFS and the Corps.

D. NMFS will be available to discuss any documents or analyses they provided to the Corps.

E. NMFS may be asked to develop or assist the Corps in developing responses to comments received on the Draft or Final EIS specific to their jurisdiction or special expertise. NMFS will develop the response to comments, or provide the Corps with substantial input and information to assist the Corps in developing the response to comment. NMFS will provide the requested information within prescribed time frames agreed upon by NMFS and the Corps.

F. NMFS agrees not to release or otherwise share any documents containing pre-decisional information (including, but not limited to: meeting notes, working draft documents, draft documents, and emails) provided by the Corps or its contractor in the development of the EIS prior to being released to the public by the Corps without first consulting with the Corps, except as otherwise provided in this paragraph. NMFS may share such information with NMFS staff and management and National Oceanic and Atmospheric Administration Office of the General Counsel staff for review purposes. If NMFS determines that release of any documents containing pre-decisional information provided by the Corps or its contractor in the development of the EIS is required by law, court order, or in development of an administrative record to be filed with a court, NMFS will not make any such release without prior notification to the Corps, to the extent possible.

V. IMPLEMENTATION, AMENDMENT, AND TERMINATION

A. This agreement will become effective on the date of the last signature, and may be amended only through written agreement of all signatories. The Corps or NMFS may terminate this agreement by providing written notice of termination to the other party. When practical, the withdrawing party will provide at least 30 days advance notice of its intent to withdraw. If not terminated sooner, this agreement will end when the Corps issues a ROD on the project.

B. Nothing in this agreement will abridge or amend the authorities and responsibilities of the Corps, NMFS, or any other party on any matter under their respective jurisdictions. NMFS will retain the right to comment on all issues related to the EIS, including those in dispute, through the normal public review and comment process.

C. Nothing in this agreement may be construed to require either the Corps or NMFS to expend appropriations; obligate or pay funds; enter into any contract, assistance agreement or interagency agreement; incur other financial obligations; or in any other way take action in violation of the Anti-Deficiency Act (31 U.S.C. § 1341 and 1342). Each agency agrees to fund its own expenses associated with this EIS process, unless otherwise agreed upon in a separate written agreement. Specific work projects or activities that involve the transfer of funds, services, or property between the parties to this agreement will require the execution of separate written agreements in accordance with applicable laws, regulations and procedures, contingent upon the availability of funds as appropriated by Congress.

D. Third-Party Beneficiary Rights. This agreement does not establish or affect legal rights or obligations. It does not create any right, benefit or claim enforceable in any cause of action by any party against the United States, its agencies, officers, or any other party. This agreement does not direct or apply to any person or party outside of the Corps and NMFS. The provisions of this agreement are intended only to assist the parties in determining and performing their roles and responsibilities under this agreement. It does not impose legally binding requirements and nothing in this agreement will be construed as limiting or affecting in any way the authorities or responsibilities of the signatory parties.

VI. DISPUTE RESOLUTION

The Corps and NMFS will strive to resolve significant differences regarding the EIS at the technical staff level with the designated liaisons identified in Section II above. Unresolved issues may be elevated to the first and second management levels in each agency for additional consideration and resolution. Any issues that remain unresolved after consideration by the first and second management levels will be resolved by the Corps' Regulatory Division Chief as necessary to meet the Corps' responsibilities and with appropriate consideration of information provided by NMFS. This process is separate from the dispute resolution mechanisms in the Clean Water Act § 404 permitting process.

VII. SIGNATURES

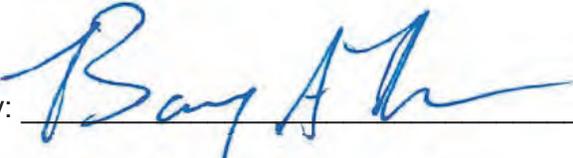
The parties hereto have executed this agreement as of the dates shown below.

U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT

By:  Date: 10 March 2021

Michael S. Jewell
Chief, Regulatory Division

NATIONAL MARINE FISHERIES SERVICE

By:  Date: January 19, 2021

West Coast Region



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

March 10, 2021

Regulatory Division (SPK-2019-00899)

National Marine Fisheries Service
Attn: Mr. Barry Thom
1201 NE Lloyd Blvd, Suite 1100
Portland, Oregon 97232
Barry.Thom@noaa.gov

Dear Mr. Thom:

We are transmitting your copy of the executed *Cooperating Agency Agreement* between the U.S. Army Corps of Engineers, Sacramento District and the National Marine Fisheries Service for the *Delta Conveyance Project Environmental Impact Statement*, which we signed on March 10, 2021. We look forward to working with your office in the development of the Environmental Impact Statement for the Delta Conveyance Project, in accordance with the agreement.

Please refer to identification number SPK-2019-00899 in any correspondence concerning this project. If you have any questions, please contact Zachary Simmons at our Sacramento Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at Zachary.M.Simmons@usace.army.mil, or telephone at (916) 557-6746.

Sincerely,

A handwritten signature in blue ink, appearing to read "M. Jewell", is located below the "Sincerely," text.

Michael S. Jewell
Chief, Regulatory Division

Enclosure

cc: (w/o encl)
Ms. Carolyn Buckman, California Department of Water Resources,
Carolyn.Buckman@water.ca.gov
Mr. Marcus Yee, California Department of Water Resources, Marcus.Yee@water.ca.gov



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

April 16, 2021

Regulatory Division (SPK-2019-00899)

U.S. Environmental Protection Agency
Attn: Ms. Bridget Coyle
Tribal, Intergovernmental, and Policy Division
75 Hawthorne Street
San Francisco, CA 94105
Coyle.Bridget@epa.gov

Dear Ms. Coyle:

We are transmitting your copy of the executed *Cooperating Agency Agreement between the U.S. Army Corps of Engineers, Sacramento District and the U.S. Environmental Protection Agency for the Delta Conveyance Project Environmental Impact Statement*, which we signed on April 16, 2021. We look forward to working with your office in the development of the Environmental Impact Statement for the Delta Conveyance Project, in accordance with the agreement.

Please refer to identification number SPK-2019-00899 in any correspondence concerning this project. If you have any questions, please contact Zachary Simmons at our Sacramento Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at Zachary.M.Simmons@usace.army.mil, or telephone at (916) 557-6746.

Sincerely,

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Michael S. Jewell
Chief, Regulatory Division

Enclosure

cc: (w/o encl)
Ms. Carolyn Buckman, California Department of Water Resources,
Carolyn.Buckman@water.ca.gov
Mr. Marcus Yee, California Department of Water Resources, Marcus.Yee@water.ca.gov
Ms. Stephanie Skophammer Gordon, U.S. Environmental Protection Agency,
Gordon.Stephanie@epa.gov

**Cooperating Agency Agreement between the
U.S. Army Corps of Engineers, Sacramento District
and the U.S. Bureau of Reclamation
for the Delta Conveyance Project
Environmental Impact Statement**

I. INTRODUCTION

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II. AGENCY DESIGNEE

The Corps and Reclamation will designate a liaison to act as the point of contact for the EIS. If any changes are made to the liaison(s), the Corps or Reclamation will ensure the other agency is notified of the change in writing.

Corps Liaison: Zachary Simmons, 916-557-6746, Zachary.M.Simmons@usace.army.mil

Reclamation Liaison: Colin Maloney, 916-414-2423, cmaloney@usbr.gov

III. LEAD AGENCY RESPONSIBILITIES

A. The Corps will be responsible for the preparation, overall direction, and content of the EIS, including determining the scope of the EIS and the significant issues to be analyzed in the EIS. The Corps will be responsible for approving the Draft and Final EIS, and for making the final decision on the content of all information contained within the Draft and Final EIS.

B. The Corps will be responsible for issuing the Notice of Intent (NOI) and for conducting the scoping process in accordance with 40 CFR 1501.7.

C. The Corps will be responsible for identifying other environmental review and consultation requirements so that any required analyses and studies can be prepared concurrently with, and integrated with, the EIS.

D. The Corps will identify Reclamation in the EIS as a cooperating agency and summarize its roles and responsibilities as a cooperating agency.

E. The Corps will invite Reclamation to appropriate interagency and/or cooperating agency meetings and will be available to discuss any questions or issues related to EIS documents pertaining to Reclamation's special expertise/jurisdiction.

F. The Corps will use the environmental analyses and proposals developed by Reclamation, when appropriate and practical. The Corps will consult with Reclamation on technical studies when Reclamation has jurisdiction by law or special expertise associated with the issue being studied.

G. The Corps will provide relevant products to Reclamation for review and comment, including, at a minimum, the following:

(1) Permitting Timetable: The Corps will prepare a permitting timetable identifying the actions and associated milestones for applicable environmental review and authorizations. The Corps will provide the permitting timetable to Reclamation for review and comment. The Corps will allow Reclamation 10 calendar days to review and comment on the permitting timetable. If any changes are made to the permitting timetable, the Corps will request review/comment from Reclamation on the changes to the permitting timetable in accordance with the timelines in this section.

(2) Purpose and Need: The Corps will provide the draft purpose and need to Reclamation for review and comment prior to publishing the public Draft EIS. The Corps will allow Reclamation 10 calendar days to review and comment on the purpose and need.

(3) Alternatives: The Corps will provide the draft alternatives to be evaluated in the EIS to Reclamation for review and comment prior to publishing the public Draft EIS. The Corps will allow Reclamation 10 business days to review and comment on the alternatives. If substantial changes are made to the alternatives, or additional alternatives are developed after Reclamation review, the Corps will provide Reclamation another opportunity to review and comment on the alternatives prior to publishing the Draft EIS, in accordance with the timelines in this section.

(4) Administrative Draft and Final EIS: The Corps will provide Reclamation with at least one electronic copy of relevant portions of the Administrative Draft and Final EIS for review and comment prior to the issuance of the public Draft and Final EIS. Relevant portions will consist of the introduction, purpose and need, alternatives, and those chapters related to Reclamation's jurisdiction and/or special expertise. The Corps will provide Reclamation 30 calendar days to review and comment on the Administrative Draft and Final EIS.

H. The Corps will evaluate and consider all written comments provided by Reclamation. The Corps will provide Reclamation a description and justification of the comments that will or will not result in changes to the EIS.

I. The Corps is responsible for directing and overseeing the work of ICF International Inc. (ICF), the third-party contractor assisting the Corps in preparing the EIS, including data collection, preparation of technical reports, alternatives preparation, impact analysis, response to public comments, and publication of the Draft and Final EIS. Reclamation will work through the Corps' designated liaison when corresponding with ICF. Exceptions may be made on a case-by-case basis when approved in advance by the Corps.

J. The Corps will ensure any products forwarded to Reclamation for its preparation, review, or comment contain specific timeframes, which will be a minimum of 10 business days, depending on the complexity of the request. The Corps may give deadlines of less than 10 calendar days if determined necessary to meet other prescribed timelines, and if agreed upon by Reclamation. If Reclamation does not respond to any requests for review or comment within the specified timeframe, the Corps reserves the right to continue without Reclamation's preparation, review, or comment on that product.

K. The Corps will be responsible for preparing its ROD.

IV. Cooperating Agency Responsibilities

A. Reclamation will participate, to the extent appropriate and practical, in meetings and provide information as requested by the Corps. Virtual meetings (e.g. teleconference, video conference) may be used in place of in-person meetings. Reclamation will provide input and analyses on issues specific to Reclamation during such meetings, as appropriate.

B. Reclamation will provide timely reviews and comments to the extent possible on relevant documents provided by the Corps. Reclamation comments will address the information needs and requirements associated with Reclamation's jurisdiction or special expertise.

C. Reclamation will provide recommendations to the Corps in those areas for which Reclamation has jurisdiction or special expertise. Reclamation will provide comments or information to the Corps within the prescribed time frames.

D. Reclamation will be available to discuss any documents or analyses it provides to the Corps.

E. Reclamation may be asked to develop or assist the Corps in developing responses to comments received on the Draft or Final EIS specific to its jurisdiction or special expertise. Reclamation will develop the response to comments or provide the Corps with substantial input and information to assist the Corps in developing the response to comment. Reclamation will provide the requested information within prescribed timeframes identified by the Corps to the maximum extent practicable.

F. Reclamation agrees that all internal working draft formulations, including draft documents, e-mails, phone discussions, and meeting discussions, used in the development of the EIS, are pre-decisional and will ensure that they will not be available for review by individuals or entities other than Reclamation staff prior to being released to the public by the Corps. If release of any pre-decisional products is required by law or court order, Reclamation will not make any such release without prior notification to the Corps. Neither Reclamation nor its employees, agents, or representatives shall summarize, quote from, paraphrase or otherwise describe the content of any draft materials or pre-decisional discussions, in any

manner or by any medium, to anyone who is not authorized by the Corps to review the pre-decisional products or discussions.

V. Implementation, Amendment, and Termination

A. This agreement will become effective on the date of the last signature and may be amended only through written agreement of all signatories. The Corps or Reclamation may terminate this agreement by providing written notice of termination to the other party. Where practical, the withdrawing party will provide at least 30 days advance notice of its intent to withdraw. If not terminated sooner, this agreement will end when the Corps issues a ROD on the project.

B. Nothing in this agreement will abridge or amend the authorities and responsibilities of the Corps, Reclamation, or any other party on any matter under their respective jurisdictions. Reclamation will retain the right to comment on all issues related to the EIS, including those in dispute, through the normal public review and comment process.

C. Nothing in this agreement may be construed to require either the Corps or Reclamation to expend appropriations; obligate or pay funds; enter into any contract, assistance agreement or interagency agreement; incur other financial obligations; or in any other way take action in violation of the Anti-Deficiency Act (31 U.S.C. § 1341 and 1342). Each agency agrees to fund its own expenses associated with this EIS process. Specific work projects or activities that involve the transfer of funds, services, or property between the parties to this agreement will require the execution of separate written agreements in accordance with applicable laws, regulations and procedures, contingent upon the availability of funds as appropriated by Congress.

D. Third-Party Beneficiary Rights. This agreement does not establish or affect legal rights or obligations. It does not create any right, benefit or claim enforceable in any cause of action by any party against the United States, its agencies, officers, or any other party. This agreement does not direct or apply to any person or party outside of the Corps and Reclamation. The provisions of this agreement are intended only to assist the parties in determining and performing their roles and responsibilities under this agreement. It does not impose legally binding requirements and nothing in this agreement will be construed as limiting or affecting in any way the authorities or responsibilities of the signatory parties.

VI. Dispute Resolution

A. The Corps and Reclamation will strive to resolve significant differences regarding the EIS at the technical staff level with the designated liaisons identified in Section II above. Unresolved issues may be elevated to the first and second management levels in each agency for additional consideration and resolution. Any issues that remain unresolved after consideration by the first and second management levels will be resolved by the Corps' Regulatory Division Chief. This process is separate from the dispute resolution mechanisms in the Clean Water Action § 404 permitting process.

VII. Signatures

The parties hereto have executed this agreement as of the dates shown below.

U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT

JEWELL.MICHAEL.S
TEVEN.1231810850
By: _____ Date: _____

Digitally signed by
JEWELL.MICHAEL.STEVEN.12318
10850
Date: 2021.06.09 14:31:00 -07'00'

Michael S. Jewell
Chief, Regulatory Division

U.S. BUREAU OF RECLAMATION

DAVID
MOONEY
By: _____ Date: _____

Digitally signed by DAVID
MOONEY
Date: 2021.05.25
21:11:17 -07'00'

David M. Mooney
Area Manager, Bay-Delta Office

**Cooperating Agency Agreement
between the
U.S. Army Corps of Engineers, Sacramento District and the
United States Environmental Protection Agency
for the Delta Conveyance Project
Environmental Impact Statement**

I. INTRODUCTION

The U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) to evaluate the effects of the Delta Conveyance Project on the quality of the human environment. The EIS is being prepared in accordance with the Council on Environmental Quality's 1978 NEPA regulations (43 Fed. Reg. 55978 (Nov. 29, 1978) as amended by 44 Fed. Reg. 873 (Jan. 3, 1979) and 51 Fed. Reg. 15618 (Apr. 25, 1986)). The Notice of Intent (NOI) was published on August 20, 2020 (85 Fed. Reg. 51420), therefore the EIS is being prepared in accordance with the NEPA regulations identified above. As the lead Federal agency, the Corps is responsible for ensuring the EIS complies with NEPA, as well as other applicable statutes, regulations, and executive orders. The Corps has authority over the Delta Conveyance under Section 404 of the Clean Water Act (33 U.S.C. 1344), which regulates the discharge of dredged or fill material into Waters of the United States, including wetlands, Section 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. 403), which regulates work or structures in navigable waters of the U.S., and Section 14 of the RHA (33 U.S.C. 408) (Section 408), which regulates alterations to a federal flood control project or federal navigation project. The United States Environmental Protection Agency (USEPA) Region 9 has accepted the role of cooperating agency in the EIS preparation because it has jurisdiction and/or special expertise over the proposed action due to the evaluation of the direct, indirect and cumulative impacts of the proposed action and other alternatives on air quality, water quality, and aquatic resources. The purpose of this agreement is to outline the roles and responsibilities of the Corps and USEPA with respect to preparation of the EIS for the proposed action.

II. AGENCY DESIGNEE

The Corps and USEPA will designate a liaison to act as the point of contact for the EIS. If any changes are made to the liaison(s), the Corps or USEPA will ensure the other agency is notified of the change in writing.

Corps Liaison: Zachary Simmons, 916-557-6746, Zachary.M.Simmons@usace.army.mil

USEPA Liaison: Stephanie Gordon, 415-972-3098, Gordon.StephanieS@epa.gov

III. LEAD AGENCY RESPONSIBILITIES

A. The Corps will be responsible for the preparation, overall direction, and content of the EIS, including determining the scope of the EIS and the significant issues to be analyzed in the EIS. The Corps will be responsible for approving the Draft and Final EIS, and for making the final decision on the content of all information contained within the Draft and Final EIS.

B. The Corps will be responsible for issuing the Notice of Intent (NOI) and for conducting the scoping process in accordance with 40 CFR 1501.7.

C. The Corps will be responsible for identifying other environmental review and consultation requirements so that any required analyses and studies can be prepared concurrently with, and integrated with, the EIS.

D. The Corps will identify USEPA in the EIS as a cooperating agency and summarize its roles and responsibilities as a cooperating agency.

E. The Corps will invite USEPA to appropriate interagency and/or cooperating agency meetings and will be available to discuss any questions or issues related to EIS documents pertaining to the USEPA's special expertise/jurisdiction.

F. The Corps will use the environmental analyses and proposals developed by USEPA, when appropriate and practical. The Corps will consult with USEPA on technical studies when USEPA has jurisdiction by law or special expertise associated with the issue being studied.

G. The Corps will provide relevant products to USEPA for review and comment, including, at a minimum, the following:

(1) Permitting Timetable: The Corps will prepare a permitting timetable identifying the actions and associated milestones for applicable environmental review and authorizations. The Corps will provide the permitting timetable to USEPA for review and comment. The Corps will allow USEPA 10 calendar days to review and comment on the permitting timetable. If any changes are made to the permitting timetable, the Corps will request review/comment from USEPA on the changes to the permitting timetable in accordance with the timelines in this section.

(2) Purpose and Need: The Corps will provide the draft purpose and need to USEPA for review and comment prior to publishing the public Draft EIS. The Corps will allow USEPA 10 calendar days to review and comment on the purpose and need.

(3) Alternatives: The Corps will provide the draft alternatives to be evaluated in the EIS to USEPA for review and comment prior to publishing the public Draft EIS. The Corps will allow USEPA 10 calendar days to review and comment on the alternatives. If substantial changes are made to the alternatives, or additional alternatives are developed after USEPA review, the Corps will provide USEPA another opportunity to review and comment on the alternatives prior to publishing the Draft EIS, in accordance with the timelines in this section.

(4) Administrative Draft and Final EIS: The Corps will provide USEPA with at least one electronic copy of relevant portions of the Administrative Draft and Final EIS for review and comment prior to the issuance of the public Draft and Final EIS. Relevant portions will consist of the introduction, purpose and need, alternatives, and those chapters related to USEPA's jurisdiction and/or special expertise, including the Clean Air Act and Clean Water Act. The Corps will provide USEPA 30 calendar days to review and comment on the Administrative Draft and Final EIS.

H. The Corps will evaluate and consider all written comments provided by USEPA. The Corps will provide USEPA a description and justification of the comments that will or will not result in changes to the EIS.

I. The Corps is responsible for directing and overseeing the work of ICF International Inc. (ICF), the third-party contractor assisting the Corps in preparing the EIS, including data collection, preparation of technical reports, alternatives preparation, impact analysis, response to public comments, and publication of the Draft and Final EIS. USEPA will work through the Corps' designated liaison when corresponding with ICF. Exceptions may be made on a case-by-case basis when approved in advance by the Corps.

J. The Corps will ensure any products forwarded to USEPA for its preparation, review, or comment contain specific timeframes, which will be a minimum of 10 calendar days, depending on the complexity of the request. The Corps may give deadlines of less than 10 calendar days if determined necessary to meet other prescribed timelines, and if agreed upon by USEPA. If USEPA does not respond to any requests for review or comment within the specified timeframe, the Corps reserves the right to continue without USEPA's review or comment on that product.

K. The Corps will be responsible for preparing its ROD.

IV. Cooperating Agency Responsibilities

A. USEPA will participate, to the extent appropriate and practical, in meetings and provide information as requested by the Corps. Virtual meetings (e.g. teleconference, video conference) may be used in place of in-person meetings. USEPA will provide input and analyses on issues specific to USEPA during such meetings, as appropriate.

B. USEPA will provide timely reviews and comments to the extent possible on relevant documents provided by the Corps. USEPA comments will address the information needs and requirements associated with the USEPA's jurisdiction or special expertise.

C. USEPA will provide recommendations to the Corps in those areas for which USEPA has jurisdiction or special expertise. USEPA will provide comments or information to the Corps within the prescribed time frames.

D. USEPA will be available to discuss any documents or analyses they provided to the Corps.

E. USEPA may be asked to develop or assist the Corps in developing responses to comments received on the Draft or Final EIS specific to their jurisdiction or special expertise. USEPA will develop the response to comments, or provide the Corps with substantial input and information to assist the Corps in developing the response to comment. USEPA will provide the requested information within prescribed timeframes identified by the Corps. USEPA's obligations under this Agreement are conditioned on the availability of sufficient resources.

F. USEPA agrees that all internal working draft formulations, including draft documents, e-mails, phone discussions, and meeting discussions, used in the development of the EIS, are pre-decisional and will ensure that they will not be available for review by individuals or entities other than USEPA staff prior to being released to the public by the Corps. If release of any pre-decisional products is required by law or court order, USEPA will not make any such release without prior notification to the Corps. Neither USEPA nor its employees, agents, or representatives shall summarize, quote from, paraphrase or otherwise describe the content of

any draft materials or pre-decisional discussions, in any manner or by any medium, to anyone who is not authorized by the Corps to review the pre-decisional products or discussions.

V. Implementation, Amendment, and Termination

A. This agreement will become effective on the date of the last signature, and may be amended only through written agreement of all signatories. The Corps or USEPA may terminate this agreement by providing written notice of termination to the other party. Where practical, the withdrawing party will provide at least 30 days advance notice of its intent to withdraw. If not terminated sooner, this agreement will end when the Corps issues a ROD on the project.

B. Nothing in this agreement will abridge or amend the authorities and responsibilities of the Corps, USEPA, or any other party on any matter under their respective jurisdictions. USEPA will retain the right to comment on all issues related to the EIS, including those in dispute, through the normal public review and comment process.

C. Nothing in this agreement may be construed to require either the Corps or USEPA to expend appropriations; obligate or pay funds; enter into any contract, assistance agreement or interagency agreement; incur other financial obligations; or in any other way take action in violation of the Anti-Deficiency Act (31 U.S.C. § 1341 and 1342). Each agency agrees to fund its own expenses associated with this EIS process. Specific work projects or activities that involve the transfer of funds, services, or property between the parties to this agreement will require the execution of separate written agreements in accordance with applicable laws, regulations and procedures, contingent upon the availability of funds as appropriated by Congress.

D. Third-Party Beneficiary Rights. This agreement does not establish or affect legal rights or obligations. It does not create any right, benefit or claim enforceable in any cause of action by any party against the United States, its agencies, officers, or any other party. This agreement does not direct or apply to any person or party outside of the Corps and USEPA. The provisions of this agreement are intended only to assist the parties in determining and performing their roles and responsibilities under this agreement. It does not impose legally binding requirements and nothing in this agreement will be construed as limiting or affecting in any way the authorities or responsibilities of the signatory parties.

VI. Dispute Resolution

The Corps and USEPA will strive to resolve significant differences regarding the EIS at the technical staff level with the designated liaisons identified in Section II above. Unresolved issues may be elevated to the first and second management levels in each agency for additional consideration and resolution. Any issues that remain unresolved after consideration by the first and second management levels will be resolved by the Corps' Regulatory Division Chief. This process is separate from the dispute resolution mechanisms in the Clean Water Action § 404 permitting process.

VII. Independent Review Responsibilities

The parties acknowledge that nothing in this agreement affects USEPA's independent authority to review and comment on the EIS pursuant to Section 309 of the Clean Air Act and NEPA and its implementing regulations. USEPA's responsibilities include reviewing the EIS

with regard to overall potential impacts of the proposed action and alternatives on the human and natural environments, and commenting on the EIS. The Corps will ensure that the EIS introductory section acknowledges USEPA's Clean Air Act Section 309 review and comment role.

VIII. Signatures

The parties hereto have executed this agreement as of the dates shown below.

U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT

JEWELL.MICHAEL.STEVEN.1231
810850
By: JEWELL.MICHAEL.STEVEN.1231 VEN.1231810850 Date: 2021.06.09 14:28:44 -07'00'

Michael S. Jewell
Chief, Regulatory Division

U.S. ENVIRONMENTAL PROTECTION AGENCY

Digitally signed by Bridget Coyle
Date: 2021.03.31 16:22:13 -07'00'
By: Bridget Coyle Date: _____

Bridget Coyle
Acting Director, Tribal, Intergovernmental, and Policy Division



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

June 30, 2021

Regulatory Division (SPK-2019-00899)

U.S. Bureau of Reclamation
Attn: Mr. David Mooney
Bay-Delta Office
801 I Street, Suite 140
Sacramento, CA 95814
dmmooney@usbr.gov

Dear Mr. Mooney:

We are transmitting your copy of the executed *Cooperating Agency Agreement between the U.S. Army Corps of Engineers, Sacramento District and the U.S. Bureau of Reclamation for the Delta Conveyance Project Environmental Impact Statement*, which we signed on June 9, 2021. We look forward to working with your office in the development of the Environmental Impact Statement for the *Delta Conveyance Project*, in accordance with the agreement.

Please refer to identification number SPK-2019-00899 in any correspondence concerning this project. If you have any questions, please contact Zachary Simmons at our Sacramento Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at Zachary.M.Simmons@usace.army.mil, or telephone at (916) 557-6746.

Sincerely,

A handwritten signature in blue ink, appearing to read "M. Jewell", is positioned above the printed name.

Michael S. Jewell
Chief, Regulatory Division

Enclosure

cc: (w/o encl)
Mr. Colin Maloney, U.S. Bureau of Reclamation, cmaloney@usbr.gov
Ms. Carolyn Buckman, California Department of Water Resources,
Carolyn.Buckman@water.ca.gov
Mr. Marcus Yee, California Department of Water Resources,
Marcus.Yee@water.ca.gov

**Cooperating Agency Agreement
between the
U.S. Army Corps of Engineers, Sacramento District and the
United States Fish and Wildlife Service
for the Delta Conveyance Project
Environmental Impact Statement**

I. INTRODUCTION

The U.S. Army Corps of Engineers, Sacramento District (Corps), is preparing an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA) to evaluate the effects of the Delta Conveyance Project on the quality of the human environment. The EIS is being prepared in accordance with the Council on Environmental Quality's 1978 NEPA regulations (43 Fed. Reg. 55978 (Nov. 29, 1978) as amended by 44 Fed. Reg. 873 (Jan. 3, 1979) and 51 Fed. Reg. 15618 (Apr. 25, 1986)). The Notice of Intent (NOI) was published on August 20, 2020 (85 Fed. Reg. 51420), therefore the EIS is being prepared in accordance with the NEPA regulations identified above. As the lead Federal agency, the Corps is responsible for ensuring the EIS complies with NEPA, as well as other applicable statutes, regulations, and executive orders. The Corps has authority over the Delta Conveyance under Section 404 of the Clean Water Act (33 U.S.C. 1344), which regulates the discharge of dredged or fill material into Waters of the United States, including wetlands, Section 10 of the Rivers and Harbors Act (RHA) (33 U.S.C. 403), which regulates work or structures in navigable waters of the U.S., and Section 14 of the RHA (33 U.S.C. 408) (Section 408), which regulates alterations to a federal flood control project or federal navigation project. The United States Fish and Wildlife Service (USFWS) has accepted the role of cooperating agency in the EIS preparation because it has jurisdiction and/or special expertise over the proposed action due to the evaluation of the direct, indirect and cumulative impacts of the proposed action and other alternatives on fish and wildlife species. The purpose of this agreement is to outline the roles and responsibilities of the Corps and USFWS with respect to preparation of the EIS for the proposed action.

II. AGENCY DESIGNEE

The Corps and USFWS will designate a liaison to act as the point of contact for the EIS. If any changes are made to the liaison(s), the Corps or USFWS will ensure the other agency is notified of the change in writing.

Corps Liaison: Zachary Simmons, 916-557-6746, Zachary.M.Simmons@usace.army.mil

USFWS Liaison: Jana Affonso, 916-930-2664, Jana_Affonso@fws.gov

III. LEAD AGENCY RESPONSIBILITIES

A. The Corps will be responsible for the preparation, overall direction, and content of the EIS, including determining the scope of the EIS and the significant issues to be analyzed in the EIS. The Corps will be responsible for approving the Draft and Final EIS, and for making the final decision on the content of all information contained within the Draft and Final EIS.

B. The Corps will be responsible for issuing the Notice of Intent (NOI) and for conducting the scoping process in accordance with 40 CFR 1501.7.

C. The Corps will be responsible for identifying other environmental review and consultation requirements so that any required analyses and studies can be prepared concurrently with, and integrated with, the EIS.

D. The Corps will identify USFWS in the EIS as a cooperating agency and summarize its roles and responsibilities as a cooperating agency.

E. The Corps will invite USFWS to appropriate interagency and/or cooperating agency meetings and will be available to discuss any questions or issues related to EIS documents pertaining to the USFWS' special expertise/jurisdiction.

F. The Corps will use the environmental analyses and proposals developed by USFWS, when appropriate and practical. The Corps will consult with USFWS on technical studies when USFWS has jurisdiction by law or special expertise associated with the issue being studied.

G. The Corps will provide relevant products to USFWS for review and comment, including, at a minimum, the following:

(1) Permitting Timetable: The Corps will prepare a permitting timetable identifying the actions and associated milestones for applicable environmental review and authorizations. The Corps will provide the permitting timetable to USFWS for review and comment. The Corps will allow USFWS 10 calendar days to review and comment on the permitting timetable. If any changes are made to the permitting timetable, the Corps will request review/comment from USFWS on the changes to the permitting timetable in accordance with the timelines in this section.

(2) Purpose and Need: The Corps will provide the draft purpose and need to USFWS for review and comment prior to publishing the public Draft EIS. The Corps will allow USFWS 10 calendar days to review and comment on the purpose and need.

(3) Alternatives: The Corps will provide the draft alternatives to be evaluated in the EIS to USFWS for review and comment prior to publishing the public Draft EIS. The Corps will allow USFWS 10 calendar days to review and comment on the alternatives. If substantial changes are made to the alternatives, or additional alternatives are developed after USFWS review, the Corps will provide USFWS another opportunity to review and comment on the alternatives prior to publishing the Draft EIS, in accordance with the timelines in this section.

(4) Administrative Draft and Final EIS: The Corps will provide USFWS with at least one electronic copy of relevant portions of the Administrative Draft and Final EIS for review and comment prior to the issuance of the public Draft and Final EIS. Relevant portions will consist of the introduction, purpose and need, alternatives, and those chapters related to USFWS' jurisdiction and/or special expertise. The Corps will provide USFWS 30 calendar days to review and comment on the Administrative Draft and Final EIS.

H. The Corps will evaluate and consider all written comments provided by USFWS. The Corps will provide USFWS a description and justification of the comments that will or will not result in changes to the EIS.

I. The Corps is responsible for directing and overseeing the work of ICF International Inc. (ICF), the third-party contractor assisting the Corps in preparing the EIS, including data collection, preparation of technical reports, alternatives preparation, impact analysis, response to public comments, and publication of the Draft and Final EIS. USFWS will work through the Corps' designated liaison when corresponding with ICF. Exceptions may be made on a case-by-case basis when approved in advance by the Corps.

J. The Corps will ensure any products forwarded to USFWS for its preparation, review, or comment contain specific timeframes, which will be a minimum of 10 calendar days, depending on the complexity of the request. The Corps may give deadlines of less than 10 calendar days if determined necessary to meet other prescribed timelines, and if agreed upon by USFWS. If USFWS does not respond to any requests for review or comment within the specified timeframe, the Corps reserves the right to continue without USFWS' review or comment on that product.

K. The Corps will be responsible for preparing its ROD.

IV. Cooperating Agency Responsibilities

A. USFWS will participate, to the extent appropriate and practical, in meetings and provide information as requested by the Corps. Virtual meetings (e.g. teleconference, video conference) may be used in place of in-person meetings. USFWS will provide input and analyses on issues specific to USFWS during such meetings, as appropriate.

B. USFWS will provide timely reviews and comments to the extent possible on relevant documents provided by the Corps. USFWS comments will address the information needs and requirements associated with the USFWS' jurisdiction or special expertise.

C. USFWS will provide recommendations to the Corps in those areas for which USFWS has jurisdiction or special expertise. USFWS will provide comments or information to the Corps within the prescribed time frames.

D. USFWS will be available to discuss any documents or analyses they provided to the Corps.

USFWS may be asked to develop or assist the Corps in developing responses to comments received on the Draft or Final EIS specific to their jurisdiction or special expertise. USFWS will develop the response to comments, or provide the Corps with substantial input and information to assist the Corps in developing the response to comment. USFWS will provide the requested information within prescribed timeframes identified by the Corps. USFWS' obligations under this Agreement are conditioned on the availability of sufficient resources.

E. USFWS agrees that all internal working draft formulations, including draft documents, e-mails, phone discussions, and meeting discussions, used in the development of the EIS, are pre-decisional and will ensure that they will not be available for review by individuals or entities other than USFWS staff prior to being released to the public by the Corps. If release of any pre-decisional products is required by law or court order, USFWS will not make any such release without prior notification to the Corps. Neither USFWS nor its employees, agents, or representatives shall summarize, quote from, paraphrase or otherwise describe the content of any draft materials or pre-decisional discussions, in any manner or by any medium, to anyone who is not authorized by the Corps to review the pre-decisional products or discussions.

V. Implementation, Amendment, and Termination

A. This agreement will become effective on the date of the last signature, and may be amended only through written agreement of all signatories. The Corps or USFWS may terminate this agreement by providing written notice of termination to the other party. Where practical, the withdrawing party will provide at least 30 days advance notice of its intent to withdraw. If not terminated sooner, this agreement will end when the Corps issues a ROD on the project.

B. Nothing in this agreement will abridge or amend the authorities and responsibilities of the Corps, USFWS, or any other party on any matter under their respective jurisdictions. USFWS will retain the right to comment on all issues related to the EIS, including those in dispute, through the normal public review and comment process.

C. Nothing in this agreement may be construed to require either the Corps or USFWS to expend appropriations; obligate or pay funds; enter into any contract, assistance agreement or interagency agreement; incur other financial obligations; or in any other way take action in violation of the Anti-Deficiency Act (31 U.S.C. § 1341 and 1342). Each agency agrees to fund its own expenses associated with this EIS process. Specific work projects or activities that involve the transfer of funds, services, or property between the parties to this agreement will require the execution of separate written agreements in accordance with applicable laws, regulations and procedures, contingent upon the availability of funds as appropriated by Congress.

D. Third-Party Beneficiary Rights. This agreement does not establish or affect legal rights or obligations. It does not create any right, benefit or claim enforceable in any cause of action by any party against the United States, its agencies, officers, or any other party. This agreement does not direct or apply to any person or party outside of the Corps and USFWS. The provisions of this agreement are intended only to assist the parties in determining and performing their roles and responsibilities under this agreement. It does not impose legally binding requirements and nothing in this agreement will be construed as limiting or affecting in any way the authorities or responsibilities of the signatory parties.

VI. Dispute Resolution

The Corps and USFWS will strive to resolve significant differences regarding the EIS at the technical staff level with the designated liaisons identified in Section II above. Unresolved issues may be elevated to the first and second management levels in each agency for additional consideration and resolution. Any issues that remain unresolved after consideration by the first and second management levels will be resolved by the Corps' Regulatory Division Chief. This process is separate from the dispute resolution mechanisms in the Clean Water Action § 404 permitting process.

VII. Signatures

The parties hereto have executed this agreement as of the dates shown below.

U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT

Michael Jewell

Digitally signed by Michael Jewell
Date: 2021.09.10 13:42:56 -07'00'

By: _____ Date: _____

Michael S. Jewell
Chief, Regulatory Division

U.S. FISH AND WILDLIFE SERVICE

DONALD
RATCLIFF

Digitally signed by DONALD RATCLIFF
Date: 2021.09.10 12:09:12 -07'00'

By: _____ Date: 9/10/21

Donald Ratcliff
Field Supervisor, San Francisco Bay-Delta Fish and Wildlife Office



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

September 13, 2021

Regulatory Division (SPK-2019-00899)

U.S. Fish and Wildlife Service
Attn: Mr. Donald Ratcliff
Field Supervisor, San Francisco Bay-Delta Fish and Wildlife Office
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814-4700
Donald_Ratcliff@fws.gov

Dear Mr. Ratcliff:

We are transmitting your copy of the executed *Cooperating Agency Agreement between the U.S. Army Corps of Engineers, Sacramento District and the U.S. Fish and Wildlife Service for the Delta Conveyance Project Environmental Impact Statement*, which we signed on September 10, 2021. We look forward to working with your office in the development of the Environmental Impact Statement for the Delta Conveyance Project, in accordance with the agreement.

Please refer to identification number SPK-2019-00899 in any correspondence concerning this project. If you have any questions, please contact Mr. Zachary Simmons at our Sacramento Regulatory Division, 1325 J Street, Room 1350, Sacramento, California 95814-2922, by email at Zachary.M.Simmons@usace.army.mil, or telephone at (916) 557-6746.

Sincerely,

A handwritten signature in blue ink, appearing to read "M. Jewell", is located below the "Sincerely," text.

Michael S. Jewell
Chief, Regulatory Division

Enclosure

cc: (w/o encl)
Ms. Jana Affonso, U.S. Fish and Wildlife Service, Jana_Affonso@fws.gov
Ms. Carolyn Buckman, California Department of Water Resources,
Carolyn.Buckman@water.ca.gov
Mr. Marcus Yee, California Department of Water Resources,
Marcus.Yee@water.ca.gov

3. *NEPA Purpose and Need.* The purpose of the study is to determine strategies to manage the risk of impacts from future flooding in the project area, including public health and safety. Coastal storm risk management measures would seek to reduce effects to important building, utility, and transportation infrastructure and resources, as well as social and economic resources, including recreation facilities. During certain conditions such as storms, king tides, or El Niño events, water from the San Francisco Bay periodically overtops sections of the seawall along the San Francisco Embarcadero waterfront, resulting in flooding of low-lying areas. Sea level rise is expected to increase risk of flooding in the future. Flooding could result in limited or no access to the Embarcadero, Ferry Building and terminals, and portions of downtown San Francisco. Potential flooding of these areas could adversely impact building infrastructure, including historic buildings; transportation and transportation infrastructure, including the BART, Muni, and the Embarcadero roadway; recreation and tourism; government resources; local businesses and economy; and public health and safety. Therefore, with the existing and increasing risk as sea levels continue to rise there is a need to manage the risk of flooding in the study area.

4. *Alternatives.* Alternative formulation is in the early stages. USACE and the Port of San Francisco are developing preliminary alternatives that combine a broad suite of flood risk management structural, non-structural, and natural and nature-based measures in addition to a No Action Alternative. Structural measures include options such as construction of new levees and floodwalls, or improvements to the existing seawall to address coastal flooding along the waterfront. Nonstructural measures include options such as raising critical infrastructure, floodproofing structures, recommending land use or zoning restrictions, or enhancing flood warning systems. Natural and nature-based features include measures like horizontal levees, ecological seawalls or “ecotones” that reduce flood risk while improving the environment. USACE and the Port of San Francisco will coordinate with interested stakeholders to further describe and refine the alternatives and/or develop additional alternatives throughout the study process. As alternative formulation progresses, more information will be available on the project website: <https://www.spn.usace.army.mil/Missions/>

Projects-and-Programs/Projects-A-Z/San-Francisco-Waterfront-Storm-Damage-Reduction/.

5. *Scoping Process.*

a. Two virtual public scoping meetings will be held to present an overview of the San Francisco Waterfront Flood Resiliency Study, the USACE alternative formulation process, and the NEPA process. Additionally, these meetings will afford all interested parties an opportunity to comment on the scope of analysis and potential alternatives. The first virtual scoping meeting will be held on September 16, 2020, from 6:00–7:30 p.m. The second virtual scoping meeting will be held on September 17, 2020, from 2:00–3:30 p.m. Information on accessing the virtual public meetings can be found at: [https://www.spn.usace.army.mil/Missions/Projects-and-Programs/Projects-A-Z/San-Francisco-Waterfront-Storm-Damage-Reduction/.](https://www.spn.usace.army.mil/Missions/Projects-and-Programs/Projects-A-Z/San-Francisco-Waterfront-Storm-Damage-Reduction/)

b. USACE will be soliciting public comments throughout the 60-day scoping period (See Dates and Addresses above).

6. *Availability.* A minimum 30-day public review period will be provided for individuals, interested parties, and agencies to review and comment on the Draft NEPA document. All interested parties are encouraged to respond to this notice and provide a current address if they wish to be notified of the Draft NEPA Document’s public circulation. The Draft NEPA Document is scheduled to be available for public review and comment in spring 2022.

PUBLIC DISCLOSURE STATEMENT: USACE believes it is important to inform the public of the environmental review process. To assist the USACE in identifying and considering issues related to the study, comments made during formal scoping and later on the draft NEPA document should be as specific as possible. Reviewers should structure their participation in the environmental review of the proposal so that it alerts USACE to the reviewers’ position and concerns. It is very important that those interested in this study participate by the close of the scoping period so that substantive comments and objections are made available to the USACE at a time when we can meaningfully consider them for alternative development and incorporate them into the study, as appropriate.

Paul E. Owen,
Brigadier General, U.S. Army, Commanding.
 [FR Doc. 2020–18226 Filed 8–19–20; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Army, Corps of Engineers

Notice of Intent To Prepare an Environmental Impact Statement for construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

AGENCY: Department of the Army, U.S. Army Corps of Engineers, DoD.

ACTION: Notice of Intent.

SUMMARY: The U.S. Army Corps of Engineers Sacramento District (USACE), as the lead agency under the National Environmental Policy Act (NEPA), will prepare an Environmental Impact Statement (EIS) for construction of the Delta Conveyance Project. The California Department of Water Resources (DWR) is the project proponent and will be referred to hereafter as the Applicant. The EIS will analyze the Applicant’s proposed action to construct new conveyance facilities in the Sacramento-San Joaquin Delta (Delta) which includes intake facilities on the Sacramento River, tunnel reaches and tunnel shafts, a southern forebay and pumping plant, and south Delta Conveyance facilities that would connect to the existing State Water Project (SWP) infrastructure.

ADDRESSES: U.S. Army Corps of Engineers, Sacramento Regulatory Division, Attn: Mr. Zachary Simmons, 1325 J Street, Room 1350, Sacramento, CA 95814–2922.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and EIS can be answered by Mr. Zachary Simmons, at (916) 557–6746, by email at Zachary.M.Simmons@usace.army.mil; or mail at U.S. Army Corps of Engineers, Sacramento Regulatory Division, Attn: Mr. Zachary Simmons, 1325 J Street, Room 1350, Sacramento, CA 95814–2922. Requests to be placed on the electronic or surface mail notification lists should also be sent to this address. For further information or media inquiries, contact Mr. Paul Bruton at (916) 557–5166, or by email at spk-pao@usace.army.mil.

SUPPLEMENTARY INFORMATION: The proposed action requires permission from USACE is required under Section 14 of the Rivers and Harbors Act (RHA). In addition, the proposed work in navigable waters and discharge of dredge or fill material into waters of the U.S. requires authorization from USACE under Section 10 of the RHA of 1899 and Section 404 of the Clean Water Act.

1. *Proposed Action.* The project requiring an EIS involves construction of new conveyance facilities in the Delta that would connect to the existing SWP infrastructure. USACE's jurisdiction is limited to construction activities resulting in the discharge of dredge or fill material within waters of the U.S., work or structures within navigable waters, and modifications to the federal levees and navigation projects. The scope of the USACE NEPA review for operations of the new facilities is limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.

The proposed action includes the construction of new intake facilities, a tunnel, and a forebay. Two new intake facilities would be located in the north Delta along the east bank of the Sacramento River between the communities of Clarksburg and Courtland. The new conveyance facilities would include a tunnel to convey water from the new intakes to a pumping plant and new southern forebay on Byron Tract, immediately west of the existing Clifton Court Forebay. A dual tunnel would connect the new facilities to the existing State Water Project (SWP) Banks Intake Canal in the south Delta. The new facilities would provide the SWP with an alternate location for diversion of water from the Delta and would be operated in coordination with the existing SWP south Delta pumping facilities, resulting in a system also known as "dual conveyance" because there would be two complementary methods to divert and convey water. Under the proposed project, the new north Delta facilities would be sized to convey up to 6,000 cubic feet per second (cfs) of water from the Sacramento River to the SWP facilities in the south Delta.

Because the proposed action would alter Federal levees and cross under a federal navigation project, permission from USACE is required under Section 14 of the Rivers and Harbors Act (RHA) (33 U.S.C. 408) (Section 408). In addition, the proposed work in navigable waters and discharge of dredge or fill material into waters of the U.S. requires authorization from USACE under Section 10 of the RHA (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344). Proposed project elements requiring a permit under Section 404 and/or Section 10 include the construction of the intakes within the Sacramento River and associated

intake facilities which include setback levees, two tunnel shafts, and temporary construction work areas. Project elements along the tunnel corridor include 13 crossings of navigable waterways, eight tunnel shafts, access roads and access road improvements, staging areas, tunnel material storage areas, and a barge landing within the Stockton Deep Water Ship Channel (SDWSC) at Lower Roberts Island. Project elements at the southern forebay facilities include construction of the new Southern Forebay, three tunnel shafts, one crossing of a navigable waterway, a pumping plant, outlet and control structure, tunnel material storage area, and temporary construction work areas. Proposed project elements requiring authorization under Section 408 include the crossing under the SDWSC, the barge landing within the SDWSC, and alterations to the Sacramento River Flood Control Project (SRFCP) to construct the intakes within the Sacramento River, associated intake facilities, and construction and maintenance of the setback levees along the Sacramento River. Compensatory mitigation would be required for unavoidable impacts to waters of the U.S. and would be developed during the EIS process.

Construction of the overall conveyance project, if approved, would take approximately 13 years, but the duration of construction at most locations would vary and would not extend for this full construction period. The future operation of the intakes after completion of construction would not be within control or responsibility of the Corps.

2. *Alternatives.* A number of project alternatives, including the no action alternative and the Applicant's preferred alternative will be evaluated in the EIS in accordance with NEPA (33 CFR part 230 (USACE NEPA Regulations) and 33 CFR part 325, Appendix B (NEPA Implementation Procedures for USACE Regulatory Projects). Current alternatives to be analyzed include variations of the proposed project. Options include two of three possible intake structures, multiple intake structure designs based on impact footprint and fish screen designs, intake and tunnel capacity between 3,000 to 7,500 cfs, and optimizing a tunnel alignment to minimize impacts within either a central Delta or eastern Delta corridor.

3. *Scoping Process.*

a. Affected Federal, State, regional, and local agencies; Native American Tribes; other interested private organizations; and the general public are invited to participate in the scoping

process. Comments can be submitted to the contacts identified above or submitted via the website identified in 4. *Scoping Meetings* below.

b. The EIS will analyze the environmental effects of construction on the aquatic environment and all other impacts that fall within the USACE jurisdiction. Potentially significant issues to be analyzed in depth include impacts to waters of the United States (including wetlands), the federal flood control project, and air quality. Other impacts include biological resources, special status species, hydrology and water quality, land use, navigation, water supply, aesthetics, recreation, and socioeconomic effects.

c. USACE has invited the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Environmental Protection Agency to participate as cooperating agencies in the preparation of the EIS. The Applicant is lead agency for the preparation of an Environmental Impact Report (EIR) under the California Environmental Quality Act for the proposed project. The two environmental reviews will be completed as separate, but parallel processes, and result in separate documents.

d. USACE will consult with the State Historic Preservation Officer and with Native American Tribes to comply with the National Historic Preservation Act, and with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) to comply with the Endangered Species Act. USACE will also coordinate with the USFWS to comply with the Fish and Wildlife Coordination Act and with NMFS to comply with the Magnuson-Stevens Fishery Conservation and Management Act.

4. *Scoping Meetings.* Due to the current COVID-19 pandemic and in compliance with Army and USACE directives, no in-person public scoping meetings will be held. Members of the public are invited to view project information and a presentation on the USACE proposed action at <https://www.spk.usace.army.mil/Missions/Regulatory/Permitting/Environmental-Impact-Statements/>. Comments may be submitted via the website or through email or written comments submitted to the contacts listed above.

5. *Availability of the Draft EIS.* The draft EIS is scheduled to be available for

public review and comment in mid-2021.

Paul E. Owen,

Brigadier General, U.S. Army, Commanding.

[FR Doc. 2020–18197 Filed 8–19–20; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF EDUCATION

[Docket No.: ED–2020–SCC–0090]

Agency Information Collection Activities; Submission to the Office of Management and Budget for Review and Approval; Comment Request; Master Generic Plan for Customer Surveys and Focus Groups

AGENCY: Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995, ED is proposing an extension of an existing information collection request (ICR).

DATES: Interested persons are invited to submit comments on or before September 21, 2020.

ADDRESSES: To access and review all the documents related to the information collection listed in this notice, please use <http://www.regulations.gov> by searching the Docket ID number ED–2020–SCC–0090. Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at <http://www.regulations.gov> by selecting the Docket ID number or via postal mail, commercial delivery, or hand delivery. If the [regulations.gov](http://www.regulations.gov) site is not available to the public for any reason, ED will temporarily accept comments at ICDocketMgr@ed.gov. Please include the docket ID number and the title of the information collection request when requesting documents or submitting comments. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Strategic Collections and Clearance Governance and Strategy Division, U.S. Department of Education, 400 Maryland Ave. SW, LBJ, Room 6W208B, Washington, DC 20202–8240.

FOR FURTHER INFORMATION CONTACT: For specific questions related to collection activities, please contact Stephanie Valentine, 202–453–7061.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C.

3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Master Generic Plan for Customer Surveys and Focus Groups.

OMB Control Number: 1800–0011.

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Individuals or households.

Total Estimated Number of Annual Responses: 451,325.

Total Estimated Number of Annual Burden Hours: 115,344.

Abstract: Surveys to be considered under this generic will only include those surveys that improve customer service or collect feedback about a service provided to individuals or entities directly served by ED. The results of these customer surveys will help ED managers plan and implement program improvements and other customer satisfaction initiatives. Focus groups that will be considered under the generic clearance will assess customer satisfaction with a direct service, or will be designed to inform a customer satisfaction survey ED is considering. Surveys that have the potential to influence policy will not be considered under this generic clearance.

Dated: August 17, 2020.

Stephanie Valentine,

PRA Coordinator, Strategic Collections and Clearance, Governance and Strategy Division, Office of Chief Data Officer, Office of Planning, Evaluation and Policy Development.

[FR Doc. 2020–18241 Filed 8–19–20; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF ENERGY

Federal Energy Regulatory Commission

[Docket No. CP20–481–000]

Rio Bravo Pipeline Company, LLC; Notice of Schedule for Environmental Review of the Rio Bravo Pipeline Project Amendment

On June 16, 2020, Rio Bravo Pipeline Company, LLC (RB Pipeline) filed an application in Docket No. CP20–481–000 requesting to amend the Certificate of Public Convenience and Necessity pursuant to Section 7(c) of the Natural Gas Act granted by the Federal Energy Regulatory Commission (Commission or FERC) for the Rio Bravo Pipeline Project in Docket No. CP16–455–000. The proposed project is known as the Rio Bravo Pipeline Project Amendment (Project Amendment), and RB Pipeline proposes to modify the pipeline facilities that will transport natural gas to Rio Grande LNG, LLC's previously approved (but not yet constructed) liquefied natural gas (LNG) Terminal in Cameron County, Texas.

On June 25, 2020, the Commission issued its Notice of Application for the Project Amendment. Among other things, that notice alerted agencies issuing federal authorizations of the requirement to complete all necessary reviews and to reach a final decision on a request for a federal authorization within 90 days of the date of issuance of the Commission staff's Environmental Assessment (EA) for the Project Amendment. This instant notice identifies the FERC staff's planned schedule for the completion of the EA for the Project Amendment.

Schedule for Environmental Review

Issuance of EA—November 16, 2020
90-day Federal Authorization Decision
Deadline—February 15, 2021

If a schedule change becomes necessary, additional notice will be provided so that the relevant agencies are kept informed of the Project Amendment's progress.

1
2

Comments Received during Scoping

From: [Shelley Ostrowski](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] NOI for Delta Conveyance Project
Date: Thursday, August 20, 2020 2:35:07 PM

Zachary-

I would like to receive email notifications of all public scoping meetings, document releases, and general updates regarding this project.

Thanks,

Shelley

Michelle Ostrowski

Deputy General Manager, External Affairs

Westlands Water District

SOstrowski@wwd.ca.gov

Phone: 559-244-1533

From: [David Olson](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Request to be added to the Delta Conveyance EIS Document Distribution List
Date: Friday, August 21, 2020 3:26:54 PM

Hi Zachary,

Please include me in all future Delta Conveyance-related EIS Document Distributions.

Thank you,

Dave Olson



Clarksburg, CA 95612

(916) 284-9706

dolson@sgs-ag.com

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From: [Judith Richey](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Conveyance Project
Date: Friday, August 21, 2020 4:44:33 PM

The climate change process has accelerated, with all of the inland areas becoming hotter and rainfall diminishing. We have every reason to expect this to continue.

The Delta Project amounts to rearranging deck chairs on the Titanic. The plan predates the climate data we all have come to accept in the last 10 years.

Unless we accept this reality, we will throw enormous amounts of money into a black hole of bad ideas and quite certainly impact the health of the Bay. Salt water will rise in the Bay as fresh water to the Delta decreases naturally, and worse, through human intervention to the Delta. The entire ecosystem in the Bay will be impacted. The Conveyance project adds insult to injury as a direct environmental attack on the Bay environment.

How can we justify this lack of forward thinking?

The poorest countries in the world now have desalination plants as they face the reality of the coming heat. If they can see it, why are we drifting around in this haze of denial of the now crystal clarity of climate change as it burns the state of California down.

Please tell me we are not this stupid! Please tell me we can adapt to rethinking a future based water solution that isn't robbing peter etc...

Money will be spent in any case. Can we at least spend it intelligently?

From: [Dante Nomellini, Jr.](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] EIS for Delta Conveyance Project -- Email Notification List etc
Date: Friday, August 21, 2020 9:41:09 PM

Hello,

Please include me on all electronic notification lists for this project.

Also, is it normal for the NOI in the federal register to not mention a deadline for public comments on the NOI? That seemed odd.

The NOI simply states: "Comments may be submitted via the website or through email or written comments submitted to the contacts listed above."

The only place I found a deadline was on the following site, which seemingly isn't referenced anywhere in the NOI nor in the websites cited in the NOI; instead, this site was referenced in a separate email from DWR:

Blocked<https://www.spk.usace.army.mil/Missions/Regulatory/Delta-Conveyance/>

Oh well, just passing that frustrating experience for whatever it's worth.

Many thanks,

Dan Jr.

Dante J. Nomellini, Jr. ("Dan Jr.")
Attorney at Law
Nomellini, Grilli & McDaniel
Professional Law Corporations
235 East Weber Avenue
Stockton, CA 95202
Mailing address:
P.O. Box 1461
Stockton, CA 95201-1461
Telephone: (209) 465-5883
Facsimile: (209) 465-3956

Email: dantejr@pacbell.net <<mailto:dantejr@pacbell.net>>

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From: [Lynne Singfook](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] save the delta
Date: Saturday, August 22, 2020 7:48:37 AM

So many outdoor recreational activities will be lost if you build these tunnels.
Fishing, boating, historical sites, piers. Please stop the tunnels!

Sent from AT&T Yahoo Mail on Android <Blocked[https://go.onelink.me/107872968?](https://go.onelink.me/107872968?pid=InProduct&c=Global_Internal_YGrowth_AndroidEmailSig__AndroidUsers&af_wl=ym&af_sub1=Internal&af_sub2=Global_YGrowth&af_sub3=EmailSignature)
pid=InProduct&c=Global_Internal_YGrowth_AndroidEmailSig__AndroidUsers&af_wl=ym&af_sub1=Internal&af_sub2=Global_YGrowth&af_sub3=EmailSignature>

From: [Norbert Dall](#)
To: [Simmons, Zachary M CIV USARMY CESPCK \(USA\)](#)
Cc: [S. Dall](#)
Subject: [Non-DoD Source] CDWR-Proposed Piecemealed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA
Date: Saturday, August 22, 2020 2:04:38 PM
Attachments: [Screen Shot 2020-08-22 at 1.14.15 PM.png](#)

Dear Colleague,

We hope and wish that this note finds you and your colleagues at the Corps well - not just - during the Covid-19 pandemic.

Thank you, in advance, for adding the undersigned to the Corps' (1) electronic mailing list, and (2) US Postal service [overland (surface)] mail notice list for any and all matters that pertain to the following:

(a) the application by the California Department of Water Resources (CDWR) to the Corps for Sections 10,14-408/404 review and authorization of the CDWR-proposal to construct new water conveyance facilities in the Sacramento-San Joaquin Delta (Delta) which includes intake facilities on the Sacramento River, tunnel reaches and tunnel shafts, a southern forebay and pumping plant, and south Delta Conveyance facilities that would connect to the existing State Water Project (SWP) infrastructure (the Project); and,

(b) Corps determination of statutory or regulatory spatial and programmatic jurisdiction in relation to each Project component that involves direct, indirect, or cumulative discharge of dredge or fill materials to waters of the United States, performance of work, placement, modification, or removal of structures within navigable waters of the US, and modifications to any federal levees and navigation projects.

Please note that on first impression, NEPA requires the Corps' review of the Project to identify and analyze all of its potentially significant direct, indirect, and cumulative effects on the environment during its proposed economic service life, including, but not limited to, the so-called dual-conveyance system scheme, and not merely those that involve variations of the Proposed Project (e.g., construction of new intake facilities, the multiple Project tunnels, pumping facilities, and new southern forebay in Byron Tract, and all feasible alternatives thereto).

(c) Corps review, pursuant to NEPA, of the Project, including, but not limited to any notice, scoping, preparation, or distribution of the Project Draft EIS, the finite project description therefor, any technical studies thereon, and all correspondence in relation thereto.

(d) The Corps' schedule for Project NEPA/EIS scoping.

Please note that the NOI to Prepare EIS, published 85 FR 162, 51420-51422, contains (1) no EIS scoping schedule, (2) no link to (or copy of) an accurate, to-scale, and legible map of the numerous project site-specific components; and (3) the link to the Project NOI (at:

[Blockedhttps://www.spk.usace.army.mil/Missions/Regulatory/Permitting/Environmental-Impact-Statements/](https://www.spk.usace.army.mil/Missions/Regulatory/Permitting/Environmental-Impact-Statements/)) contains no project information or presentation on the Corps-proposed action.

In addition, my first attempt to address your email address resulted in a denial of access. (Screenshot below.)

Please email or call me if you have any questions regarding this matter.

Thank you.

Regards,

NHD

Norbert H. Dall

Partner

Dall & Associates

Advisers and Consultants in Sustainable Coastal Management,
Land Use, and Transportation

Co-author, The Coasts of California (in preparation)

930 Florin Road, Suite 200

Sacramento, California 95831 USA

Telephone (direct): +1.916.392.0283

Mobile Telephone: +1.916.716.4126 (please call this number during the Covid-19 pandemic)

Email: norbertdall@icloud.com <<mailto:norbertdall@icloud.com>>

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Hmm. We're having trouble finding that site.

We can't connect to the server at `usace.army.mil`.



If that address is correct, here are three other things you can try:

- Try again later.
- Check your network connection.
- If you are connected but behind a firewall, check that Firefox has permission to access the Web.

Try Again

From: [Cheri Johnson](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Conveyance Project
Date: Sunday, August 23, 2020 8:29:18 AM

This is a continuing nightmare for the Delta. The history, farms, way of life, recreational activities, and beauty of the Delta will be lost because of outside political strings being pulled to destroy the Delta's way of life to send water to where they shouldn't be farming because they don't have their own water supply. Other water storage/ sources need to be developed for their agriculture activities and not steal it from the Delta!

Please consider the short- and long-term disaster the "tunnel" would be for the people and the Delta!

Thank you,
Cheri Johnson

Walnut Grove, Ca. 95690

Sent from my iPad

From: [Tom Williams](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#); paul.bruton@usace.army.mil
Cc: [SPK-PAO SPK](#)
Subject: [Non-DoD Source] Delta Conveyance Project SPK-2019-00899 Provide Public Comments Deadline and E-Mail Address
Date: Sunday, August 23, 2020 12:55:05 PM

USA CoE, Sac.Regulatory Div., Attn: Zachary Simmons, 1325 J St, Rm1350, Sacramento, CA 95814-2922 916-557-6746, Zachary.M.Simmons@usace.army.mil <<mailto:Zachary.M.Simmons@usace.army.mil>>

Paul Bruton 916-557-5166, or spk-pao@usace.army.mil <<mailto:spk-pao@usace.army.mil>>

NOI states Comments may be submitted via the website or through email or written comments submitted to the contacts listed above but does not provide any.

Requests to be placed on the electronic or surface mail notification lists should also be sent to this address.

Further information, Paul Bruton 916-557-5166, or spk-pao@usace.army.mil <<mailto:spk-pao@usace.army.mil>> .

Please Provide:

Public Comments Deadline and E-Mail Address

AND

Subject Line Requirements Delta Conveyance Project SPK-2019-00899 Public Comments NOI

Dr Tom Williams Snr. Technical Adviser Citizens Coalition for A Safe Community 4117 Barrett Rd., Kos Angeles, CA 90032-1712
323-528-9682 ctwilliams2012@yahoo.com

From: [Susann Lucero](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnels
Date: Sunday, August 23, 2020 6:37:43 PM

Sir,

Thankyou for taking time to read my letter...

My husband's family has lived on the Delta through 4 generations...our concern is that we live right where intake 5 is supposed to be...our address is [REDACTED] Courtland, Ca. 95615...of course, we are against the Tunnels...our way of Life would be severely distorted ...but to take it even further...we might be open to imminent domain and have to leave our home ...or live right next to the intake...which is unacceptable. This Black Cloud, has been hanging over our heads since Governor Brown, who wanted to follow in his Father's footsteps, was in office. Can you let us know, if the plans include our land, If the Tunnels go through...so we can be prepared for our fate or joy. Respectfully yours, Alwilda Susann Bohnstedt

--

Susann Lucero

From: [Annamarie Bermudez](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Conveyance Project Comments
Date: Monday, August 24, 2020 6:51:31 PM

Good afternoon,

I couldnt find the link to submit my comment on the website so I am e-mailing you.

I am a concerned resident of Hood, CA located in the Sacramento Delta. I live one block away from where the tunnel project will start. I am a mother of two and a super commuter. I am one of many who use Hood Franklin Rd and the river road to commute. This project will clog the roads and make them even more congested and dangerous then they are now. Not to mention it will inhibit emergency vehicles from reaching those in need. My husband is a volunteer fire fighter and he agrees that more traffic on the roads will be dangerous. Especially since commuters can already be impatient and pass on the two laned road, large trucks will make it worse. The destruction from the construction will irreversible! The noise will make all of us miserable!! The roads are already destroyed and large trucks will make them worse! What about bus that picks up my child. I'm terrified to think about fast driving, distracted truck drivers racing down the river roads and hitting a bus filled with children!! Because I can totally see that happening! Especially because these drivers dont know these roads. I just bought my house 2 years ago and I do not want to be stuck living here in turmoil! Have we not learned anything from history and its best to leave well enough alone? We live in California of all places!! One of the most liberal states in the country. We stand for "conservation" and this is what we get. I just dont understand why the project has to start in the middle of a town!! If this has to happen PLEASE do it lower down the river, where it is LESS populated or at least have the state buy out the residents so we can move somewhere else. PLEASE DO NOT DESTROY MY HOME!

Sincerely,
AnnaMarie Bermudez

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Sent from my Android phone with mail.com <Blockedhttp://mail.com> Mail. Please excuse my brevity.

From: [Chrissy](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] SPK-2019-00899 Public Comment
Date: Thursday, August 27, 2020 11:30:40 PM

Dear Mr. Simmons,

I whole heartedly oppose any and all proposed Delta tunnels. If built the actual tunnel costs would undoubtedly exceed the original estimate of 15.9 billion dollars. This is an absurd amount at the best of times, but in the middle of a pandemic that has left the state in a huge deficit it's criminal. This project also hastens the extinction of winter and spring run Chinook salmon, Central Valley steelhead, Delta and longfin smelt and other state and federal listed fish species. The enormously expensive project would also imperil the salmon and steelhead populations on the Trinity and Klamath rivers that the Yurok, Karuk and Hoopa Valley tribes have been fishing for since time immemorial. For the reasons stated, and many more, I request a public hearing on this proposed project. It is owed to Californians who stand to loose their water, their livelihoods, their homes, and their ways of life.

Sincerely,
Chrissy Hoffman

From: [Norris, J. Michael](#)
To: [Simmons, Zachary M CIV USARMY CESPCK \(USA\)](#)
Cc: [Jacobsen, Eric](#); [Janowicz, Jon A](#)
Subject: [Non-DoD Source] Fw: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER20/0358 - Notice of Intent by the U.S. Army Corps of Engineers for the Proposed Delta Conveyance Project - Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA
Date: Friday, August 28, 2020 7:43:06 AM

The USGS has no comment until the Notice of Intent is completed.

J. Michael Norris

J. Michael Norris

James Michael Norris (Mike)
Water Mission Area
Office of Quality Assurance
Manager of Environmental Document Review Program
603 226-7847
cell 603 831-0013
mnorris@usgs.gov
331 Commerce Way, Pembroke NH, 03275

From: oepchq@ios.doi.gov <oepchq@ios.doi.gov>

Sent: Thursday, August 20, 2020 1:22 PM

To: Reddick, Virginia; Treichel, Lisa C; Alam, Shawn K; Braegelmann, Carol; Kelly, Cheryl L; Yazzie, Harrilene J; Howerton, B J; Harris, Melissa M; Whitesides, Scott M; Edmonds, Joseph W; Tkach, Andrew R; Taylor, Theresa J; Cunningham, Catherine (Cathy) S; ERs, FWS HQ; ERs, FWS HQ; Werdel, Nancy; Fox, Samuel H; Runkel, Roxanne; Norris, J. Michael; Hall, Harold; oepchq@ios.doi.gov; Whitlock, Janet L

Subject: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER20/0358 - Notice of Intent by the U.S. Army Corps of Engineers for the Proposed Delta Conveyance Project - Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

This e-mail alerts you to a Environmental Review (ER) request from the Office of Environmental Policy and Compliance (OEPC). This ER can be accessed here.<Blockedhttps://ecl.doi.gov/ER_summary.cfm?id=35364>

To access electronic ERs visit the Environmental Assignments website: Blocked<https://ecl.doi.gov/ERs.cfm>. For assistance, please contact the Environmental Review Team at 202-208-5464.

Comments due to Agency by: 09/21/20

From: [Katie Solorio](#)
To: [Simmons, Zachary M CIV USARMY CESPCK \(USA\)](#)
Cc: [Kara Perry](#)
Subject: [Non-DoD Source] Delta Conveyance Project SPK-2019-00899
Date: Friday, August 28, 2020 2:54:05 PM
Attachments: [Delta Conveyance Project.pdf](#)

Good Afternoon,

Please see the response letter regarding the Delta Conveyance Project. For any questions regarding this letter, please contact Site Protection Manager Kara Perry, who is copied on this e-mail.

Thank you,

Katie Solorio
Administrative Assistant
Cultural Resources Department

Phone: (530) 698-1555
Fax: (530) 558-2034
Email: KSolorio@ssband.org

Shingle Springs Band of Miwok Indians | P.O. Box 1340, Shingle Springs, CA 95682

SSBMI Disclaimer: This email (Delta Conveyance Project SPK-2019-00899) is from Shingle Springs Band of Miwok Indians: Cultural Resources Department and is intended for zachary.m.simmons@usace.army.mil. Any attachments thereto may contain private, confidential, and privileged material. Any review, copying, or distribution of this email (or any attachments thereto) by parties other than the Shingle Springs Band of Miwok Indians (and its affiliated departments or programs) or the intended recipient(s) is strictly prohibited. If you properly received this e-mail as an employee of the Shingle Springs Band of Miwok Indians, outside legal counsel or retained expert, you should maintain its contents in confidence in order to preserve the attorney-client or work product privilege that may be available to protect confidentiality.

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Shingle Springs Band of Miwok Indians

Shingle Springs Rancheria (Verona Tract), California

5281 Honpie Road • Placerville, CA 95667
(530) 698-1400 • shinglespringsrancheria.com

CULTURAL RESOURCES

August 24, 2020

U.S. Army Corps of Engineers
Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814

Dear Zachary Simmons,

The Most Likely Descendant, Daniel Fonseca would like to initiate consultation process with you in regard to the Delta Conveyance Project (SPK-2019-00899). Among other things, we would like this consultation to address the cultural and historic resource issues, pursuant to the regulations implementing Section 106 of the National Historic Preservation Act and Assembly Bill 52.

Prior to meeting we would like to request any and all completed record searches and/or surveys that were done in/around the project area up to and including environmental, archaeological and cultural reports.

Please let this letter serve as a formal request for the Shingle Springs Band Of Miwok Indians to be added as a consulting party in identifying any Tribal Cultural Properties (TCPs) that may exist within the project's Area of Potential Effects (APE).

Please contact Kara Perry, Site Protection Manager, (530) 488-4049, kperry@ssband.org, to schedule a consultation pursuant to Section 106 of the NHPA and AB 52.

Sincerely,

Daniel Fonseca
Tribal Historic Preservation Officer (THPO)
Most Likely Descendant (MLD)

From: [PATRICIA MCSWAIN](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] Public Notice SPK-2019-00899
Date: Tuesday, September 1, 2020 10:18:07 AM

Good morning,

I am against this permit. I have been fighting tunnels taking water from Northern California to Southern California. We in the North have always conserved our water and the South has not. I do not want this permit given. Please keep me in the loop. This is endangering our fish and wildlife.

Pat McSwain

[REDACTED]

Email marvin3210@comcast.net

From: [Terra Land Group](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Cc: ["Candini, Cassandra"](#); ["Teresa Vargas"](#); ["Chris Neudeck"](#); ["Frank Avila"](#); [Chris Elias](#); ["Darling, Ruth@CVFPB"](#); ["Jones, Ryan@CVFPB"](#); [nguyen@sjcog.org](#); [marv.jimenez@water.ca.gov](#); [fbuchman@sigov.org](#); [Salvers, Elizabeth A CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Public Comment Letter Re: EIS for Proposed Delta Conveyance Project
Date: Wednesday, September 2, 2020 12:07:46 PM
Attachments: [2020-09-02_LTR_USACE_PubComm.pdf](#)

Good Afternoon,

Attached please find a public comment letter dated September 2, 2020 from Terra Land Group, LLC to the U.S. Army Corps of Engineers RE: Public Comments on the Department of the Army, Corps of Engineers' ("USACE") Notice of Intent to Prepare an Environmental Impact Statement for construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA.

Thank you,

Martin Harris

Terra Land Group

MH/cm

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TERRA LAND GROUP, LLC

September 2, 2020

VIA EMAIL

U.S. Army Corps of Engineers
Sacramento Regulatory Division
Attn: Mr. Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814-2922
(zachary.m.simmons@usace.army.mil)

RE: Public Comments on the Department of the Army, Corps of Engineers' ("USACE") Notice of Intent to Prepare an Environmental Impact Statement for construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA.

Dear Project Team Members,

My name is Martin Harris and I am an authorized representative for Terra Land Group, LLC ("TLG"). TLG owns several properties located in Manteca and Lathrop, and as an organization dedicates a significant amount of its efforts to ensure the safety of our communities by soliciting local, state, and federal agencies to protect our area from the effects of flooding.

Over the past few years, TLG representative Martin Harris has: (i) attended many public and private meetings; and (ii) reviewed thousands of pages of environmental documents; and (iii) written over seven hundred letters to local and state authorities expressing concerns related to the effects of development on flooding in our area.

TLG has expressed concerns that the developing areas may not be paying their fair share towards the total floodwater, stormwater, wastewater drainage, and other water delivery and groundwater sustainability impacts that may be created to the non-developing rural areas south of Manteca. (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and SSJID) (**See Enclosures 1-16**)

This becomes especially important when it is considered that any and all total drainage flows and water conveyance flows to be expected in and along the South Delta may not have been adequately determined and may be different than what the narrow scope of existing flood models indicate. (**See Enclosures 10-12**) In addition, TLG believes that the non-developing rural areas south of Manteca (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and SSJID) must be included in any flood protection or drainage plan to be considered.

In addition, as more and more people move into California and as more land is being developed or farmed, there needs to be more water storage and reuse opportunities to accommodate those increased needs. This is especially important as local city, county, state, and federal authorities take various actions to divert or hold back an increasing amount of water (from all sources) to make more water available to the public they serve. However, there also needs to be safe ways of storing, delivering, conveying, draining,

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and discharging that water to avoid flood and other hydrology-related impacts for the people who live in the areas that may be affected.

On August 20, 2020 the U.S. Department of Defense posted a notice in the Federal Register (Vol. 85, No. 162) detailing the USACE's intent to prepare an Environmental Impact Statement for construction of the proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA. The project was represented to involve construction of new conveyance facilities in the Delta that would connect to the existing State Water Project ("SWP") infrastructure.

Particularly concerning is a statement by the USACE in the notice that "*the scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.*"

QUESTION: Will mitigation measures be included to prevent any potential for reverse channel flows and associated backwater effects that may impede the natural flow of Old River as identified on pages 3A-28 and 3A-29 of the Bay Delta Conservation Plan California WaterFix Final EIR/EIS (December 2016)?

QUESTION: Will any flood modeling be considered for impacts in and along the South Delta for events with peak flows similar to those experienced in 1997?

QUESTION: Will any flood modeling be considered for impacts in and along the South Delta for events with peak flows that are anticipated to occur due to climate change?

In addition, TLG is writing this letter to make the project team members and other authorities aware of what appears to be a joint effort by both local, state, and federal authorities to pursue a phased strategy of flood protection and other federally-assisted improvements both inside and outside of the South Delta to meet California Senate Bill No. 5 ("SB5") requirements as well as provide improved efficiencies in the ways we currently are storing, delivering, reusing, and draining water. (See Enclosure 1)

TLG believes that storing, delivering, reusing, and draining water in and along the South Delta becomes complicated when it is considered that the January 2018 San Joaquin River Basin Lower San Joaquin River, CA Final Integrated Interim Feasibility Report/EIR/EIS: ("LSJRFS") includes the following:

1. Page ES-1 of the LSJRFS states: *The study area also includes the distributary channels of the San Joaquin River in the southernmost reaches of the Delta; Paradise Cut and Old River as far north as Tracy Boulevard, and Middle River as far north as Victoria Canal.*
2. Page 3-31 of the LSJRFS states: *Currently, the levee safety program has defined the levee system that incorporates RD 17 as bounded on the north by Walker Slough, west by the San Joaquin River and south by the Stanislaus River. This includes RD 17, RD 2096, RD 2094, RD 2075 and RD 2064.*
3. Page 5-17 of the LSJRFS states: **Stanislaus River to Paradise Cut.** *The confluence of the San Joaquin and Stanislaus Rivers defines the upstream extent of the hydraulic model used for this study.*
4. Page ES-2 of the LSJRFS states: *Analysis of the study area is challenged by the presence of three sources of flooding, the Delta Front, Calaveras River and San Joaquin River. This results in commingled floodplains for the North and Central*

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Stockton areas. The distributary nature of the Delta also affects Delta water levels, because high flows from the Sacramento River may “fill” the Delta prior to a peak inflow on the San Joaquin River as occurred in 1997, raising water levels on the Delta front levees.

5. Page 5-27 of the LSJRF states: 2.1.1 FLOODING Problem: **There is significant risk to public health, safety and property in the study area associated with flooding.** The study area is located in the Central Valley of California which has very little topographic relief, resulting in potential flooding of areas far from water courses... (See Enclosure 1)

Potential Impacts to Consider:

TLG believes that all Mossdale Tract Flood modeling and Adequate Progress reports that have been publicly released to date have failed to fully consider and provide mitigation measures for:

- (i) Unresolved and continuing sedimentation issues that continue to reduce channel flow capacity in and along the South Delta Lower San Joaquin River System.
- (ii) Climate change and continued uncertainty relating to its effect on increasing the total potential volumes of channel flows to be expected in and along the South Delta Lower San Joaquin River System.

COMMENT: Martin Harris and several other South Manteca rural neighbors attended a Central Valley Flood Protection Board Workshop on February 14, 2020. Although a number of climate change presentations were made by staff, flood models and associated drainage flow volumes related to climate change do not appear to have been fully determined.

QUESTION: What effect will this have on determining the total amount of reservoir storage water that can be safely stored in higher elevations throughout the Sacramento and San Joaquin River Reservoir System(s)?

COMMENT: The Paradise Cut Expansion project, in the form presented in the “Conceptual Design Technical Memo/Paradise Cut Expansion Project/April 9, 2019,” may or may not prove adequate in offsetting the full range of development and other hydrology-related impacts that may be created. Also, TLG believes that the Paradise Cut Expansion Stage reductions called for between the Paradise Weir and the Airport Way (Vernalis Bridge) may not fully address the potential for additional drainage impacts to be created. (See Enclosures 1-16)

This is especially concerning when considering pages 4 and 5 of the Mossdale Tract Program: 2019 Annual Adequate Progress Report Update for Urban Level of Protection-Final Report (included as Attachment 2 to the 8/20/2019 MCC Meeting Agenda Item B.3), which states that, “the Urban Flood Risk Reduction Study remains incomplete and the Climate Adoption Policy is underway. As such, a new determination that the project meets the appropriate Standard of Protection will need to be made in conjunction with the 2020 Annual Report.”

Most concerning, the Mossdale Tract Program: 2020 Annual Adequate Progress Report Update for Urban Level of Protection, Final Report (Included as Attachment 2, Exhibit “A”

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to the 7/21/2020 MCC Meeting Agenda Item B.2 (20-292)) includes a number of important statements that must be factored into any flood protection plan that may be considered. Some of these statements include:

(i) Page A-4: *"In terms of watershed hydrology, the CVFPP [2017 Central Valley Flood Protection Plan] also predicts a tripling of 200-year flood flows by the year 2067."*

(ii) Page A-5: *"...it is not expected that SJAFCA use the 2017 CVFPP Update as a basis for design and investment-level decisions. However, the trend of the 2017 CVFPP Update demonstrates that climate change will increase both the flows projected to flow down the San Joaquin River and increase the tailwater stages."*

(iii) Page A-6: *"Coordination with relevant land-use agencies in and around current and future levee alignments to ensure approved development can accommodate expanded levee footprints and extended levee alignments."*

QUESTION: How will what appears to be a very real potential for unresolved and continuing sedimentation and climate change issues in and along the South Delta be considered and allowed for in any future or continuing Mossdale Tract Drainage Plans? (See Enclosures 1-16)

QUESTION: What drainage and increased back-water effects may be created to the areas south of Manteca (ie. Reclamation Districts 17, 2094, 2075, 2096, 2064 and the SSJID)?

(iii) A Stanislaus River right bank levee breach in the areas west of the City of Ripon.

(iv) Limited topographic relief to ground surface areas in and along the South Delta.

QUESTION: Will limited topographic relief to ground surface areas in and along the South Delta slow down San Joaquin River (and Paradise Cut) channel flows and promote continuing sedimentation?

(v) Flood and other drainage impacts that may occur in conjunction with anticipated changes to the way Old River enters and drains into what appears to be a modified Franks Tract (as detailed in the draft report "Franks Tract Futures 2020 Reimagined" published by the California Department of Fish and Wildlife).

QUESTION: Will mitigation measures be included to prevent any potential for reverse channel flows and associated backwater effects that may impede the natural flow of Old River as identified on pages 3A-28 and 3A-29 of the Bay Delta Conservation Plan California WaterFix Final EIR/EIS (December 2016)?

(vi) Various federal and state-funded Manteca and Lathrop area highway construction and other state, federal, and/or county transportation improvement projects as presented in (a) the 2014 San Joaquin Council of Governments Sustainable Communities Strategy, Draft EIR and 2015 FTIP Conformity Document and August 2020 City of Manteca Active Transportation Plan. (See the 9/1/20 MCC Meeting Agenda Item C.4)

QUESTION: Have all roadway-related floodwater and other hydrology-related drainage impacts to the areas south of Manteca been properly considered (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064, and the South San Joaquin Irrigation District ("SSJID"))?

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(vii) Unresolved plans as to how the cities of Manteca and Lathrop can reasonably drain what appears to be ever-increasing amounts of stormwater and effluent wastewater from the residential, commercial, and industrial-zoned developing areas into non-developing areas that flooded in 1997.

COMMENT: TLG believes that any and all total drainage flow volumes and drainage flow patterns to be expected in and along the South Delta have not been adequately determined and may be different than what the narrow scope of existing flood models may indicate. (See Enclosures 1-16)

QUESTION: What potential increased flood water, stormwater, and effluent wastewater, irrigation water, potable water delivery, traffic circulation, emergency vehicle services response and private property road access impacts and changes to drainage patterns may be created due to the construction (and/or expansion) of 100-year flood protection infrastructure as appears to be called for due to a recent May 21, 2019 San Joaquin County Board of Supervisors approval of Morning Hearing item #1: Development Title Text Amendment No. PA 1900067 allowing revisions to the Definition of Structure?

QUESTION: What increased flood and back-water impacts may occur when that same 100-year infrastructure (as referenced in the previous question) is subjected to a 200-year flood event?

(viii) Flood and other hydrology-related drainage impacts anticipated to occur in conjunction with the ACE train and Valley Link rail expansions.

COMMENT: TLG believes that decisions related to rail system at-grade and grade separation (aerial, embankment, tunnel, or trench) track modifications in and along the areas crossing the South Delta (Mosssdale) may affect both 100-year and 200-year California Senate Bill No. 5 ("SB5") flood water drainage and other hydrology-related impacts in the areas around the Manteca and Lathrop communities.

(ix) Flood and other hydrology-related drainage impacts anticipated to occur in conjunction with RD 17 planned improvements associated with any and all Phase II, Phase III, and California Senate Bill No. 5 200-year projects to be considered.

(x) Flood and other hydrology-related impacts that may occur in conjunction with anticipated changes to the Tri-Dam Project, the South San Joaquin Irrigation District, South San Joaquin Groundwater Sustainability Agency ("SSJGSA"), South Delta Water Agency ("SDWA"), and the Eastern San Joaquin Groundwater Authority water master plans.

COMMENT: TLG believes that any Tri-Dam Project, SSJID, SSJGSA, SDWA, or Eastern San Joaquin Groundwater Authority water master plan needs to consider flood and other hydrology-related impacts associated with SSJID drain #11 (and SSJID drain #10) for all areas extending to their origin.

(xi) Short-term and long-range flood and other hydrology-related impacts that may occur in conjunction with what is anticipated to be a continuing series of approvals of water transfer agreements between the SDWA and SSJID (or SSJGSA). (For an example, see SSJID 5/12/2020 meeting agenda items 9 and 10).

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QUESTION: When considering the potential water supply needs in the areas of southwest Manteca and Lathrop, isn't it likely that a combination of one or more future SDWA and SSJID (or SSJGSA) water transfer agreements will eventually over time result in water supply, conveyance, conservation, and drainage infrastructure being modified or constructed to transfer water to southwest Manteca as well as other SDWA users located downstream?

QUESTION: If so, what drainage and other hydrology-related impacts should be considered? (See Enclosures 1-16)

(xii) Flood and other hydrology-related impacts that may occur in conjunction with the anticipated expansion of River Islands as proposed in the Notice of Preparation for the River Islands Phase 1 or 2 Project/Update for the West Lathrop Specific Plan.

(xiii) Flood and other hydrology-related impacts that may occur in conjunction with the adoption of the City of Lathrop's Integrated Water Resources Master Plan (See LCC 12/9/19 meeting agenda item 5.1 and associated project description figures 2.0-7 and 2.0-8).

(xiv) What appears to be undetermined flood and other hydrology-related groundwater sustainability and drainage impacts associated with the City of Manteca's continued reliance on a 2005 City of Manteca Water Master Plan (EIR was certified in 2007). This master plan appears to be outdated and fails to properly allow for the protections that CEQA (Section 15164) was meant to provide. (See MCC 8/18/2020 meeting agenda items B.4 (20-340), B.5 (20-341), and B.7 (20-342)) (See Enclosure 15)

QUESTION: In relation to the City of Manteca's continued reliance on its 2005 Water Master Plan, have all flood and other hydrology-related impacts been properly considered?

(xv) Flood and other hydrology-related impacts that may occur in conjunction with the San Joaquin Area Flood Control Agency's ("SJAFCA") Lower San Joaquin River Project. TLG has been informed that this project has won a coveted "New Start" designation in Fiscal Year 2020 along with \$27.225 million in federal funding for preconstruction, engineering, design, and construction of the project's first increment. SJAFCA's Lower San Joaquin River Project will include Phase II of the Lower San Joaquin River Feasibility Study and Mossdale Tract.

(xvi) Potentially catastrophic flood risks associated with continuing delays as evidenced in SJAFCA's proposed time extension amendment to SB5 in order to achieve 200-year flood protection for the Mossdale Tract and Manteca area Airport Way corridor.

(xvii) South Manteca flood and other drainage impacts resulting from the proposed planning evaluation and concept development and anticipated improvements to the Manteca Dry Land Levee as presented at the SJAFCA July 16, 2020 board meeting. (See Enclosure 14)

An informational briefing was conducted in association with the April 24, 2020 Central Valley Flood Protection Board meeting agenda item 8D: San Joaquin Area Flood Control Agency Projects Update.

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QUESTION: What mitigation measures will be provided as part of SJAFCA's Lower San Joaquin River Project to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts to the areas south of Manteca (ie: Reclamation Districts 17, 2094, 2096, 2075, 2064 and the SSJID)?

QUESTION: When considering the anticipated economic downturn that many are expecting to occur due to the COVID-19 health crisis, will sufficient drainage district maintenance assessments and other flood protection and drainage infrastructure construction funding be made available to construct (in a timely manner) all phases of the SJAFCA Lower San Joaquin River Project? This includes the Paradise Cut Expansion Project and other flood drainage protection project phases deemed necessary to protect the high-risk areas south of Manteca (ie. Reclamation Districts 17, 2094, 2096, 2075, 2064 and the SSJID). What potential impacts may occur if funding is either suspended or exhausted? **(See Enclosures 10-12)**

(xviii) On or about July 29, 2020, Governor Gavin Newsom released the final version of the California Water Resilience Portfolio. The portfolio includes 142 actions to help build a climate-resilient water system in the face of climate change.

QUESTION: What mitigation measures will be provided as part of the California Water Resilience Portfolio to offset any floodwater and other hydrology-related drainage and water delivery, conservation, and supply impacts to the areas south of Manteca (ie. Reclamation Districts 17, 2094, 2096, 2075, 2064 and the SSJID)?

QUESTION: What part (if any) will the (i) Delta Conveyance Project and (ii) the California Water Resilience Portfolio Initiative and (iii) changes to the way Old River enters and drains into Franks Tract (as detailed in the draft report "Franks Tract Futures 2020 Reimagined" published by the California Department of Fish and Wildlife) play in mitigating any and all drainage and water delivery, conservation, and supply impacts that need to be considered?

With these concerns in mind, TLG urges the project team members for the USACE's EIS for construction of the Proposed Delta Conveyance Project to consider the comments and concerns stated in this letter before approving any project with the potential to affect or alter drainage patterns and total flow volumes in the Delta as well as in and along the areas south of Manteca (ie. RD 17, 2096, 2075, 2094, 2064, and the SSJID). **(See Enclosures 1-16)**

Thank you for your attention to this very important matter.

Respectfully,



Martin Harris
for Terra Land Group, LLC.

MH/cm

TERRA LAND GROUP, LLC

Enclosures:

These Enclosures can be downloaded as needed via Dropbox through the provided hyperlinks.

1. 2018-02-26 letter from TLG to the San Joaquin Area Flood Control Agency
(https://www.dropbox.com/s/8scnhemfwexbkr9/2018-02-26_LTR_SJAFCA_LSJR%20EIR_PublicComm_wEncl.pdf?dl=0)
2. 2018-03-05 letter from TLG to the San Joaquin Area Flood Control Agency
(https://www.dropbox.com/s/tl0ir7soookd6ze/2018-03-05_LTR_SJAFCA_Letter2.pdf?dl=0)
3. 2017-04-20 letter from TLG to the San Joaquin County Board of Supervisors
(https://www.dropbox.com/s/7dy40jzjqeotw56/2017-04-20_LTR_SJCBS_Re04-25-17MtgPubComm_MHcm.pdf?dl=0)
4. 2019-03-04 letter from TLG to the Manteca City Council
(https://www.dropbox.com/s/a8ldad6e6or9c6p/2019-03-04_LTR_MCC_AgltD3.pdf?dl=0)
5. 2019-03-18 letter from TLG to the City of Lathrop Public Works Department
(https://www.dropbox.com/s/musf61jnz7azjvy/2019-03-18_LTR_LPW_EIRWaterResPlan.pdf?dl=0)
6. 2019-08-21 letter from TLG to the Eastern San Joaquin Groundwater Agency
(https://www.dropbox.com/s/srnfonfc2rbj1j1/2019-08-21_LTR_ESJGA_GSP.pdf?dl=0)
7. 2019-10-07 letter from TLG to the San Joaquin Local Agency Formation Commission
(https://www.dropbox.com/s/snktx3dvn8obbz/2019-10-07_LTR_LAFCo_Aglts4.pdf?dl=0)
8. 2020-05-11 letter from TLG to the South San Joaquin Irrigation District
(https://www.dropbox.com/s/c7plzfs56gvf1b/2020-05-11_LTR_SSJID_Aglts9.pdf?dl=0)
9. 2020-06-01 letter from TLG to the Manteca City Council
(https://www.dropbox.com/s/dxbuqnlscqp9p2r/2020-06-01_LTR_MCC_AgltsB3.pdf?dl=0)
10. 2020-05-16 Manteca Bulletin news article "California Budget Cutbacks Threaten Environmental Spending Plans"
11. 2020-05-30 Manteca Bulletin news article "SJ River flows may triple in 45 years due to climate shift"
12. 2020-06-02 Manteca Bulletin news article "2065: Sediment builds up in SJ River while state inaction helps cue up major flooding"
13. 2020-05-19 letter from the City of Lathrop to the Honorable Susan Talamantes Eggman, California State Assembly
14. 2020-07-13 letter from TLG to the San Joaquin Area Flood Control Agency
(https://www.dropbox.com/s/2l7sefnk5l0ub9o/2020-07-13_LTR_SJAFCA_Aglts4.2.pdf?dl=0)
15. 2020-08-17 letter from TLG to the Manteca City Council
(https://www.dropbox.com/s/m6au05tt1va2jvf/2020-08-17_LTR_MCC_AgltsB.4.pdf?dl=0)
16. 2020-08-31 letter from TLG to UC Davis and the California Department of Fish and Wildlife
(https://www.dropbox.com/s/h9y92glho2leetj/2020-08-31_LTR_Franks_PubComm.pdf?dl=0)

cc:

Manteca City Council, % Cassandra Candini-Tilton
Lathrop City Council, % Teresa Vargas, City Clerk
Reclamation District No. 17, Attn: Chris Neudeck
South San Joaquin Irrigation District, Attn: Frank Avila
San Joaquin Area Flood Control Agency, Attn: Chris Elias, Executive Director
Ruth Darling, Program Manager I, Engineering and Technical Office, Central Valley Flood Protection Board

TERRA LAND GROUP, LLC

Central Valley Flood Protection Board, Attn: Ryan Jones
San Joaquin Council of Governments, % Diane Nguyen
California Department of Water Resources, Attn: Mary Jimenez
San Joaquin Flood Control and Water Conservation District, % Fritz Buchman
Elizabeth Salyers, Chief, Civil Works Project Management Branch, U.S. Army Corps of Engineers
Eastern San Joaquin Groundwater Authority

5151 E. ALMONDWOOD DRIVE MANTECA, CA 95337

California budget cutbacks threaten environmental spending plans

SACRAMENTO (AP) — California Gov. Gavin Newsom's proposed budget cuts include canceling billions of dollars in climate change spending, a blow to environmental advocates who look to the state as a stopgap for the Trump administration's weakening of federal protections.

In January, Newsom proposed a \$12 billion "climate budget" that, over the next five years, would offer incentives for companies to convert to electric vehicles, give low-interest loans to businesses to clean up their practices and spend billions on projects preparing for floods, droughts and wildfires.

But Thursday, Newsom proposed eliminating most of the foundation for those programs to balance a budget that will have an estimated \$54.3 billion deficit. The economic downturn has been brought by a statewide stay-at-home order to limit the spread of the coronavirus. The order has closed most businesses for two months, putting more than 4.5 million people out of work and sending state tax collections plummeting.

The proposed cuts come as the state is battling the Trump administration over water quality and auto emissions, among other environmental issues.

"At a time when the Trump administration is mounting an unprecedented assault on environmental and public health protection, it's absolutely devastating and horrifying," said Kassie Siegel, director of the Climate Law Institute at the Center for Biological Diversity.

The Newsom administration says the cuts represent "unprecedented times" that have forced the state to "make sacrifices that we didn't think six months ago we would have to do." The administration chose to protect programs to clean up the air in disadvantaged communities and to provide safe drinking water.

"All the leaders around the world from Germany to Denmark to Japan are all suffering similar economic fates," said Jared Blumenfeld, secretary of the California Environmental Protection Agency. "What California is doing is prioritizing and making sure, as the governor said, our values come first."

The biggest cut was scrapping a proposal to borrow \$4.75 billion to prepare the state for climate-change disasters like sea level rise that threatens the coastal cities and devastating wildfires that have destroyed

to convince Newsom not to veto it over cost concerns.

Newsom canceled a \$250 million contribution to the "climate catalyst fund," aimed at jump starting investment in technology to help clean up private sector polluters.

But the most ironic impact is on the state's "cap and trade" program, which requires big businesses to purchase credits that allow them to pollute.

Coronavirus-related closures since mid-March have shut down most businesses and kept cars off the road, leading to a dramatic improvement in air quality. But it's also reduced the demand for credits, meaning the state is likely to make less money when it sells them.

That means less money for a host of programs offering incentives for companies to convert their diesel-powered fleets — one of the largest sources of air pollution — to electric vehicles.

"The good news is emissions are decreasing. However, there is a lot of funding that has occurred in the past that may not occur in the future as a result of that," Blumenfeld said.

The Newsom administration canceled a plan to hire 53 more people to regulate the state's oil and gas industry. The cut surprised environmental advocates because the new employees would have been paid for not by state income tax collections, but by fees paid from the oil and gas industry itself.

California Department of Natural Resources Secretary Wade Crowfoot said the new hires were withdrawn because of "COVID-related economic issues impacting that sector."

"Oil and gas won," said Kathryn Phillips, director of Sierra Club California. "But people who breathe and live near ports are losing."

Western States Petroleum Association President Cathy Reheis-Boyd said "there are no 'winners' when the state or businesses have to make tough budget decisions."

"Even without these new positions, California will continue to have the toughest regulatory standards for oil production in the world," she said.

tens of thousands of buildings and killed more than 100 people.



That proposal could be revived in the Legislature, where lawmakers view it as a type of economic stimulus to create jobs during a coronavirus-induced economic downturn. But they would first have

SJ River flows may triple in 45 years due to climate shift

FLOOD PROTECTION

By DENNIS WYATT

The Bulletin

Climate modeling by the Department of Water Resources that assumes that within 45 years water flow may triple in the San Joaquin River.

If that is the case plans and designs for state-mandated protection against a 200-year flood — a reference to a 1 in 200 chance of an event of such a magnitude in a given year and not the frequency — could be woefully inadequate.

It also would mean the envisioned \$180 million project now being pursue to protect all of Lathrop outside of River Islands, southwest Manteca, the

Airport Way corridor north to French Camp, and Weston Ranch may cost significantly more.

In addition to the 200-year flood protection complication the new river flow projections on the San Joaquin River will have on efforts to protect urban areas, it also

SEE FLOW, PAGE [A10](#)



PROTECTION

FLOW

FROM PAGE A1

means flooding frequency could increase significantly in rural South Manteca in the 5,000acre River Junction Reclamation District. The area at the confluence of the Stanislaus and San Joaquin rivers has flooded 11 times in the 93 years since 11 miles of levees were built in 1927 to protect the farm area. A 12th major flood was barely averted two years ago when an alert farmer noticed a boil growing and was able to rally nears to stop a breach before state re-enforcement arrived.

The Manteca City Council when they meet Tuesday at 7 p.m. with the public being able to attend for the first time since the pandemic started in early March is being asked to join the cities of Lathrop and Stockton as well as San Joaquin County to ask the state for an extension for a 2025 mandate that construction start on upgraded flood protection.

Senate Bill 5 that put the mandate in place allows for one justified 5-year extension to 2030.

If work is not started on actual levee improvements as things sit now by 2025, no new construction will be allowed in the identified 200-year floodplain. That runs the gamut from new commercial, residential, and

but also existing homes, businesses, and schools.

What would impacts of 200-year flood be Should a 200-year flood occur with multiple levee failures along the Stanislaus and San Joaquin rivers south of the Interstate 5 bridge before the merger with the 120 Bypass, engineers have indicated it would:

uflood 5,200 existing homes with 3 feet or more of water.

uendanger and force the overall evacuation of 50,000 residents in Lathrop outside of River islands, Weston Ranch in Stockton, southwest Manteca, and rural areas

uforce the evacuation of San Joaquin Hospital — the county’s major trauma center — as well as the county jail.

uforce first responders at five fire stations, the Lathrop Police Department and the county sheriff to abandon their stations and key communication centers in the middle of a major emergency.

uLathrop High and Weston Ranch High would have water flowing through their campuses as would six other Manteca Unified elementary schools.

industrial to improvements that increase square footage such as home additions as well as new outbuildings such as barns.

While the extension could be justified simply based on having to re-adjust the project to take into account by new Department of Water Resources projected river water flows, the San Joaquin Area Flood Control Agency's (SJAFCA) is also arguing the COVID-19 pandemic will create economic impacts making it difficult to raise the needed funds to do the work.

New construction taking place in the 200-year flood plain is already paying fees toward the work. The fear is construction may slow down and reduce the funds flowing to the agency to perform the work. In addition a property assessment of some type on all new and existing development is needed.

The SJAFCA project would also protect a portion of Stockton, French Camp, and the rural area between Weston Ranch and Lathrop.

River Islands at Lathrop — with 300-foot wide super levees — isn't expected to have issues if water flows in the San Joaquin River triple by 2065.

Ironically a project River Islands has been seeking federal and state approval for — widening the Paradise Cut that bypasses the problematic elbows on the San Joaquin River at Mossdale and connects with the Old River between Tracy and Lathrop — has been tied up by federal agencies for more than 15 years. When plans for the project that will take pressure off levees protecting Lathrop and parts of Manteca was first submitted, federal officials said it would be an 18-month approval process.

SJAFCA officials estimate the five-year time extension will enable construction of more than 7,000 housing units, thousands of square feet of commercial and industrial space, and create almost 22,000 jobs. Most importantly, it will ensure residents and properties in the Mossdale Tract area are fully protected from a 200-year flood event.

That construction will not only generate funds to build better flood protection for growth

enforce the closure of portion of Interstate 5 — the major West Coast freeway running from Mexico to Canada — and the 120 Bypass.

Water would swamp the wastewater treatment plant serving 84,500 existing Manteca residents and more than 13,000 of Lathrop's nearly 26,000 residents.

Disrupt Union Pacific Railroad train movements as well as damage tracks that Altamont Corridor Express relies on.

182 commercial and industrial properties from Costco to the Lathrop Target and Tesla Motors to Simplot would be flooded.

And that's just for starters. Modeling shows a number of existing homes would likely suffer water damage in fringe areas that could receive upwards of three feet of flood water.

Manteca, Lathrop, and Stockton aren't the only communities impacted by the Senate Bill 5 mandate. There are 85 cities in 33 Central Valley counties that have to comply.

To contact Dennis Wyatt, email dwyatt@mantecabulletin.com



This dry levee south of Woodward Avenue is part of the plan to enhance 200-year-flood protection. The levee is expected to be extended and made more robust.

Bulletin file photo

2065: Sediment builds up in SJ River while state inaction helps cue up major flooding

If we can take snippets of science in a rapidly evolving situation at face value during an evolving threat to public health and safety and suspend all sorts of rules that protect fish from single use plastic bags to suspending the right to peaceful assembly as we have during the COVID-19 pandemic why can't we do the same when it comes to climate change?

The science offered up by the state Department of Water Resources contends water flow will triple in the San Joaquin River over the next 45 years due to climate change.

This has led to an upending of plans moving forward to spend \$180 million for 200-year flood protection — a reference to the chances of a certain size of flooding event happening in a given year as opposed to frequency — for most of Lathrop as well as parts of Manteca and Stockton.

The new flow numbers the state wants used will require going back to the drawing board and likely spending closer to a half billion dollars.

Senate Bill 5 that mandates 200-year flood protection was devised in the aftermath of Hurricane Katrina when the Mississippi River laid waste to New Orleans due to insufficient levee flood protection.

If climate change is indeed a major threat to public health and safety then why does the state keep insisting that local jurisdictions pursue mandated solutions after putting cities and counties in proverbial strait jackets?

The modeling of the Department of Water Resources that underscores the fears that have been whipped up by climate change is a challenge on par with COVID-19. As such we need to pull the plug on any behavior that doesn't stem the threat climate change imposes including successful environmental challenges to dredging the San Joaquin River after it passes Vernalis.

You will find Vernalis about 10 miles south of Manteca where the Stanislaus River joins up with the San Joaquin River. Driving across the Airport Way bridge looking south toward Vernalis you can see evidence of a major impediment to the San Joaquin River being able to handle increasing levels of water flow due to climate change or any other reason. It is sediment build up that could easily be dredged to deepen and increase the river's ability to carry larger water flows.

Memorial Day weekend when water flows had kicked up due to late spring releases, dozens of people walked across the submerged part of the sand bar to the sediment island created almost in the center of the channel.

Crossing to the exposed sand bar from the rural Tracy side of the river is suicidal given not just the cold water but the swiftness of the river.

Proposition 13 — the 2000 water bond measure approved by voters — included funding to study sediment build-up much to the objection of some environmentalists as well as cubicle jockeys at the Department of Water Resources.

The provision to fund a dredging study was the result of a hard-fought effort by then State Senator Mike Machado to get it included in the bond measure. The study, and a lot of other work voters were promised that would happen if they passed the bond, never happened.

That's because then Gov. Gray Davis — with the concurrence of the California Legislature — “borrowed” \$1 billion in Prop. 13 bond money to plug a hole in the state budget. The money, of course, was never paid back so projects including the dredging study could be done.

By the way, Gov. Gavin Newsom wants to rip a page from Gray Davis' playbook and once again “borrow” money from special funds such as bonds to plug Titanic-sizes holes he blasted in the state budget over multiple

years with his COVID-19 response. Newsom, just like Davis, promises the state will pay back what it “borrows.”

The issue of silt build up being a potential major contributing factor to flooding on the Lower San Joaquin River Vernalis to a point west of Mossdale — the critical area for the needed 200-year flood protection — has been brought up in the years by various government papers.

Longtime farmers have always said that there has been at least six feet of sediment build up since the 1960s when the Central Valley Water Project re-plumbed the West Side of the San Joaquin Valley.

There is arguably tons of anecdotal evidence the farmers are right that can be seen in drought years measured against the early 1960s. You can see the evidence between Vernalis and Mossdale. The study was either supposed to be able to dispel that anecdotal evidence or confirm its existence.

The reason environmental groups fought its inclusion in the water bond project and shed no tears when Gray Davis essentially killed the study is their working contention that anything in place that is part of a habitat is part of the environment even if it was the result of misdirected decisions by man. In this case “man” is actually the State of California acting in concert with the United States government.

If the Department of Water Resources is so sure of modeling that San Joaquin River flow could triple by 2065 then why doesn't it justify a COVID-19-style approach?

Not only should the Lower San Joaquin River should be dredged but it should happen without a time consuming environmental impact report.

The same holds true for efforts to create a bypass of the problematic Mossdale bend where much of the flooding concerns for Lathrop, Manteca, and Stockton can be found. The application to widen Paradise Cut to create a bypass south of Manteca to connect with the Old River east of Lathrop has languished in the federal environmental review process for 15 years. When it was submitted to the Army Corps of Engineers, it was supposed to be an 18-month process.

Dredging the river would also take pressure off the highly vulnerable levees along the Stanislaus and San Joaquin rivers that have failed 11 times in 93 years. The threat those levees pose to Lathrop and Manteca is why the dry of cross levee south of Woodward Avenue is so critical to the 200-year flood protection plan for 50,000 existing residents, their homes, public infrastructure including the 120 Bypass and Interstate 5, businesses, schools, and more.

Unlike COVID-19 that did not exist as a threat 10 months ago, the state and federal bureaucracy has been acutely aware of the ticking time bomb better known as the San Joaquin River. Yet a definite solution such as dredging that could reduce death and other carnage has been ignored and buried by the state bureaucracy in complicity with the environmental perfection movement.

To contact Dennis Wyatt, email dwyatt@mantecabulletin.com



DENNIS WYATT

Editor Department of Water of Resources employees take water depth readings of the San Joaquin River from the Airport Way bridge several years ago.

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City of Lathrop



From the Desk of Mayor Sonny Dhaliwal

390 Towne Centre Drive
Lathrop, California 95330
(209) 941-7213 - City Phone
(209) 670-4053 - City Cell
Email: sdhaliwal@ci.lathrop.ca.us

May 19, 2020

Honorable Susan Talamantes Eggman
California State Assembly
State Capitol, Room 4117
Sacramento, CA 95814

Re: Flood Control Legislation

Dear Assembly Member Eggman,

I am writing to request your support and assistance in helping our San Joaquin County communities achieve a 200-year event flood control standard to protect life and property in Mossdale Tract in San Joaquin County.

The Mossdale Tract is a 22,000-acre area located in central San Joaquin County and bordered on the west by the San Joaquin River. One third of the Mossdale Tract is within the city boundaries of Lathrop, Manteca, and Stockton. The levees along the Mossdale Tract do not currently provide 200-year flood protection. This poses a significant risk to public health, safety, and property.

Pursuant to SB 5 (2007), by 2025, the San Joaquin Area Flood Control Agency (SJAFCFA) must complete construction of a flood control system to achieve an Urban Level of Protection (ULOP), which is a project designed to protect the Mossdale Tract from a 200-year event flood event. SJAFCFA must annually issue an adequate progress report and then communities relying on that report must make annual findings. If SJAFCFA cannot issue the annual report, then housing, commercial, and industrial development planned for Mossdale Tract in the near and far term must cease, and the jobs associated with those developments will not be created.

SJAFCFA's inability to make an adequate progress report will also put an end to implementation of development fees and other local assessments needed to raise the funding necessary to move forward with the ULOP. This will eliminate SJAFCFA's ability to obtain hundreds of millions of dollars of federal funds to complete the needed project.

Prior to 2018, other local agencies in San Joaquin County were responsible for complying with SB 5 and its 2025 deadline. Progress was inconsistent during this period. However, on January 1, 2018, SJAFCFA took over the role of Local Flood Management Agency (LFMA) responsible for complying with SB 5.

Since assuming that responsibility, SJAFCFA has made great progress in bringing the process back on track. Nonetheless, several factors have intervened to make it clear that we are close to the point at which SJAFCFA will not be able to issue the annual report demonstrating adequate progress. Among others, these factors include:

- As a result of climate change, recent studies by the Department of Water Resources predict that by 2065 there may be three times the flow in the San Joaquin River than was originally planned for when designing the ULOP project. This increased flow will require significant changes to the original project alternatives at substantial cost and delay in both design and construction.
- With the arrival of COVID-19 and the resulting economic calamity, it is now highly unlikely that over the next year SJAFCA will be able to raise the local funds needed, and if unsuccessful that will assure that SJAFCA will no longer be able to make the 2025 deadline set forth in SB 5. Again, continued adequate progress is necessary for development to occur at Mossdale Tract. In turn, development is required to raise the local funds to both fund a project as well as to obtain matching Federal funds for an infusion of hundreds of millions of dollars. Moreover, the ravaged economy has undermined confidence and delayed most development plans by a year or two. All this is enough to sidetrack project-financing assessments, the foundation of the plan to raise necessary funds to complete the flood control system.

To address these challenges, SJAFCA **must** obtain a one-time extension of the 2025 deadline set forth in SB 5 to 2030. Without this extension, it is very likely that SJAFCA and the other local agencies will never have the funding to complete a 200-year ULOP project, thereby assuring eventual physical harm to people living in Mossdale Tract and damage to property in Mossdale Tract.

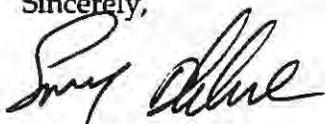
On the other hand, if the SB 5 deadline is extended by just five years, in a year or two SJAFCA will be able to take advantage of renewed development impact fees as well as implement local assessments to move forward on the 200-year ULOP project, which will also generate the local funds necessary to qualify for hundreds of millions of federal matching funds to complete the project. The extension will also enable construction of more than 7000 housing units and thousands of square feet of commercial space by 2030 and create almost 22,000 jobs in the meantime. Most importantly, it will ensure residents and property alike in Mossdale Tract are fully protected from a 200-year flood event.

All of this can be accomplished without new state spending, as there is no new state spending associated with extending the SB 5 deadline by five years.

For these reasons, I respectfully request your support and assistance to obtain the necessary amendment to SB 5 this year.

Thank you for your consideration. I would be pleased to provide you with any additional information you may require.

Sincerely,



Mayor Dhaliwal

cc: Chris Elias, Executive Director, San Joaquin Area Flood Control Agency

From: [Jeremy Shannon](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] SPK-2019-00899
Date: Wednesday, September 2, 2020 12:26:51 PM
Attachments: [Delta Conveyance Project \(SPK-2019-00899\) - CCMVCD.pdf](#)

Good afternoon Mr. Simmons,

A comment letter regarding the application by the California Department of Water Resources for the proposed Delta Conveyance Project (SPK-2019-00899) should be attached. Please let me know if you have any questions or need anything further. Thanks, and please take care.

--

Mosquito control matters.

Jeremy Shannon

Vector Control Planner

<Blockedhttps://www.contracostamosquito.com/picts/CCMVCD-Logo_Current.png>

Contra Costa Mosquito & Vector Control District

155 Mason Circle

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September 2, 2020

Zachary Simmons, Project Manager
US Army Corps of Engineers, Sacramento District
1325 J Street, Room 1350
Sacramento, California 95814-2922

Re: Delta Conveyance Project; Public Notice SPK-2019-00899

To: Zachary Simmons,

Thank you for the opportunity to express the position of the Contra Costa Mosquito & Vector Control District (the District) regarding the application by the California Department of Water Resources for the Delta Conveyance Project located in multiple counties, including portions of Contra Costa County, California.

As a bit of background, the District is tasked with reducing the risk of diseases spread through vectors in Contra Costa County by controlling them in a responsible, environmentally-conscious manner. A “vector” means any animal capable of transmitting the causative agent of human disease or capable of producing human discomfort or injury, including, but not limited to, mosquitoes, flies, mites, ticks, other arthropods, and rodents and other vertebrates. Under the California Health and Safety Code, property owners retain the responsibility to ensure that the structure(s), device(s), other project elements, and all additional facets of their property do not breed or harbor vectors, or otherwise create a nuisance. Owners are required to take measures to abate any nuisance caused by their activities and/or the structure(s), device(s), or other feature(s) on their property. Maintaining a nuisance may lead to abatement by the Contra Costa Mosquito & Vector Control District and civil penalties pursuant to California Health and Safety Code §2060 et seq.

All mosquitoes require water to complete their life cycle. Projects and activities that construct impervious surfaces, alter water flow or drainage, create or modify wetlands and other habitat, contain water conveyance or treatment elements, etc. have the potential to produce standing water and vector breeding habitat, creating a possible health hazard for area citizens, pets, livestock, and wildlife. Vector species that may breed in such locales have the ability to not only affect nearby individuals, but potentially spread disease to persons and other animals several miles away. The areas designated for launch shafts, the southern forebay, and sections of tunnel near unincorporated Byron, CA, already require consistent monitoring by District personnel to control mosquitoes. Discharge of dredge and/or fill material should not result in the creation of new mosquito breeding habitat or exacerbation of existing vector production sites within the project area. California Department of Water Resource

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projects currently underway in Contra Costa County have proven to be substantial sources of mosquito production, requiring significant District resources to address. Adequate planning, design, and implementation of the project paired with thorough communication with the District should ensure no aspect of this proposed project should prove similar.

Information regarding our services, best management practices, local vectors, and more can be found on our website at www.contracostamosquito.com. If further guidance is needed or vector-related issues arise, please encourage the California Department of Water Resources and any other stakeholder to reach out to the Contra Costa Mosquito & Vector Control District for assistance.

Sincerely,

A handwritten signature in cursive script that reads "Jeremy Shannon".

Jeremy Shannon

Vector Control Planner

925-771-6119

jshannon@contracostamosquito.com

From: [Marr, Marina](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Fwd: STOP the Tunnels in the California Delta
Date: Tuesday, September 15, 2020 2:51:33 PM

Good Afternoon Mr. Simmons,

My family and I are in the California Delta everyday. The food we eat is grown in the Delta, the businesses we often use are in Delta, even our peace of mind comes from our daily drive along the river and admiring the unique beauty, we are saving for our retirement to be at our home along the banks of the Delta. Building these tunnels would decimate the local wildlife, ecosystem and culture of a rare California treasure. No other place in California is like this. The history preserved here in the many small towns pre-dates the statehood of California even. The wildlife here is not prevalent anywhere else in our state. My children and I kayak throughout the Delta and I am able to show and teach them so much, which anchors a desire to preserve history and nature both in balance for a future generation.

The farmland here has soil so rich it looks like fresh coffee grounds. We grow fresh blueberries, pears, grapes for food and California Award winning wines, sweet white corn, citrus trees, and olives for oil and food, even saffron will grow in this rich farmland. The tunnels would allow salt water to come up the river. The farms cannot grow with salt water.

Taking the water from the Delta will NOT be enough to solve the water problems of Southern California. The ROI is insufficient. I grew up there and scuba dived, surfed and fished there in Orange County, San Diego and LA Counties. Instead of tunnels we need desalination plants built along the coast. There are plenty of abandoned warehouses, ship yards, and even large failed retail sites that could be converted and rebuilt to be desalination plants locations, This would provide an economical boost to blighted sites with new jobs and a practical purpose to serve the adjacent communities with fresh water. The ocean impact can be minimized with the right coastal management.

Please forgive me for not knowing your rank if there is a proper military salutation. No disrespect intended. Please feel free to call me at (925) 783-2010, if you want to ask me any questions or for validation. Please accept my invitation to come kayak in the California Delta anytime or come try a meal prepared with local farm to fork produce.

Respectfully yours,

<Blockedhttps://lh3.googleusercontent.com/c-P30tAqQmoi1YUICWiXpi9_gzaXe60kmlOdnsH7pwk6cbbPjyhFaLXzQ_HsIYrAzocRzaB4b6i-VBASuyjOIJhgS1nlobX7yj_csSh6-qtUPbzx8blTr3U3VxNnoA4jjiqWiq57R>

Marina Marr

Marina.Marr@NorCal.AAA.com <<mailto:Marina.Marr@NorCal.AAA.com>>

Direct Line: (916) 478-7509

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From: [Juliana At the Store](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel-NO
Date: Wednesday, September 16, 2020 7:44:08 AM

No on the tunnel for Sacr Tunnel.
Two voters.
Steve and Laurie Ware

From: [Stephen Ware](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] Tunnel
Date: Wednesday, September 16, 2020 7:44:36 AM

NO on the Tunnel

From: [Todd Ravazza](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Opposition to the CA Delta Tunnels Project
Date: Wednesday, September 16, 2020 9:58:06 AM

Dear Mr. Simmons,

I am taking the time to voice my position on the proposed California Delta Tunnel project.

Approval of this project to any degree would permanently harm not only our critically important delta but all that it serves, from downstream to the West Delta and Suisun/San Pablo/SF Bays to a plethora of recreational activities. At risk is a marked, and possibly irreversible, degradation of water quality, complete loss of habitat in some [and possibly many] areas. These impacts have a likely effect of devastating multiple fish, waterfowl and aquatic species. I respectfully urge the USACE in the strongest possible terms to deny this project. It is ill-conceived and will be ill-fated that will result in long-term, if not permanent, effects for our environment and many people's current ways of life.

Please force other options to be considered for the desired water sources. Southern California water needs being met should not come at the demise of such a wonderful part of our state that plays so many roles in so many ways and is a natural and paramount part of the State's water shed.

Respectfully Submitted,

Todd M. Ravazza - California Native Son & Resident

From: [Casey Clements](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Seeker locke tunnel
Date: Wednesday, September 16, 2020 10:44:38 AM

This is an area on which Myself and previous generations have lived made pur lively hoods and raised our children, Fished, hunted and recreation. It is our home and a way of life. The farming depends on this Delta to grow crops that feed the world. It isn't like saving the smelt isn't ruining lives already. This is an over reach of our habitat and our lives.

California's Central Valley is loosing it's beauty and sustainabilty as time goes on. This tunnel will put the period at the end of the sentence and will never be able to be reversed.

Casey Clements

Sent from my Verizon, Samsung Galaxy smartphone
Get Outlook for Android <Blocked<https://aka.ms/ghei36>>

From: NPS_Environ_Rev@nps.gov
To: [Simmons, Zachary M.CIV.USARMY.CESPK \(USA\)](mailto:Simmons_Zachary.M.CIV.USARMY.CESPK@USA)
Cc: Danette_Woo@nps.gov; Jani_pettebone@nps.gov
Subject: [Non-DoD Source] NPS Comments, ER-20/0358: Proposed Delta Conveyance Project - Sacramento River
Date: Thursday, September 17, 2020 3:59:43 PM

Dear Sir/Madam,

Using the link(s) below, you can download NPS comments on ER-20/0358, the Proposed Delta Conveyance Project - Sacramento River.

If you have questions, please contact Danette Nolan at Danette_Woo@nps.gov.

ER-20-0358-ConsolidatedComments.doc:

Blocked <https://irma.nps.gov/ERTS/Download/7a446661354636746f733976663753616d5051652f6f7961375172364e434e536d486e4c767666653949563635686a6249586448584d2b2b446e775477657543>

Comments for ER Control Number: ER-20/0358

mfrisbie@nps.gov

8/24/2020

The project area is over 10 miles south of Pony Express National Historic Trail designated route and we do not anticipate any direct or indirect impacts to the trail. Thank you.

From: [Amy Mckenzie](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta tunnels
Date: Thursday, September 17, 2020 5:05:22 PM

Dear Mr. Simmons,

I am contacting you to plead with you to cancel this long running environmental nightmare, the Sacramento delta tunnel project.

Aren't we experiencing enough environmental destruction!

To destroy a beautiful area for Southern Ca water demands is just wrong.

Build dams, build water storage holding tanks, etc.

Don't kill a whole community.

Orchards, recreation, wildlife.

Please let's keep the beautiful delta as is. Once gone it will never be the same.

I ask you to do the right thing for our environment and don't let big money win out.

Thank you,

Amy Mckenzie

Sent from my iPad

From: [Heather Lynn Cheesman](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta
Date: Friday, September 18, 2020 1:14:47 PM

Mr. Zachary M Simmons,

I have visited your beautiful area and have been on the delta by boat and kayak. It is full of life and I know making this decision is hard. (It should be) I was born right outside San Francisco and ended up moving to Georgia. When I came back, my little town of Walnut Creek looked nothing like I remember it. I understand progress but at what price? When I visited, I spoke to the locals and they explained what was on the line and my question is: Is this the only solution? What cause is going to happen if this goes through? It's not an easy decision but seeing what would happen to the Delta in the aftermath. Sometime, I hope to bring my children to the Delta and show all its beauty. Please talk to the locals, they are the heart of the Delta.

Thank you for your time,
Heather Lynn Cheesman

From: [Greg Gallegos](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Conveyance Project
Date: Saturday, September 19, 2020 8:15:41 AM

Hi Zacharay,

I'm writing to to express my concern about the proposal for the Delta Conveyance Project. Being that I've lived on and near the delta for 26 years I've seen a few dramatic changes. The biggest change I noticed was when the Deltas Water was diverted away from it's natural course and sent away, never to comeplete the combined rivers natural flushing process of the area. I've noticed negative wildlife and plant changes that I believe would never have happened if those water weren't bought, shipped away, and allowed to do what they have always done!

Please do not allow another water diversion.

Thank you sincerely,

Greg Gallegos

From: [Dorreen Oxford](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Frank's Tract futures
Date: Saturday, September 19, 2020 8:52:51 AM

This is upsetting to me on so many levels. Please read this small piece of information that I researched:

>>Frank's Tract Recreational Area was designated as a world heritage site: 1959.<<
Doesn't this count for anything? It should mean a lot!

This is home to so many people that bought homes in this area to be within the beauty of the Delta. Many families have been here for years but will be cut off from the Tract that they have grown up around. Something is just not right about this! We give more to others from other countries and other parts of our state that they are capable of taking care of their own area so it makes less sense to spend millions of dollars to change habitats and lives in our area. Leave it as it is, the way it was designated as a world heritage site.

1. The Swanson's Hawk has lost habitat and has diminished in numbers. We'll lose these birds if tunnels proceed.
2. The Sandhill Cranes also with habitat loss, human disturbance and power lines will also become threatened of their 10 million year existence. That's so tragic! They return every year to the Delta to their same winter roosts from October through February. They are one of the oldest known surviving bird species. They won't make it with the tunnels project. There's been a yearly wetland tour by the Department of Fish & Wildlife that will cease with tunnels project. This has to be stopped.
3. We have mink, otters, pelicans, coots, egrets, blue heron, green heron, cormorants, ducks, geese and several mating swan that we see daily and would like to continue seeing them daily.

Sincerely,

Dorreen Oxford
Concerned resident
Bethel Island, CA

Sent from my iPad

From: [Amy Bohlman](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Conveyance Project
Date: Saturday, September 19, 2020 9:59:21 AM

>>Frank's Tract Recreational Area was designated as world heritage site: 1959.<<

Doesn't this count for anything? It should mean a lot! The Swanson's Hawk has lost habitat and has diminished in numbers. We'll lose these birds if tunnels proceed. The Sandhill Cranes also with habitat loss, human disturbance and power lines will also become threatened of their 10 million year existence. That's so tragic! They return every year to the Delta to their same winter roosts from October through February. They are one of the oldest known surviving bird species. They won't make it with the tunnels project. There's been a yearly wetland tour by the Department of Fish & Wildlife that will cease with tunnels project.

This has to be stopped.

--

Thanks,

Amy

From: [Jack Hanna](#)
To: [Simmons, Zachary M CIV USARMY CESPCK \(USA\)](#)
Subject: Re: [Non-DoD Source] Delta bypass conveyance
Date: Tuesday, September 29, 2020 11:11:58 AM

Mr. Simmons,

Thank you for the referral, Zachary. I will follow up.

However, given the severe impacts which may be associated with a major diversion around our central and western Delta waters, I would feel much better with an Army Corp of Engineers model. The State of California has, for this project, a history of cherry-picking scientific information toward a conclusion. The dam on False River not only failed in its intention but had unintended consequences in the tidal currents of Taylor Slough at the time and since the dam was removed. I hope your office will be reviewing and verifying California's projections before any major work can begin.

Franks Tract Futures is an example of an immature project whose intentions and results are not made clear to us. Our Bethel Island levee system is fragile and the efforts to bypass the few unimproved island levees would cost a thousand times more than finishing the levee improvements. The adjoining islands have been raised, reinforced, and faced above the crest. We have one thousand owners of levee who cannot be assembled to finance a complete project. Clearly the Metropolitan Water islands are the benchmark to a safe Delta complex.

Please take these issues into your evaluations for the 'Tunnel' project. The concerned citizens of the Delta welcome your involvement.

Jack

On Mon, Sep 28, 2020 at 7:51 AM Simmons, Zachary M CIV USARMY CESPCK (USA)
<Zachary.M.Simmons@usace.army.mil <<mailto:Zachary.M.Simmons@usace.army.mil>> > wrote:

Mr. Hanna,

If you have additional questions regarding the Delta Conveyance modeling effort, please contact Mr. Marcus Yee at Marcus.yee@water.ca.gov <<mailto:Marcus.yee@water.ca.gov>> or 916-835-6981.

Thank you,

Zachary

From: Simmons, Zachary M CIV USARMY CESPCK (USA)
Sent: Thursday, September 24, 2020 11:55 AM
To: 'Jack Hanna' <rapiersup@gmail.com <<mailto:rapiersup@gmail.com>> >
Subject: RE: [Non-DoD Source] Delta bypass conveyance

Hi Mr. Hanna,

The CA Dept of Water Resources (DWR) is currently working on CalSim 3 modeling for water flows. This modeling effort is not complete and will take several months to be ready. There may be other modeling that is or will be prepared in support of the project. None of the modeling is being prepared by the Corps nor is it directly in support of the EIS. If you are interested in modeling you must contact DWR. I have sent a request to DWR for contact information that I can share with you for your questions on the modeling efforts.

Thank you,

Zachary

From: Jack Hanna [<mailto:rapiersup@gmail.com> <<mailto:rapiersup@gmail.com>>]
Sent: Wednesday, September 23, 2020 12:04 PM
To: Simmons, Zachary M CIV USARMY CESPCK (USA) <Zachary.M.Simmons@usace.army.mil>
<<mailto:Zachary.M.Simmons@usace.army.mil>> >
Subject: Re: [Non-DoD Source] Delta bypass conveyance

Mr. Simmons,

Thank you, Zach. My first question is about the modeling for the hydrological changes that the proposed Tunnel would create in various flow volumes. The Bay Model has always fascinated me. I suspect that most of the modeling is done with computers these days and less and less from the filling and cleaning of that fabulous raised relief map with live waterways.

What modeling has been done to date? Can I/we see it online? May I share your response?

Jack Hanna, Bethel Island resident and contributor to Bay and Delta Yachtsman.

On Tue, Sep 22, 2020 at 8:12 AM Simmons, Zachary M CIV USARMY CESPCK (USA) <Zachary.M.Simmons@usace.army.mil> <<mailto:Zachary.M.Simmons@usace.army.mil>> > wrote:

Mr. Hanna

I am the biologist assigned to the environmental review for this project. If you have any questions, you can send them to me and I'll see what I can do.

Thank you,

Zach

From: Jack Hanna [<mailto:rapiersup@gmail.com> <<mailto:rapiersup@gmail.com>>]
Sent: Monday, September 21, 2020 6:24 PM
To: Simmons, Zachary M CIV USARMY CESPCK (USA) <Zachary.M.Simmons@usace.army.mil
<<mailto:Zachary.M.Simmons@usace.army.mil>> >
Subject: Re: [Non-DoD Source] Delta bypass conveyance

Thank you for acknowledging my input. I have biologist questions. Can you refer me or will you take some?

Jack Hanna

On Mon, Sep 21, 2020 at 12:47 PM Simmons, Zachary M CIV USARMY CESPCK (USA) <Zachary.M.Simmons@usace.army.mil <<mailto:Zachary.M.Simmons@usace.army.mil>> > wrote:

Good Afternoon Mr. Hanna,

Thank you for your comments on the proposed Delta Conveyance project. We will take your comments into consideration during the environmental review.

Have a good day,

Zachary M. Simmons

Biologist, Senior Project Manager

Regulatory Division, Special Projects Branch

U.S. Army Corps of Engineers, Sacramento District

1325 J Street, Room 1350, Sacramento, CA 95814

(916) 557-6746

Zachary.M.Simmons@usace.army.mil <<mailto:Zachary.M.Simmons@usace.army.mil>>

From: Jack Hanna [<mailto:rapiersup@gmail.com> <<mailto:rapiersup@gmail.com>>]
Sent: Saturday, September 19, 2020 12:45 PM
To: Simmons, Zachary M CIV USARMY CESPCK (USA) <Zachary.M.Simmons@usace.army.mil

<<mailto:Zachary.M.Simmons@usace.army.mil>> >

Subject: [Non-DoD Source] Delta bypass conveyance

Dear Army Corp staffers,

While I recognize the need for the Engineers' Corp to do useful work in the management of American waterways, I beg you not to buy into the shallow science that water contractors and their political affiliates are using to justify this project.

1. The project does not draw any new water sources
2. It will allow agricultural producers to dump more pollution into the Bay/Delta Estuary, which is struggling already with pollutants.
3. The cost of the project will place a staggering burden on posterity
4. Water contractors have FAILED to meet their obligations in Oroville and elsewhere to share costs.
5. Oroville Dam will fail! It is past its useful life and must be reinforced.

From: [Jack Hanna](#)
To: [Simmons, Zachary M CIV USARMY CESPCK \(USA\)](#)
Subject: Re: [Non-DoD Source] Delta bypass conveyance
Date: Wednesday, September 23, 2020 12:05:36 PM

Mr. Simmons,

Thank you, Zach. My first question is about the modeling for the hydrological changes that the proposed Tunnel would create in various flow volumes. The Bay Model has always fascinated me. I suspect that most of the modeling is done with computers these days and less and less from the filling and cleaning of that fabulous raised relief map with live waterways.

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Mr. Hanna

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Thank you,

Zach

From: Jack Hanna [<mailto:rapiersup@gmail.com> <<mailto:rapiersup@gmail.com>>]
Sent: Monday, September 21, 2020 6:24 PM
To: Simmons, Zachary M CIV USARMY CESPCK (USA) <Zachary.M.Simmons@usace.army.mil <<mailto:Zachary.M.Simmons@usace.army.mil>> >
Subject: Re: [Non-DoD Source] Delta bypass conveyance

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Jack Hanna

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Good Afternoon Mr. Hanna,

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Have a good day,

Zachary M. Simmons

Biologist, Senior Project Manager

Regulatory Division, Special Projects Branch

U.S. Army Corps of Engineers, Sacramento District

1325 J Street, Room 1350, Sacramento, CA 95814

(916) 557-6746

Zachary.M.Simmons@usace.army.mil <<mailto:Zachary.M.Simmons@usace.army.mil>>

From: Jack Hanna [<mailto:rapiersup@gmail.com> <<mailto:rapiersup@gmail.com>>]

Sent: Saturday, September 19, 2020 12:45 PM

To: Simmons, Zachary M CIV USARMY CESPK (USA) <Zachary.M.Simmons@usace.army.mil>
<<mailto:Zachary.M.Simmons@usace.army.mil>> >

Subject: [Non-DoD Source] Delta bypass conveyance

Dear Army Corp staffers,

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3. The cost of the project will place a staggering burden on posterity
4. Water contractors have FAILED to meet their obligations in Oroville and elsewhere to share costs.

5. Oroville Dam will fail! It is past its useful life and must be reinforced.

From: [Dennis](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Cc: diana.ramirez@sen.ca.gov
Subject: [Non-DoD Source] Adverse impact of Delta Conveyance Project to groundwater in San Joaquin - Tracy Aquifer, sub-basins 5-022.01 and 5-022.15
Date: Saturday, September 19, 2020 4:20:24 PM

Hello Mr. Simmons,

I am writing to you to voice my concern that there has not been sufficient study of the impact of the drilling and excavation to install the Delta Conveyance Tunnel to local communities that rely on the ground water from the San Joaquin - Tracy basin, particularly to sub-basins 5-022.01 and 5-022.15 through or near which the proposed Tunnel is planned.

Several communities and numerous private homes have other source of potable water except from well water that have used water from this basin for more than a century.

The drilling for the proposed Tunnel cannot be done without polluting the aquifer, either directly from the materials and substances used during the construction, and by extracting excessive water from the aquifer that will be necessary to dewater in order to do the construction and in a ill-fated effort to remove those introduced pollutants. As you are well aware, the equipment used to construct such a tunnel unavoidably leaves behind fragments of metals and lubricants that are listed on Proposition 65 list of toxic or carcinogenic substances. Unfortunately, the common practice of installing test wells along the path of such a project would in this case either cause a serious depletion of ground water from the aquifer resulting in land subsidence, or would cause seeping of surface water or migration of pollutants from otherwise contained sources, such as the former Dow Chemical plant in Antioch. The impact to the numerous communities which use this aquifer as their only source of water has not been properly studied, and none of the affected communities, municipal water companies or private well owners have been contacted to warn them of this potential.

I urge you to consider the impact to thousands of Californians that will have no source of water once this tunnel project destroys the largest aquifer in California, and to the embarrassment to the USACE for not providing technical guidance to the politicians promoting in this ill-fated project.

Respectfully,
Dennis Eisenbeis
Bethel Island, California

From: [Harris, Kayla K](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Cc: [Pintero, Janice A](#)
Subject: [Non-DoD Source] DCP NOI Response Letter
Date: Monday, September 21, 2020 11:05:01 AM
Attachments: [20200921 DCP NOI Response Letter signed.pdf](#)

Good Morning,

Please see attached Delta Conveyance Project (DCP) Notice of Intent (NOI) Response Letter.
Please forward to your staff as appropriate. Paper copies will not be distributed.

Thanks,

Kayla Kamaile O Hualalai Harris
Secretary
Bureau of Reclamation, Bay-Delta Office
Interior Region 10
801 I Street, Suite 140
Sacramento, CA 95814
(916) 414-2400 (Office)
(279) 200-2081 (Mobile)
(916) 414-2439 (Fax)



IN REPLY REFER TO:

BDO-100
2.1.4.17

United States Department of the Interior

BUREAU OF RECLAMATION
Interior Region 10
Bay-Delta Office
801 I Street, Suite 140
Sacramento, California 95814-2536



Mr. Zachary Simmons
U.S. Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922

Subject: Notice of Intent to Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project

Dear Mr. Simmons:

Thank you for the opportunity to inquire about the Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for Construction of the Proposed Delta Conveyance Project (DCP). This letter transmits the Bureau of Reclamation's request for Cooperating Agency status and initial questions regarding the subject NOI, Proposed Action, and EIS.

Reclamation requests the U.S. Army Corps of Engineers (USACE) provide Reclamation with Cooperating Agency status for the DCP. Cooperating Agency means any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. (40 CFR § 1508.5). Reclamation has unique expertise to provide the USACE given: 1) our previous role as the Federal lead for both the National Environmental Policy Act (NEPA) and the Section 7 Endangered Species Act (ESA) consultation on previous iterations of the DCP; and, 2) the construction of the DCP has implications on Reclamation's and DWR's coordinated operations of the Central Valley Project and State Water Project to optimize water supply delivery and power generation consistent with applicable laws, contractual obligations, and agreements.

Reclamation looks forward to working as a Cooperating Agency on the DCP and gaining a better understanding of the benefit in segmenting the impacts of construction from the operations of the DCP. During the DCP process that resulted in WaterFix, both construction and operational impacts were analyzed under a single project to ensure cumulative impacts were addressed. Moreover, Reclamation would like to understand better the justification for the independent utility of the construction phase of the DCP.

INTERIOR REGION 10 • CALIFORNIA-GREAT BASIN

CALIFORNIA*, NEVADA*, OREGON*

* PARTIAL

For further information or assistance, please contact Mr. Colin Maloney at the Bay Delta Office at cmaloney@usbr.gov. or 916-414-2422

Sincerely,

David M. Mooney, Ph.D
Bay-Delta Office Manager

INTERIOR REGION 10 • CALIFORNIA-GREAT BASIN

CALIFORNIA*, NEVADA*, OREGON*

* PARTIAL

From: [Thomas P. Schlosser](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Cc: [George Kautsky \(hupafish@hoopa-nsn.gov\)](#); [Danny Jordan \(de_jordan@earthlink.net\)](#); [Joseph R. Membrino - Hall, Estill, Hardwick, Gable, Golden & Nelson \(Membrino, Joseph\)](#); [Amber Turner \(hvtcsecretary@hoopa-nsn.gov\)](#); [Michael Orcutt - Hoopa Fisheries Department \(mworcutt@gmail.com\)](#); [Colegrove, Tess \(ota@hoopa-nsn.gov\)](#); [Darcy Miller \(hupa_darcy@yahoo.com\)](#); [Davis, Joe \(jgd119@humboldt.edu\)](#); [Deacon Ferris \(df.nortonfield@gmail.com\)](#); [Everett, gov \(Everett.colegrove@hoopa-nsn.gov\)](#); [Kimberlee Dodge](#); [Leilani Pole \(witchpejones@aol.com\)](#); [nelson Jr. Byron \(bighorn1004@hotmail.com\)](#); [Oscar Billings \(oscar.billings@hoopa-nsn.gov\)](#); [Shane McCullough \(sb.mesketfield@gmail.com\)](#)
Subject: [Non-DoD Source] Scoping comments to Corps of Engineers for their EIS on the Delta tunnels
Date: Tuesday, September 22, 2020 7:26:34 PM
Attachments: [HVT.Environmental Impact Statement Intent Letter.Delta Conveyance Project \(002\).pdf](#)

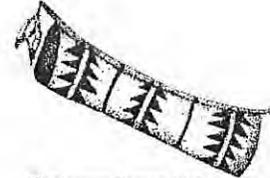
Attached please find the scoping comments of the Hoopa Valley Tribe of California. Please let me know if you have any difficulty in opening the document or any questions.

Best,
Tom Schlosser
Hoopa Valley Tribe attorney
206 669 6142



HOOPA VALLEY TRIBAL COUNCIL

Hoopa Valley Tribe
Post Office Box 1348 Hoopa, California 95546
PH (530) 625-4211 • FX (530) 625-4594
www.hoopa-nsn.gov



Chairman Byron Nelson, Jr.

September 22, 2020

Via E-mail (Zachary.M.Simmons@usace.army.mil.)

U.S. Army Corps of Engineers
Sacramento Regulatory Division
Attn: Mr. Zachary Simmons,
1325 J Street, Room 1350
Sacramento, CA 95814-2922.

Re: Scoping Comments of Hoopa Valley Tribe on Notice of Intent to Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

Dear Mr. Simmons:

On behalf of the Hoopa Valley Tribe (Tribe), we submit the following scoping comments on Corps' Notice of Intent to Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA, which was published on August 20, 2020. Our intent is to provide the Corps of Engineers with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the Tribe's area of statutory responsibility that will need to be explored in the EIS.

The Trinity River System is part of the Delta Conveyance Project (DCP) Area, north of the Delta. Briefly, the significant issues of concern to us are centered on (1) protection of the water reserved to the Trinity River by federal law and the 2000 Trinity River Fisheries Restoration Record of Decision (ROD); (2) protection of water quality, particularly temperature, of that reserved Trinity River water; and (3) protection of other water reserved to the Trinity River by the Trinity River Division Act of 1955, (Pub. L. No. 84-386) (1955 Act). These issues directly affect the timing and amount of water available to the conveyance project, and hence, its benefits.

Interest of the Hoopa Valley Tribe

The Hoopa Valley Tribe ("Tribe"), a federally recognized Indian tribe, is located on the Hoopa Valley Reservation, which was established for the Tribe by the United States in 1864. *Parravano v. Babbitt*, 70 F.3d 539, 542 (9th Cir. 1995), *cert. denied*, 518 U.S.1016 (1996). The lower twelve miles of the Trinity River, and a stretch of the Klamath River near the Trinity confluence, flow through the Tribe's Reservation. Since time immemorial, the fishery resources

of the Trinity and Klamath Rivers have been the mainstay of the life and culture of the Hoopa Valley Tribe. The principal purpose of the Tribe's Reservation was to set aside sufficient resources of these rivers for the Indians to be self-sufficient and achieve a moderate standard of living based on fish. Memorandum from John D. Leshy (M-36979), Solicitor of the Department of the Interior to the Secretary of the Interior (Oct. 4, 1993), *cited with approval*, *Parravano*, 70 F.3d at 542. The United States, as trustee for the Tribe, has a fiduciary responsibility to protect and preserve the Tribe's trust resources. *Klamath Water Users Ass'n v. Patterson*, 204 F.3d 1206, 1213 (9th Cir. 2000); Memorandum to Regional Director, Bureau of Reclamation from Regional Solicitor, Pacific Southwest Region (July 25, 1995) ("Reclamation must exercise its statutory and contractual authority to the fullest extent to protect the tribal fisheries and tribal water rights").

When Congress authorized the Trinity River Division (TRD) of the Central Valley Project (CVP) in 1955, Congress recognized that "an asset to the Trinity River Basin, as well as to the whole north coastal area, are the fishery resources of the Trinity River." S. Rep. No. 1154, 84 Cong., 1st Sess. (1955 Senate Report) at 5; H.R. Rep. No. 602, 84th Cong., 1st Sess. (1955 House Report) at 4. Congress accordingly limited the integration of the TRD into the CVP and required the Secretary of the Interior to exercise a priority for use of all TRD water necessary to protect fish and other in-basin needs. 1955 Trinity River Division Central Valley Project Act, Pub. L. No. 84-386, 69 Stat. 719 ("1955 Act"), § 2 (provisos); Memorandum from Solicitor to Assistant Secretary, Land and Water Resources, Dec. 7, 1979. *See also* Memorandum from Solicitor to Secretary (M-37030) re Trinity River Division Authorization's 50,000 Acre-Foot Proviso and the 1959 Contract between the Bureau of Reclamation and Humboldt County, December 23, 2014.¹

Nonetheless, development and operation of the TRD without faithful adherence to the foregoing legal and fiduciary obligations took a devastating toll on the Hoopa Valley Tribe, the Trinity and Klamath Rivers, and the fish species that rely on those rivers. Between 1963 and 1981, Chinook salmon runs in the Trinity River declined by 80%. Eighty to ninety percent of total salmonid habitat in the Trinity Basin was lost during that time. In 1981, relying on an environmental study, the authority provided by the 1955 Act, § 2, and the trust obligation to protect tribal resources, the Secretary ordered an increase of annual flows released from the TRD to the Trinity River downstream of Lewiston Dam to 340,000 acre-feet annually and further directed initiation of a Trinity River Flow Evaluation Study ("TRFES") to study and develop a flow regime and other measures to improve habitat conditions in the Trinity River. The Secretary concluded "there are responsibilities arising from congressional enactments, which are augmented by the federal trust responsibility to the Hupa and Yurok tribes, that compel restoration of the river's salmon and steelhead resources to pre-project levels." 1981 Secretarial

¹ The first proviso of Section 2 of the 1955 Act provides that ". . . the Secretary is authorized and directed to adopt appropriate measures to insure the preservation and propagation of fish and wildlife . . ." The second proviso of Section 2 of the 1955 Act provides that ". . . not less than 50,000 acre-feet shall be released annually from the Trinity Reservoir and made available to Humboldt County and downstream water users." These two provisos "represent separate and independent limitations on the TRD's integration with, and thus diversion of water to, the CVP." Memorandum M-37030, December 23, 2014.

Order.

In 1984, Congress affirmed and authorized the Secretary's restoration directive in the Trinity River Basin Fish and Wildlife Management Act ("1984 Act"), Pub. L. No. 98-541, 98 Stat. 2721. Congress extended the scope of the restoration mandate to the Klamath River in the Klamath River Basin Conservation Restoration Area Act ("1986 Act"), Pub. L. No. 99-552, 100 Stat. 3080. The express goal and directive of these acts was to restore anadromous fish populations to optimum levels in both the Klamath and Trinity River Basins. Congress reauthorized and amended the 1984 Act in the Trinity River Basin Fish and Wildlife Management Act of 1996 ("1996 Act"), Pub. L. No. 104-143, 110 Stat. 1339 (1996). The 1996 Act amended and expanded the scope of the 1984 Act's mandate to include rehabilitation of fish habitat "in the Klamath River downstream of the confluence with the Trinity River." 1996 Act, § 3(b).

In 1992, Congress passed the Central Valley Project Improvement Act ("CVPIA"), Pub. L. No. 102-575, § § 3401-12, 106 Stat. 4600, 4706-31 (1992). Section 3406(a) of the CVPIA modified the purposes of the CVP to include the mitigation, protection, and restoration of fish and wildlife. Section 3406(b)(23) of the CVPIA expressly confirmed the Bureau of Reclamation's trust responsibility to the Hoopa Valley Tribe and its fishery. The CVPIA required the Secretary to take specific actions "in order to meet Federal trust responsibilities to protect the fishery resources of the Hoopa Valley Tribe, and to meet the fishery restoration goals of the [1984 Act]." CVPIA, § 3406(b)(23). Congress directed the Secretary to complete the TRFES and, if the Secretary and the Tribe concurred in the TRFES' recommendations once completed, directed the Secretary to implement any increase in flow and CVP operations accordingly. *Id.*, § 3406(b)(23)(B).

The U.S. Fish and Wildlife Service, the Hoopa Valley Tribe and other agencies completed the TRFES in 1999. The TRFES recommended a flow regime and management actions to rehabilitate habitat in the mainstem channel of the Trinity River between Lewiston Dam and the Klamath confluence at Weitchpec. The TRFES did not address restoration issues downstream of the Trinity-Klamath confluence. Following completion of the TRFES and an EIS under NEPA, the Secretary, with the Tribe's concurrence as required by section 3406(b)(23) of the CVPIA, executed the Trinity River Mainstem Fishery Restoration Record of Decision ("ROD") in December 2000. The 2000 Trinity ROD adopted the TRFES' recommendations to restore physical fishery habitat in the mainstem Trinity River pursuant to Congress' direction in the 1984 Act and the CVPIA. The Tribe has been and remains an active leader in implementation of habitat rehabilitation projects pursuant to the ROD.

In September 2002, thousands of fall-run Chinook salmon died in the lower-Klamath River during their migration upstream when a combination of unusually low flows, warm water temperatures, and a large number of returning fish led to a severe disease outbreak. In certain recent years (2003-2004, 2012-2015), the Secretary has scheduled extra releases of water from Trinity Reservoir during the late summer when fishery managers and scientists determined that fish returns and low flow conditions were expected to duplicate conditions present in 2002. The Ninth Circuit affirmed the Secretary's authority to implement these "flow augmentation releases" pursuant to Section 2 of the 1955 Act. *San Luis & Delta-Mendota Authority v.*

Haugrud, 848 F.3d 1216 (9th Cir. 2017). On April 20, 2017, the Bureau of Reclamation executed its Record of Decision re Long-Term Plan to Protect Adult Salmon in the Lower Klamath River Final Environmental Impact Statement (FARs ROD). The Bureau selected the Proposed Action of providing supplemental flows from mid-August to late September, from Lewiston Dam to prevent a disease outbreak in the lower Klamath River in years when the flow in the lower Klamath River is projected to be less than 2,800 cfs. The Bureau relied on Section 2 of the 1955 Act for the statutory authority for its decision.

The current state of the fishery in the Klamath-Trinity river system remains unstable and imperiled due to continued federal mismanagement, particularly in the coordinated operation of the CVP and SWP. Abundance and fishery allowances for Chinook salmon in 2017 were at the lowest levels since the stock was first managed in 1978. In consideration of the unprecedented low stock size, the Pacific Fishery Management Council significantly limited 2017 marine fisheries affecting Klamath River fall Chinook (“KRFC”). The harvest guideline for the in river Tribal fishery was set to 814 adult KRFC. The Yurok and Hoopa Valley Tribe share the annual harvestable surplus of KRFC on a 50-50 basis with non-Tribal fisheries. This harvest of only 814 KRFC was the lowest ever reserved for the two tribes whose collective membership exceeds 8,000 persons. Adding to the collapse of the tribal fishery for KRFC were record low returns of Coho salmon, which are listed (since 1997) under the Federal ESA as a “threatened” species. Klamath-Trinity origin Coho salmon are part of the Southern Oregon Northern California Coastal (SONCC) Evolutionarily Significant Unit (ESU) that are listed under the Federal ESA.

The federal statutory directive to return fish species in the Klamath and Trinity Rivers to pre-TRD levels has fallen woefully short due to mismanagement and continuing failure to recognize the priority for use of TRD water necessary to protect fish and other in-basin needs and for economic development. As an example, Trinity hatchery mismanagement has contributed to the instability and degradation of the fishery through CVP/SWP coordination mismanagement lacking proper oversight or goal and objective review. Nor can the Hoopa Valley Tribe or its members achieve the promised moderate livelihood based on fish. The United States, the State of California, and the Bureau of Reclamation, collectively and independently have a responsibility to ensure protection, preservation, and restoration of the Tribe’s fisheries resources, which at the present time are in extremely imperiled condition. Any action taken by Corps with respect to DCP must be consistent with existing legal obligations to the Tribe and the Trinity and Klamath Rivers.

Scoping Comments of the Hoopa Valley Tribe

1. The DCP EIS Must Fully Account For, Develop, and Implement Necessary Measures for Mitigation, Restoration, Preservation and Propagation of the Affected Fish Species, Habitat, and Indian Trust Assets.

The August 20, 2020 Notice of Intent appears to be focused on physical alternatives to maximize water deliveries for consumptive purposes south of the Delta while largely ignoring the connected environmental impacts of the coordinated operations of the SWP and CVP. The Corps’ limited authority over DCP operations does not mean that environmental impacts of DCP

operations can lawfully be omitted from the EIS. One of the essential purposes of the DCP as well as the CVP, as approved by Congress, is to mitigate, restore, preserve and propagate fish and wildlife. E.g., CVPIA Section 3406(a). Consequently, the description of the purpose of the proposal as well as subordinate objectives must also include protection of fisheries, including those in the Trinity and Klamath rivers. To ensure full disclosure of environmental impacts, inclusion of fisheries protection in the EIS statement of purpose is required as a benchmark against which EIS alternatives will be measured. Moreover, as discussed above, federal reclamation law establishes a first priority for use of the CVP water developed by the TRD for restoration, preservation and propagation of Trinity River fish and wildlife, and economic development of the Hoopa Valley Tribe and other water users downstream of the TRD. Any alternatives considered for the DCP must consider ways to fully implement the mitigation, restoration, preservation, and propagation of fish and wildlife and Hoopa Valley Tribe economic development as mandated by Congress and required by the United States' and the State's obligations.

Specific examples of protective and restorative measures that the EIS should evaluate and ultimately adopt include:

- Full funding and implementation of actions under the 2000 ROD.
- Augmentation of flows beyond the requirements of the 2000 ROD as necessary for preservation and propagation of fish in the Trinity and/or Klamath Rivers when conditions warrant.
- Coordinating and integrating operation of CVP/TRD operations with the Klamath Irrigation Project in a joint directorate with the Hoopa Valley Tribe.
- Funding and developing infrastructure to establish and maintain temperature of water releases from TRD facilities suitable for fish and wildlife preservation and propagation.
- Upgrading the TRD hatchery facilities and funding Hoopa Valley Tribe plans for additional selective harvest;
- Transferring management of TRD hatchery to Hoopa Valley Tribe.
- When called upon by the Tribe as a third party beneficiary of the June 19, 1959 contract between the United States and Humboldt County for annual release of 50,000 acre-feet of TRD water for: (a) facilitating economic development of the Hoopa Valley Reservation and (b) fishery preservation and propagation activities in addition to those provided for with Proviso 1 TRD water.
- Accumulating and maintaining in TRD carryover storage for use in the Trinity/Klamath basin for beneficial uses, up to 150,000 acre-feet of Proviso 2 water.
- Facilitating lease or exchange of Proviso 2 water in carryover storage to CVP contractors and the State Water Project on terms acceptable to the Tribe.

In summary, no Delta Conveyance Project should be undertaken without full recognition and implementation of the Congressional priorities and mandate to mitigate, restore, preserve, and propagate fish and wildlife and provide for economic development of TRD water in the Trinity/Klamath basin. The Hoopa Valley Tribe depends on the water and fish of the Trinity and

Klamath Rivers and the EIS must recognize that the Corps of Engineers and the Bureau of Reclamation, as trustees to the Tribe, must exercise statutory and contractual authority to the fullest extent to protect the tribal resources and the in-basin water needs. The Corps must identify and avoid any impacts related to the DCP water deliveries to SWP or CVP contractors whose entitlement to use water is manifestly junior to the Tribe's right under reclamation law to CVP water.

2. Recognize Priorities for use of TRD water downstream of Lewiston Dam.

As described above, the Trinity River Fishery Restoration ROD of 2000 resulted from Congress's requirement in CVPIA Section 3406(b)(23). In that subsection, Congress directed that the ROD concerning "the minimum Trinity River instream fishery releases established under this paragraph [(b)(23)] and the operating criteria and procedures referred to in subparagraph (A) shall be implemented accordingly." Thus, federal law demands compliance with the ROD. The ROD provides detailed flow releases for each day, depending on the water year type. These are mandatory. It also projects that "long-term average water exports to the Central Valley would be 630,000 acre-feet."

Further, Proviso 1 TRD water for fishery preservation and propagation is also established in the 2017 FARs ROD. There may be additional Proviso 1 needs identified in the future, which also will have priority over diversions to the CVP. 1955 Act Proviso 2 water for economic development must also be protected from export. Accordingly, the EIS must make no assumption that, on average, more water can be exported from the Trinity System to the CVP-DWR coordinated operation than remains after the amounts required to fulfill Proviso 1 and Proviso 2 priorities. Only water surplus to the flow releases of those provisos, and other federal obligations, is available to the coordinated operations of the CVP and SWP.

3. Avoid assuming that changes in the timing of TRD water exports to the CVP can be made.

Trinity River water is stored behind Trinity Dam, then flows approximately 10 miles to Lewiston Dam, where it is either released by the Bureau of Reclamation to the Trinity River or diverted to the Sacramento River. During warm weather, the temperature of water released to the Trinity can rise substantially as it flows between the two dams, especially when Trinity Dam releases are small and little flow is present in that reach. For this reason, the ROD provides: "the TRD [will] be operated to release additional water to the Trinity River, and the timing of exports to the Central Valley would be shifted to later in the summer to help meet Trinity River instream temperature requirements."

Compliance with Trinity River instream temperature requirements is required by water quality standards of the North Coast Regional Water Quality Control Board (NCRWQCB), the water rights permits of the Bureau of Reclamation, and by the Biological Opinion adopted by the ROD. The Biological Opinion includes a mandatory condition, as follows: "7. In dry and critically dry water year types, Reclamation and USFWS shall work cooperatively with the upper Sacramento River Temperature Task Group to develop temperature control plans that provide for compliance with temperature objectives in both the Trinity and Sacramento rivers."

The NCRWQCB temperature objectives are:

Lewiston Dam to Douglas City Bridge

60°F July 1 – September 14

56°F September 15 – October 1

Lewiston Dam to confluence of North Fork
Trinity River

56°F

October 1 - December 31

Further, Water Rights Order 90-5, which governs the Bureau of Reclamation's TRD water rights certificates, provides:

Permittee shall not operate its Trinity River Division for water temperature control on the Sacramento River in such a manner as to adversely affect salmonid spawning and egg incubation in the Trinity River. Adverse effects shall be deemed to occur when average daily water temperature exceeds 56F at the Douglas City Bridge between September 15 and October 1, or at the confluence of the North Fork Trinity River between October 1 and December 31 due to factors which are (a) controllable by permittee and (b) are a result of modification of Trinity River operations for temperature control on the Sacramento River. If the temperatures in the Trinity River exceed 56F at the specified locations during the specified periods, Permittee shall immediately file with the Chief of the Division of Water Rights a report containing project operational data sufficient to demonstrate that the exceedance was not due to modifications of Trinity River operations for water temperature control on the Sacramento River. If, within fifteen days, the Chief of the Division of Water Rights does not advise Permittee that it is violating this condition of its water right, Permittee shall be deemed not to have caused the exceedance in order to control temperature on the Sacramento River.

These temperature standards require rigorous adherence; they can become unattainable if the schedule for water exports to the CVP-SWP is modified. Accordingly, it is essential that the EIS not assume that changes in the schedule of Trinity River exports are possible even if that is desirable from the standpoint of the Delta conveyance.

4. Recognize the influence that management of TRD carryover has on the ability to meet water quality standards in Trinity River

End of season carryover storage behind Trinity Dam influences the ability to meet water temperature standards protective of salmon spawning below Lewiston Dam. Specifically, the total volume of cold water available on 1 June is of significance; this can vary substantially from year to year with volume of runoff, volume and temperature profile of carryover from previous years, and temperature of the present year's runoff into Trinity Lake.

Limitations of TRD infrastructure also affect the ability to meet water temperature needs,

as the current facilities cannot be operated to avoid considerable heat gain during summer months. As described in a letter written on 23 May 2016 by the Chair of the Trinity River Restoration Program, Federico Barajas, in a letter to Reclamation Regional Director, David Murillo. *“During periods of drought, and in the future under virtually all climate warming scenarios, the 2-3°F increase in water temperature that occurs in Lewiston Reservoir will likely elevate temperatures to unsuitable levels for salmonids for which Reclamation has Tribal Trust, Public Trust, and Endangered Species Act (ESA) responsibilities.”*

Water temperature standards for Trinity River below Lewiston Dam were exceeded in October 2015 for a period of two weeks during the onset of salmon spawning. On 21 January 2016, the Tribe filed a request for enforcement of Water Rights Order 90-5², which prohibits diversions from Trinity River that adversely affect salmonid spawning and incubation.

5. Model water deliveries in recognition of 1955 Act priorities for use of Trinity River water.

The second exception in Section 2 of the 1955 Act states: “That not less than 50,000 acre-feet shall be released annually from the Trinity Reservoir and made available to Humboldt County and downstream water users.” That mandate requires the annual 50,000 acre-feet release from the Trinity Division to be made in such a way that the water will be available for use by Humboldt County and downstream users. In other words, the 50,000 acre-feet comes with the attributes of TRD storage, regulation and scheduling.

The State of California issued several permits for the Trinity Division. Permit 11968 includes conditions that limit diversions. Permit Condition 9 states “Permittee [Bureau of Reclamation] shall release sufficient water from Trinity and/or Lewiston Reservoirs into the Trinity River so that not less than an annual quantity of 50,000 acre-feet will be available for the beneficial use of Humboldt County and other downstream users.” Permit Condition 10 states: “This permit shall be subject to the prior rights of the county in which the water sought to be appropriated originates to use such water as may be necessary for the development of the county, as provided in Section 10505 of the Water Code of California.”

In previous planning, such as the Delta Plan planning process, it appears that modelers assumed that the 1955 Act’s reserved 50,000 acre-feet of water could be treated as available for diversion to the Central Valley. This is unlawful. In 1979 the Solicitor of the Department of the Interior reviewed the legal status of the fishery flow releases and the 50,000 acre-feet of water developed and controlled by the Trinity Division. The Solicitor wrote:

On occasion the Congress has specifically limited the Secretary’s discretion in meeting the general CVP priorities. For example, in authorizing the Trinity River Division of the CVP in 1955, Congress specifically provided that in-basin flows (in excess of a statutorily prescribed minimum) determined by the Secretary to be necessary to meet in-

² Letter from Ryan P. Jackson, Chair Hoopa Valley Tribal Council, to John O’Hagan, Permitting and Enforcement Branch Assistant Deputy Director, Division of Water Rights, California State Water Resources Board

basin needs take precedence over needs to be served by out-of-basin diversion. See Pub. L. No. 84-386, §2. In that case, Congress' usual direction that the Trinity River Division be integrated into the overall CVP, set forth at the beginning of section 2, is expressly modified by and made subject to the provisos that follow giving specific direction to the Secretary regarding in-basin needs.

Memorandum opinion from the Solicitor to the Assistant Secretary, Land and Water Resources 3-4 (December 7, 1979) (1979 Opinion). *See also* Memorandum from Solicitor to Secretary (M-37030) re Trinity River Division Authorization's 50,000 Acre-Foot Proviso and the 1959 Contract between the Bureau of Reclamation and Humboldt County, December 23, 2014. So long as the EIS does not confirm that the 50,000 acre-feet entitlement for the Trinity Basin is unavailable to the DCP and CVP-DWR coordinated operation, it will significantly overstate the benefits of the alternatives under consideration.

In summary, no further planning for the Delta Conveyance Project should occur that assumes the availability for diversion of any Trinity River water resources that are committed by law to the Trinity River Basin and its communities. The EIS should preclude the availability for use in a delta conveyance water allocated to: the ROD flow releases; the 50,000 acre-feet of additional Trinity Division water for Humboldt County and downstream users; the carryover storage for preservation of temperatures needed for the Trinity River fishery; or the area of origin rights of Trinity County.

Sincerely yours,

HOOPA VALLEY TRIBAL COUNCIL

A handwritten signature in blue ink, appearing to read "Byron Nelson, Jr.", with a stylized flourish at the end.

Byron Nelson, Jr., Chairman

From: samchilcote@gmail.com
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta project comments
Date: Sunday, September 27, 2020 8:54:12 PM

Good evening,

I am writing to provide comments on the Delta Conveyance Project.

- * I do not see any statement of the need of the project. I have heard several versions of the need for the project and none of them seems adequate to justify the enormous cost of the project. Why do we need this project? Has a cost-benefit analysis been conducted to see if it is justified?
- * Why were the only Alternatives considered variations of the twin tunnel design? It seems to me that there are many other, more environmental-friendly designs which could accomplish whatever the purpose is with less habitat degradation.
- * I understand the jurisdictional issues with USACE. However, I do not believe the project can be analyzed for environmental impacts with construction and future operation/maintenance being addressed separately. Construction of the facilities by itself does not meet a need, does it? Construction is not a purpose in itself.
- * Furthermore, I do not believe that the scope can exclude the “potential downstream effects of the diversion of water from the new intake or to the overall SWP and water deliveries”. Again, the purpose of constructing the facilities is to divert and convey water.
- * Lastly, the analysis can not exclude the future operation of the intake from the analysis because construction does not meet a need. Construction and operation cannot be discussed separately because they are connected actions. The Council on Environmental Quality’s A Citizen’s Guide to the NEPA in Section 1508.25 states that agencies shall consider 3 types of actions in determining the scope of an EIS. One of which is a connected action. “Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they: (i) Automatically trigger other actions which may require environmental impact statements. (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously. (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.” Operations results from construction of the facilities so they are connected actions and must be analyzed accordingly. If ACE has not authority, perhaps they are not the best agency to lead the EOS preparation?
- * Obviously you will be analyzing climate change as a reasonable and foreable future condition, correct?

Thank you for your time.

Samantha Chilcote

Weaverville, CA

From: [Burgos, Pilar](#)
To: [Simmons, Zachary M CIV USARMY CESPCK \(USA\)](#)
Cc: [DeltaConveyance@Water.CA.Gov](#); [Lanza, Jodie](#); [Mikulas, Mischelle](#)
Subject: [Non-DoD Source] Letter of Support for the Delta Conveyance Project Notice of Intent to Prepare an Environmental Impact Statement
Date: Monday, October 5, 2020 1:24:37 PM
Attachments: [image001.png](#)
[image006.png](#)
[image007.png](#)
[DMS-#5895693-v3-Support Letter for Delta Conveyance Project.PDF](#)

Dear Mr.
Simmons,

Please consider the PDF attachment as your copy of this correspondence. If you have any questions, please contact Mr. Tremblay at (562) 908-4288, extension 2701.

Thank you.

Pilar Burgos
Secretary | Facilities Planning
562-908-4288 ext. 2702 | pburgos@lacsd.org <<mailto:pburgos@lacsd.org>>

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October 5, 2020

VIA ELECTRONIC MAIL Zachary.M.Simmons@usace.army.mil

Mr. Zachary Simmons
U.S. Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922

Dear Mr. Simmons:

Support for the Delta Conveyance Project
Notice of Intent to Prepare an Environmental Impact Statement

The purpose of this letter is to express support, by the Los Angeles County Sanitation Districts (Sanitation Districts), of the United States Army Corps of Engineers' (USACE's) intent to prepare an Environmental Impact Statement (EIS) on the Delta Conveyance Project (DCP). The Sanitation Districts are a regional public agency consisting of 24 independent special districts serving over 5.5 million people in 78 cities and the unincorporated territory within Los Angeles County. The Sanitation Districts protect public health and the environment through innovative and cost-effective wastewater and solid waste management and, in doing so, convert waste into resources such as recycled water, energy, and recycled materials. As part of the recycled water program, the Sanitation Districts operate ten water reclamation plants (WRPs) that currently produce approximately 150,000 acre-feet per year of recycled water, of which approximately 100,000 acre-feet per year is supplied to over 952 sites for a variety of uses, including groundwater recharge, landscape and agricultural irrigation, recreational impoundments, industrial processing, and environmental enhancement. This program is one of the largest wastewater recycling programs in the world, with a long history of providing affordable, high-quality recycled water, and accounts for a significant investment in Los Angeles County's recycled water infrastructure. Since the inception of its program in 1962, the Sanitation Districts have delivered nearly 3.4 million acre-feet of recycled water for beneficial reuse. Recycled water produced at the reclamation plants that is not reused for the purposes listed above is discharged to local surface waters that are often effluent dominated.

The Sanitation Districts support the USACE's intent to prepare an EIS for the DCP, which would implement a single tunnel to convey water to the existing SWP pumping facilities, and environmental measures necessary to mitigate impacts in compliance with State and Federal environmental laws. These efforts would secure, protect, and enhance California's water supply by building intakes in the north Delta to avoid increased salinity from tidal effects and expected climate change effects.

More importantly from our wastewater treatment and water recycling standpoint, the projected reduced salinity of State Water Project (SWP) water, will reduce the salinity of recycled water produced by the Sanitation Districts thereby promoting water reuse, and facilitate our actions in accordance with State water policy and regulatory requirements.

Reducing salinity will help alleviate concerns of many potential recycled water users that elevated salt content could adversely impact their plantings. Lower salinity recycled water would also greatly improve the feasibility and cost of implementation measures required by Salinity and Nutrient Management Plans

developed in accordance with the State Water Resources Control Board's Recycled Water Policy. The reduced regulatory burden on recycled water users and improved recycled water quality would increase water reuse, thereby helping Southern California develop local water supplies and reduce its dependence on water from the SWP. These efforts to develop local recycled water supplies also assist the State in attaining its goal to recycle at least two million additional acre-feet per year by 2030 (a goal that was adopted by the State Water Resources Control Board in the Recycled Water Policy) and move the State towards a sustainable water future.

The Sanitation Districts are also partnering with the Metropolitan Water District of Southern California on a potential 165,000 acre-feet per year potential water recycling project at our Joint Water Pollution Control Plant. The water will be used to replenish four groundwater basins in southern California and possibly supply water to industrial users in the Los Angeles harbor area. The project will provide a new local source of reliable, high quality, and climate-change resilient water that would benefit the region for years to come. It will also further the State's recycling goals while increasing the amount of local water supply, thus reducing pressure on DCP to meet the water needs of southern California. The project will involve reverse osmosis treatment to remove salts and trace constituents to produce a purified recycled water suitable for potable reuse. Implementation of the DCP and resulting reduced salinity will improve product water quality, reduce the cost and energy requirements of treatment, and result in less residual concentrate (salts or brine) that must be disposed.

High salinity in SWP deliveries also contributes to elevated chloride levels entering our Saugus and Valencia WRPs, which are operated by the Santa Clarita Valley Sanitation District (a Sanitation Districts' member agency) and discharge recycled water to the Upper Santa Clara River (USCR). The Los Angeles Regional Water Quality Control Board has imposed salinity Waste Discharge Requirements on the treated wastewater from these facilities, and the Santa Clarita Valley Sanitation District is currently constructing an advanced water treatment facility to remove chloride from its wastewater in order to comply with limits based on the USCR Chloride Total Maximum Daily Load (TMDL) for its discharges. The SWP water used by the community contains chloride levels that can approach or even exceed regulatory limits. The cost to comply with the USCR Chloride TMDL is expected to exceed \$130 million plus \$6 M per year in operating costs. The Sanitation Districts anticipate that implementation of the DCP will reduce salinity levels and improve the quality of SWP water, thus providing a water quality benefit and treatment cost reduction to the Santa Clarita Valley.

Overall, the Sanitation Districts support the DCP and the USACE's intent to prepare an EIS for the DCP due to the expected benefits to SWP water quality, which will lead to better local water quality for drinking water and recycled water; increased water recycling; more sustainable local water supplies; and lower cost compliance with regulatory requirements. If you have any questions or require additional information, please contact me at rtremblay@lacsdc.org or at (562) 908-4288, extension 2701.

Very truly yours,

Ray Tremblay
Raymond L. Tremblay
Department Head
Facilities Planning

RT:JL:pb

cc: Renee Rodriguez, California Department of Water Resources (hard copy via USPS)

February 12, 2020

Sent Via Email

California Department of Water Resources
Delta Conveyance Scoping Comments
Attn: Ms. Renee Rodriguez
P.O. Box 942836
Sacramento, CA 94236

DeltaConveyanceScoping@water.ca.gov

RE: Delta Conveyance Project Notice of Preparation of Environmental Impact Report

Dear Ms. Rodriguez:

The Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) is mandated by California Health and Safety Code §40961 to represent the citizens of Sacramento in influencing the decisions of other agencies whose actions may have an adverse impact on air quality. In that context, Sac Metro Air District staff offer the following recommendations on the Delta Conveyance Project Notice of Preparation of Environmental Impact Report.

Sac Metro Air District provides air quality, greenhouse gas, and toxic emissions analysis expectations, significance thresholds, and mitigation strategies in its *Guide to Air Quality Assessment in Sacramento County*ⁱ (Guide). Using the Guide will ensure a thorough air quality analysis is conducted for portions of the project to be constructed and operated in Sacramento County. For full disclosure and ease of review, all emissions calculations and analysis assumptions should be contained in the draft environmental impact report.

Since the Delta Conveyance Project is expected to be a joint state and federal project, please include a General Conformityⁱⁱ applicability analysis and determination. If offsite mitigation or offsets will be needed for nitrogen oxide emissions (NO_x), Sac Metro Air District recommends early consultation with Department of Water Resources staff since opportunities to reduce large amounts of NO_x in the Sac Metro Air District may be limited and expensive.

Discuss project consistency with the Department of Water Resources' Climate Action Plan (CAP) and applicable climate regulations and Executive Orders adopted since the CAP was prepared, with particular attention to AB 2800ⁱⁱⁱ, AB 1482^{iv} and Executive Order B-30-15^v.

In January, the Sac Metro Air District released its draft *Guidance to Address the Friant Ranch Ruling for CEQA Projects in the Sac Metro Air District*^{vi} covering the analysis and disclosure of potential health effects resulting from new project emissions. Consult the new guidance when analyzing the Delta Conveyance Project's emissions.

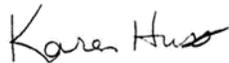
February 12, 2020

A specific health impact not addressed in the Friant Ranch guidance is Valley Fever^{vii}. To reduce potential exposure and resulting health effects, include preventative fugitive dust control measures for construction activities and provide a public education campaign for nearby receptors.

All projects are subject to Sac Metro Air District rules in effect at the time of construction. A complete listing of rules is available at www.airquality.org. Specific rules that may be applicable to construction activities is also available in the Sac Metro Air District's Rules & Regulations Statement^{viii}.

Thank you for considering these recommendations. If you have any questions regarding air quality in Sacramento County, you may contact me at 916-874-4881 or khuss@airquality.org.

Sincerely,



Karen Huss
Associate Air Quality Planner/Analyst

cc: Paul Philley, AICP, CEQA and Land Use Section Supervisor, Sac Metro Air District
Shelley Jiang, Climate Change Coordinator, Sac Metro Air District

ⁱ *Guide to Air Quality Assessment in Sacramento County*, accessed January 27, 2020, <http://www.airquality.org/Businesses/CEQA-Land-Use-Planning/CEQA-Guidance-Tools>

ⁱⁱ General Conformity website, accessed January 27, 2020, <https://www.epa.gov/general-conformity>

ⁱⁱⁱ AB 2800, accessed February 12, 2020, https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB2800 and *Paying it Forward: The Path Toward Climate-Safe Infrastructure in California*, September 2018, https://resources.ca.gov/CNRALegacyFiles/docs/climate/ab2800/AB2800_ES_FINAL.pdf

^{iv} AB 1482, accessed February 12, 2020, https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB1482

^v Executive Order B-30-15 related guidance, accessed February 12, 2020, <http://opr.ca.gov/planning/icarp/resilient-ca.html>

^{vi} Draft Friant Ranch Guidance, released January 31, 2020, www.airquality.org/LandUseTransportation/Documents/SMAQMD_FriantRanch_DraftFinalPublic.pdf

^{vii} California Department of Public Health Valley Fever Fact Sheet, August 2019, <https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/ValleyFeverFactSheet.pdf>

^{viii} Rules & Regulations Statement, June 2018, http://www.airquality.org/LandUseTransportation/Documents/Rules%20attachment_6-18Final.pdf

DELTA PROTECTION COMMISSION

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April 15, 2020

Via U.S. Mail:
 Delta Conveyance Scoping Comments
 Department of Water Resources
 P.O. Box 942836
 Sacramento, CA 94236
 Attn: Renee Rodriguez

Via email: DeltaConveyanceScoping@water.ca.gov

Subject: Delta Conveyance Notice of Preparation (NOP) Scoping Comments

Dear Ms. Rodriguez,

The Delta Protection Commission (Commission) is a California State agency created by the Delta Protection Act of 1992, which declared “the Delta is a natural resource of statewide, national, and international significance, containing irreplaceable resources, and that it is the policy of the state to recognize, preserve and protect those resources of the Delta for the use and enjoyment of current and future generations” (California Public Resources Code (PRC) section 29701).

The Act directed the Commission to regulate land use in the Delta to ensure that the populous metropolitan areas surrounding the Delta did not overrun this natural resource and forever alter those irreplaceable resources, including the agricultural, recreational, natural and cultural features that make the Delta the unique place that it is.

In response to the NOP, this letter sets forth the broad principles that serve as the foundation for the attached document detailing issue-by-issue comments. As with the predecessor conveyance proposals, a tunnel through the Delta will irreversibly damage Delta agriculture, recreation, cultural and natural resources. This letter presents our assessment of the potential impacts, offers promising alternatives and effective and feasible mitigation measures for consideration, and reaffirms our position that previously ill-defined impacts – or those not defined at all in previous environmental review – must now receive the attention they require.

Additional Authorities

In addition to the Delta Protection Act of 1992, the Commission’s authority with respect to the Delta conveyance proposal presented in the NOP stems from the following legislation and agreements.

Delta Reform Act: The Delta Reform Act of 2009 (Chapter 5, Statutes of 2009), as well as 2009 amendments to the Delta Protection Act of 1992, declared that the State's basic goals for the Delta are to provide a more reliable water supply for California and protect, restore and enhance the Delta ecosystem "in a manner that protects and enhances the unique cultural, recreational, natural resource and agricultural values of the Delta as an evolving place" (PRC section 29702(a) and Water Code section 85054). In addition, the law identifies the Commission as a "forum for Delta residents to engage in decisions regarding actions to recognize and enhance the unique cultural, recreational, and agricultural resources of the Delta" (PRC section 29703.5(a)). It directs the Commission to recommend ways to protect and enhance the Delta's unique values to the Delta Stewardship Council.

Sacramento-San Joaquin Delta National Heritage Area. The John D. Dingell, Jr. Conservation, Management, and Recreation Act, enacted in March 2019, created the Sacramento-San Joaquin Delta National Heritage Area (NHA). The law designates the Delta Protection Commission as the NHA's local coordinating entity, and charges it with preparing and submitting to the Secretary of the Interior a NHA management plan. Pursuant to the Act, the plan will emphasize the importance of agricultural resources and activities, flood protection facilities, and other public infrastructure, incorporating an integrated and cooperative approach for addressing them, and provide comprehensive policies, strategies and recommendations for conservation, management, development, and funding of the NHA. We are already at work on that plan, which is due to the Secretary of the Interior by March 2022. Federal agencies (such as the U.S. Army Corps of Engineers or U.S. Bureau of Reclamation) that are planning to conduct activities that may impact the NHA are to coordinate their actions with the Commission to the maximum extent practicable.

Staten Island Memorandum of Understanding

The Commission has a role in reviewing any land-use changes on Staten Island, which is subject to a 2001 conservation easement and a 2002 Memorandum of Understanding between the Commission and the Department of Water Resources (DWR). The stated intent of the conservation easement is that Staten Island be protected from "any actions that would result in the conversion of any material portion ... away from agricultural use." DWR holds the conservation easement and is legally responsible for its enforcement.

Principles

The Commission's comments are based on foundational principles that underlie our response to the Notice of Preparation, derived from what matters to those who live, work and recreate in the Delta. Since none of the stated project objectives specifically benefit the Delta region, we believe these principles should be given equal weight to the project objectives.

The Delta Reform Act of 2009 articulated the State's recognition that the Delta is a special place. Congress recognized its singular qualities when designating it a National Heritage Area. Its assets attracted people from around the world, whose hard work and creativity fashioned the unique landscape that is our home. These special attributes

include its productive farmlands, with its drainage and irrigation infrastructure; the waterways navigated by recreational and commercial vessels and attracting boaters, anglers and other recreationists; and its rich cultural history stretching from Native California Indians through waves of immigrants to today's legacy communities and multi-generational family farms. It enjoys quiet, dark night skies, and close-knit communities. It is a place of surprising diversity and continuity. Protecting the Delta as a unique place means adhering to the following basic principles.

Protect Delta Water

The reliability of water supplies for in-Delta users and the Delta ecosystem must be fully protected. Our local water utilities, farms, resorts, and industries benefit from abundant fresh water. Our fish and wildlife are attuned to the pulses of this water as it interacts with the Delta's tides. Complex infrastructure built to manage this water, including siphons, diversions, drains, other discharges, and levees, is also carefully adapted to current conditions. This water is protected by our rights as an area where these waters originate, by other water rights, and by federal and State law. Any Environmental Impact Report (EIR) for Delta isolated conveyance must carefully evaluate any harm to the region's water and fully protect all its uses, including its water management infrastructure.

Improve Levees and Reduce Reliance on Exports

The EIR should consider an alternative that reduces risks to Delta water supplies from earthquakes and sea level rise by improving Delta levees, as recommended in the Commission's Economic Sustainability Plan for the Sacramento-San Joaquin Delta (ESP). This alternative should consider a reduction of other region's reliance on water from the Delta by investing in water use efficiency, water recycling, and other advanced technologies. EIR alternatives and mitigation measures should also be consistent with regulations implementing the Delta Reform Act, the Clean Water Act, and the Davis-Dolwig Act's (Water Code sections 11910-11911) requirements about protecting Delta wildlife and fish, providing recreation opportunities, and consulting with local agencies.

Listen to Delta People

The Delta is a complex place. No one knows it better than those who live, work, and recreate there and the local governments who represent them. Involving these Delta people will be essential to understanding the project's effects and how to avoid or reduce them. The Bay-Delta Conservation Plan (BDCP) began by excluding many local stakeholders from discussions about it. Many Delta people felt excluded from substantive involvement in the BDCP EIR as well. The sense of skepticism that resulted will be difficult to overcome. But DWR has gained valuable experience developing constructive working relationships with wildlife and fish agencies that can be applied to working with people in the Delta. The Delta Conveyance Design and Construction Authority (DCA) outreach effort with its Stakeholder Engagement Committee (SEC) is a start, but should supplement, not substitute for consultation. DWR's outreach and listening effort should extend beyond pro forma California Environmental Quality Act (CEQA) notifications. The alternative is further decades of gridlock and impasse.

Protect People as Well as Wildlife

Delta residents and recreationists must be protected as effectively as its fish and wildlife. Like the fish and wildlife that receive so much attention, our multiracial population is also at risk. Too many residents and workers have low incomes, and others' jobs rely on water-dependent farms or tourism. The communities where they live and work, the waterways that attract our recreationists, and the highways traveled to jobs and shopping, to ship our produce, and to draw visitors are as critical as the river channels and other habitats where wildlife and fish live and migrate. Impacts to the Delta's residents and visitors should be assessed using current data, not outdated information or guesswork. Alternative points of diversion that avoid damaging our communities deserve the same consideration as locations that minimize harm to fish. Specific actions to reduce damaging effects should be spelled out whenever feasible, not deferred to be worked out later. Performance standards should be clearly stated. When harm is unavoidable, compensation to offset damage must be provided, just as it is for damage to waterfowl or salmon.

Treat Us as Well as Other Californians

Measures to mitigate impacts in the Delta must be at least equivalent to those used in other large public works projects in southern California, Santa Clara County, and the San Joaquin Valley that would receive water through the proposed tunnel. These regions have employed both practical and innovative ways to reduce and offset the damaging effects of public works projects. Homes have been insulated to quiet excess noise. State-of-the-art equipment has been used to reduce disruption during construction. Homes that must be purchased are subsequently replaced and made available at affordable prices. Historic structures have been carefully mothballed and then rehabilitated after project completion. Funds have been provided to help adversely-affected businesses persist despite the disruptions caused by project construction. The application of such measures elsewhere in California demonstrates that they can typically be accomplished successfully, considering economic, environmental, social and technological factors. The EIR must evaluate such measures applicability in the Delta and adopt them whenever feasible.

Use the Best Science

The EIR must be based on the best available science and employ adaptive management where impacts within the Delta are uncertain. Data about the Delta must be carefully collected and shared for review. Evaluations of impacts to agriculture, tourism, transportation, housing, cultural assets, and other Delta resources must be peer-reviewed, as should economic studies used to consider mitigation measures' feasibility. Where effects are uncertain, actual effects during the construction period should be monitored so that mitigation can be adjusted based on actual conditions rather than inexact forecasts.

Be Readable

As noted by the Delta Independent Science Board, the circumstances surrounding impact assessment of a conveyance project demand that the environmental review “go beyond legal compliance,” that it have “extraordinary completeness and clarity,” that it be “exceptionally clear about the scientific and comparative aspects of both environmental impacts and project performance.” The EIR should include summaries of impacts, by chapter, written plainly and with explanatory graphics, so that it is easily understood by Delta residents and agencies. The EIR’s purpose should be to inform public discussion and agency decisions about alternative ways to achieve the project’s objective, rather than just to compile an exhaustive and encyclopedic narrative about the project and its effects. Innovative communications, such as video clips, should supplement the written report.

Don’t Make the Delta Pay

DWR’s water contractors must agree to reimburse affected Delta local governments and special districts for the lost property taxes or assessments for land used in the project’s construction, location, mitigation, and operation, as required by the Delta Reform Act (Water Code section 85089). DWR should also anticipate reimbursing local agencies, many of whom operate on very modest budgets, when it calls on them for data or consultation during the preparation of the EIR.

Conclusion

The Delta Protection Commission offers these scoping comments in the spirit of constructive dialogue. We believe considering alternatives in light of these principles and giving them equal weight to the project objectives will change the perspective of a preferred alternative and mitigation measures significantly. We hope they will aid DWR in bringing together and resolving the concerns of our affected local government constituents, responsible and trustee agencies, and other interested parties, including those who may not be entirely in accord with the action on environmental grounds, as provided in CEQA Guidelines Section 15083.

Thank you for the opportunity to provide input. We are available to engage in multi-lateral discussion of how to protect and enhance the unique values of the Sacramento-San Joaquin Delta.

Sincerely,



Erik Vink
Executive Director

Attachment: “Attachment to NOP Comment Letter Dated April 15, 2020”

CC: Chairman Villegas and Commissioners, Delta Protection Commission

ATTACHMENT TO DELTA PROTECTION COMMISSION NOP COMMENT LETTER (APRIL 15, 2020) – DELTA CONVEYANCE

The following comments provide the Commission's specific suggestions and recommendations regarding preparation of the Delta Conveyance Draft EIR.

ALTERNATIVES

The EIR should examine these alternatives, which we believe may avoid or reduce the adverse effects to Delta resources enumerated in the subsequent sections.

Improve through-Delta conveyance and reduce reliance on exports. The Delta Protection Commission advocates improved through-Delta conveyance, rather than the isolated facility proposed by DWR. In recognition of our recommendation and because the project proposed by DWR addresses only some of the factors that contribute to the unreliability of Delta water exports, the EIR should also include an alternative that promotes water reliability by strengthening Delta levees and dredging key Delta channels, rather than tunneling under the Delta, while also reducing other region's reliance on water from the Delta by investing in water use efficiency, water recycling, and other advanced technologies. The through-Delta conveyance components of this alternative should include all the features recommended in the Delta Plan (Delta Plan recommendation WR R1 2(a)(4) and (c)).

This alternative's provisions to reduce reliance on the Delta should be informed by an analysis of water demand and promising alternative supplies in areas to be served by the project. The analysis should comply with the Delta Plan's regulatory policy WR P1. The alternative should also be informed by analyses highlighting southern California's increasingly diverse water supplies and further opportunities to reduce imports there (<https://www.nrdc.org/experts/doug-obegi/mwd-suggests-southern-california-has-too-much-water>; <https://www.nrdc.org/experts/ben-chou/new-report-finds-big-mismatches-socal-water-plans>) and in the San Joaquin Valley (<https://www.ppic.org/wp-content/uploads/water-and-the-future-of-the-san-joaquin-valley-february-2019.pdf>).

Far eastern alignment. A tunnel alternative deserving evaluation is the far eastern alignment recommended in the January 20, 2020 report of the Independent Technical Review (ITR) Panel to the Delta Conveyance Design and Construction Authority (DCA). We understand that a similar alignment was proposed in 2010 by an ITR Panel for the WaterFix tunnels. In addition to the cost and logistical advantages identified by the panel, such an alignment would seem to avoid or

reduce impacts to land use, recreation (including boating), and Highway 160 corridor cultural resources from noise, traffic, and construction disruption. Mitigation of remaining impacts would appear to be less complex and thus perhaps less expensive as well. However, the potential impacts of the far eastern alignment have not been as thoroughly studied as the central corridor alignment in terms of agriculture, natural resources and land use conflicts. For example, the far eastern alignment could have potential significant adverse impacts to the Port of Stockton and adjacent neighborhoods.

Alternative points of diversion. Because construction of diversion facilities causes such significant impacts to nearby Delta communities and natural and cultural resources in the Sacramento River/Highway 160 corridor, alternative diversion locations that avoid or reduce damage to Delta communities and recreational boating as well as protect fish should be considered. In addition, the analysis of potential diversion points undertaken in the BDCP/WaterFix EIR's Appendix 3F should be revisited with impacts to Delta communities weighted equally with impacts to fish and wildlife. Experts in Delta land use should be represented on the ranking panel equally with fish agency representatives. Relying on fish biologists, who are not trained in land use, cultural resources, or other relevant topics to weigh impacts on Delta communities does not employ the best available science. Use of a single point of diversion with a total project capacity of 3000 cfs should also be considered, thereby reducing the extent of damage from multiple points of diversion.

Alternative intermediate forebay locations. To avoid or reduce impacts from noise and construction disruption near Locke and the Cosumnes River Preserve and damage that dredging and barge facilities would inflict on recreational boating, aesthetics, and Snodgrass Slough's natural areas, an alternative location for the intermediate forebay and associated facilities should be evaluated south of Walnut Grove Road and adjacent to I-5 along the far eastern alignment. Such a site would still involve painful damage, but perhaps less harm than the site currently under consideration.

HYDROLOGY AND WATER RESOURCES

Protect in-Delta water resources. The project's effects on in-Delta water uses should be carefully assessed. This should include modeling that forecasts the effects of the project's operations, together with ongoing State Water Project (SWP) and Central Valley Project (CVP) operations using existing south Delta facilities, on water quality parameters that affect in-Delta uses. Key parameters that should be assessed include salinity, organic carbon, temperature, in-Delta and through-Delta flows, and outflows to the Bay. The EIR should describe the implications of changes in these parameters on

agriculture, municipal water suppliers that rely on Delta water, Delta industrial uses, such as food processors and petrochemical plants, Delta sport fisheries, and recreation, including the spread of aquatic invasive species and harmful algal blooms. The Department of Parks and Recreation's Division of Boating and Waterways (DBW) and other agencies such as the CA Department of Fish and Wildlife (DFW) and State Water Resources Control Board (SWRCB) should be consulted for current data. This modeling should report outcomes for key parameters over time, through at least 2050, so that readers can understand the project's longer-term effects as climate change affects sea levels and makes runoff to the Delta less predictable. Implications of the project for wastewater agencies discharging to the Delta should also be explored.

If the project will adversely affect Delta water quality, as the BDCP/WaterFix EIR concluded, then vague pledges to provide alternative water supplies or offset increased local water treatment costs should be replaced with a mitigation program that spells out the processes used to identify mitigation actions, sources of alternative water supplies, action triggers, time frame, means of payment, fund sources, an objective third-party governance system, and other pertinent details. Delta water agencies should be involved as this mitigation program is developed.

Protect groundwater. The BDCP/WaterFix EIR acknowledged groundwater losses due to construction dewatering and implementing its environmental commitments but did not identify specific measures to meet preexisting or future water demands of affected parties. These impacts to groundwater should be assessed and specific measures to avoid or mitigate them should be proposed.

Anticipate export interruptions. The EIR should assess the probable impacts to south-of-Delta water users due to interruption or reduction of exports of Delta water conveyed through the proposed project due to drought, growing demand by north-of-Delta water users with superior water rights, alterations in runoff because of climate change, potential regulatory changes, or legal challenges. These and other threats make Delta water exports inherently unreliable. Contingency measures that could be employed in SWP and CVP service areas as well as in the Delta to mitigate this unreliability or restore water exports following these types of disruptions should be described.

Outline cumulative long-term effects. The complexity and potential connections among the many potential actions affecting Delta water resources that are currently under study contributes to Delta residents' concerns about the project. To address these concerns, the EIR should describe how the tunnel could be operated under a scenario in which planned reservoirs, including Sites, expanded Los Vaqueros, expanded Pacheco Reservoir, and south of Delta groundwater banks are completed and operated, as proposed in funding proposals to the California Water Commission. The reservoirs and groundwater banks are reasonably foreseeable: State and in some cases federal funds

have been awarded, draft feasibility reports are sometimes complete, as is Sites Reservoir's draft EIR, and south-of-Delta water agencies have joined as sponsors supporting the projects. It is often stated that these projects' value depends on improved conveyance that can move water stored north of the Delta to those new storage areas proposed south of the Delta, but it is unclear how this would alter operations of the tunnel or its impacts on Delta water resources. This should be explained.

Improve through-Delta conveyance and reduce reliance on exports. The Delta Protection Commission advocates improved through-Delta conveyance, rather than the isolated facility proposed by DWR. In recognition of our recommendation and because the project proposed by DWR addresses only some of the factors that contribute to the unreliability of Delta water exports, the EIR should also include an alternative that promotes water reliability by dredging key Delta channels and strengthening Delta levees, rather than tunneling under the Delta, while also reducing other region's reliance on water from the Delta by investing in water use efficiency, water recycling, and other advanced technologies, as discussed above.

Assess flood risks and plan for post-flood recovery. Areas where key project facilities would be located are protected by levees where the risk of levee failure contributes to their ranking in the Delta Plan as very high priorities for State-funded levee improvements. In the north Delta these facilities, including the proposed diversion facilities, an electrical building, sedimentation basin and appurtenant structures, are protected by the levees of Maintenance Area No. 9 South. Similarly, the Byron Reclamation District's levees protect access to and operational facilities at Clifton Court Forebay, including presumably the new pumping facility. The EIR should describe how these project facilities would be protected from flooding in the event of levee failure, how SWP workers would access these facilities until floodwaters drain, how SWP operations would be maintained or restored after that flooding, and measures to reduce the risk of levee failure affecting project facilities.

LAND USE, PLANNING AND PUBLIC SERVICES

Delta Land Use is Controlled Carefully to Foster Agriculture, Encourage Tourism and Recreation, and Maintain Legacy Communities. The Sacramento-San Joaquin Delta is vast, encompassing nearly three-quarters of a million acres of land and 700 linear miles of waterways. Its land uses generally reflect the settlement patterns of the past century and a half, closely associated with its rivers, sloughs, and waterways, and with the configuration of agricultural lands. Rural communities reflect the diverse heritage of the Delta, serving as social and service centers for the surrounding farms and historically served as shipping sites for products.

In response to rapidly encroaching urban growth the Legislature enacted the Delta Protection Act of 1992 (Public Resources Code 29760 et seq.), establishing the Delta Protection Commission and dividing the legal Delta into a primary zone and a secondary zone, with the Commission's principal land use authority over the primary zone. The Act requires the Commission to prepare and update a comprehensive Land Use and Resource Management Plan guiding land uses within the primary zone. The primary zone is largely rural and not intended for intense development. The secondary zone includes existing cities and areas that may be developed. The "legacy communities," eleven communities largely in the primary zone – Clarksburg, Courtland, Freeport, Hood, Locke, Walnut Grove, Ryde, Isleton, Rio Vista, Knightsen, and Bethel Island, -- are a focus of economic development activities and cultural heritage.

Key elements of the Commission's and counties' land use approach are to preserve the rural lands for agriculture and agricultural-related businesses, allow for rural, farm-friendly visitor-serving facilities such as wineries and event facilities, marinas and resorts in key locations to support tourism, and protect the legacy communities as retail and residential centers to support agriculture and tourism. This approach includes some flexibility by allowing unique uses, such as agricultural sales or childcare facilities, by special permits.

The proposed tunnel is incompatible with this fundamental strategy, both during the long construction period and during operation. Presentations at the Stakeholder Engagement Committee (SEC) meetings convened by the DCA showing the location and intensity of construction impacts on traffic, for example, have illustrated how the effect on the Delta as a whole – as a place – is analogous to an earthquake with a series of major aftershocks. Not all Delta communities will be affected in the same way, or perhaps with the same intensity, but all will be affected.

Intake facilities on the Sacramento River as described in the NOP, regardless of which are selected, and regardless which corridor alignment is selected, would irreparably damage the communities of Clarksburg in Yolo County, and Hood and Courtland in Sacramento County. In San Joaquin County, launch shafts, tunnel material handling, and maintenance and retrieval shafts will convert farmland and disrupt marinas and recreational boating. Contra Costa county communities such as Discovery Bay would suffer major recreation impacts. In Solano County, the economic and cultural impact of required project mitigations from agricultural lands being converted to restoration projects are a major concern, as are water quality impacts on municipal wells for Rio Vista and agricultural users in the Cache Slough region.

Every Element of the Project Disrupts Existing and Planned Land Use. Tunnel construction would fundamentally change the agricultural- and water-based character of Delta communities and landscape because of the duration and sheer number of

different locations that construction and staging would take place. The use of nearly 8,000 acres of land will be changed due to surface impacts, with another several thousand acres of agricultural lands likely converted for habitat mitigation. Construction of the tunnel launch, retrieval/reception and maintenance shafts, the intermediate and new southern forebays, pumping plant, and construction-support facilities along the alignment including access and haul roads, potential additional rail lines, barge unloading facilities, concrete batch plants, fuel stations, mitigation areas, and power transmission and/or distribution lines will alter the landscape for the better part of two decades, based on the construction methodology currently being presented by the DCA. Use of additional areas will be harmed by noise, traffic congestion, impaired recreation and tourism, damaged scenery, other disruption accompanying construction, degraded quality of life, lowered property values, and lost investment.

- Intake and Tunnel Construction. Construction of two intakes for either alignment shown in the NOP, each occupying at least 200 acres, would result in drastic changes to the communities of Clarksburg, Hood and Courtland, as well as neighboring areas and the Stone Lakes National Wildlife Refuge. Road construction and widening, bridge modifications and interchange improvements, and installation and operation of concrete batch plants would virtually all occur within the primary zone, in direct conflict with the most fundamental principles of the land use approach of the Delta Protection Act and the Commission's Land Use and Resource Management Plan. After construction is completed, pressure will grow for non-farm development at areas adjoining new offramps or sites that cannot be returned to agriculture.
- Tunnel Corridors. Extending beyond the intakes, construction and operation of the "Central Tunnel Corridor," which would also necessitate widening of narrow bridges and extension of existing or creation of new access and haul roads through much of the agricultural land of the primary zone, would literally pave the way for transformation of the regional landscape, setting a precedent of devalued baseline conditions.

Two to three launch shafts for launching the tunnel boring machines (TBMs) would be required along either tunnel corridor alignment shown in the NOP. Likely launch shaft locations are at Granville Tract adjacent to Interstate 5 at Twin Cities Road, at Lower Roberts Island near the San Joaquin River channel, and at Byron near the Clifton Court Forebay and proposed new southern forebay. Another potential launch site for an "Eastern Tunnel Corridor" would be at Rough and Ready Island near the Port of Stockton. According to the SEC presentations, current thinking is that four TBMs would be used, and would potentially tunnel in both north-south directions.

Each launch shaft site would be 200-300 acres. The size and complexity of the launch shafts sites are significant: at these sites, the TBM is launched, followed by the tunnel liner sections, and the tunnel material is removed. Once removed, tunnel material must be dewatered, currently proposed to be onsite with large levees surrounding a tunnel material storage and consolidation center. Liner sections for the proposed 40-foot diameter tunnel would potentially be fabricated at existing nearby plants in Stockton, Lathrop, Antioch and Rio Vista. Transport of liner sections onsite and tunnel material offsite is being considered by barge, rail, and/or truck, although barge and/or rail are being prioritized. A range of operational conditions for the tunnel is possible, but among the examples given at the SEC meetings for a 6,000 cubic feet per second (cfs) tunnel capacity would be that 50 liner segments per day would require 25 days of truck hauling versus 3 to 5 days by rail or barge. Likewise, estimates for removal of tunnel material offsite range widely, but are staggering.

The launch sites would include construction offices, concrete batch plants, equipment storage and electrical substations.

In addition to the launch sites, potentially up to 10 maintenance and retrieval (or reception) shafts will be required for either alignment shown in the NOP. At 15 to 20 acres per shaft site, this represents another 200 acres minimum of converted farmland.

It would be disingenuous for the draft EIR to characterize any of the land conversion along the tunnel alignment as temporary, since even construction sites that are not permanently part of operations will be fallow so many years and will be affected by soil modifiers and other effects from the use of the property as to be of questionable agricultural value if they are ever decommissioned and reclaimed for agricultural use. However, most if not all facilities may well be left in place, according to presentations at the SEC, increasing pressure for non-farm use at sites that cannot be returned to agriculture.

- Habitat Mitigation. Further changes to existing land uses can be anticipated from habitat restoration likely to be proposed to mitigate damage to biological resources. For example, the BDCP/WaterFix EIR proposed converting thousands of acres of farmland to marsh or riparian woodland.

Recommended Significant Adverse Impacts Analysis and Method of Documentation:

Given the foregoing brief description of just some of the potential land use impacts, it is clear that tunnel construction and operation in any alignment will irrevocably alter the rural character of the Delta, adversely impacting its economic pillars (agriculture and recreation), and its cultural heritage. The project seriously threatens the long-term

sustainability of the Delta regional economy, which the Commission is charged with enhancing and promoting. In addition to direct land use conflicts, in many areas the project would cause a substantial change in intensity of land use that would be incompatible with adjacent land and water uses.

The basic livability of Delta legacy communities and Discovery Bay would be compromised by increased noise and congestion and reduced quality of life. Property values and affordable housing have already been severely impacted over the past decade, buffeted by the economic downturn, by high flood insurance costs and stringent construction requirements, and by the threat of construction of BDCP/CA WaterFix, the predecessors to the current single tunnel proposal. The challenges of housing project construction workers will likely mean competition for local housing resources, which will make it more challenging for major Delta businesses such as marinas and agricultural support to house their workers. The project would cause enormous disruption of the basic elements of daily life for Delta residents, including functional access to schools, libraries, churches, medical care, elder and childcare, and shopping.

Existing congestion on Highways 4, 12, and 160 already impairs Delta residents' commutes to jobs within the Delta and beyond to the metropolitan areas of the East Bay, Stockton-Tracy, and Sacramento, often literally grinding to a standstill. Accidents are frequent and too often fatal, especially on Highway 160 and Twin Cities Road. Delta farmers' ability to move slow or over-size equipment safely from one location to another is already challenged. At least two dozen bridges on the Sacramento, Mokelumne, and Middle rivers and multiple sloughs would be affected by increased barge, rail and truck transit. Either of the alignments of the proposed project shown in the NOP would exacerbate these existing transportation challenges. New rail spurs or access and haul roads could also interfere with access to farmland.

Damage to landside recreation and tourism would occur both directly and indirectly through noise and disruption of the aesthetic charm and character of key tourist destinations such as Hood, Courtland, Clarksburg, Locke, Walnut Grove and seasonal and permanent farm stands along the scenic Highway 160 as well as wildlife viewing destinations such as Stone Lakes National Wildlife Refuge (NWR), Cosumnes River Preserve, Staten Island, and numerous San Joaquin County sandhill crane and waterfowl roosting sites.

Recreational boating would be significantly impacted – and in some cases facilities eliminated – on the Sacramento, Mokelumne and San Joaquin Rivers and the south Delta and at marinas, launches, popular anchorages and hangouts such as Lost Slough and the Meadows; Wimpy's; Giusti's; Beaver, Hog and Sycamore Sloughs; Tower Park; King Island; Potato Slough; Mildred Island and Horseshoe Bend; Bullfrog Landing and Lazy M, to name just a few.

Effects could include partial property acquisitions, resulting in division of agricultural or residential parcels, which could create non-conforming lot sizes that are inconsistent with counties' land use and zoning designations.

To meaningfully convey these effects for Delta communities and decision-makers, the EIR should tabulate the acreage and map the areas affected by every adverse or incompatible feature of the project, including direct land use conversions, noise in excess of standards for existing or proposed land use, properties where road congestion to level D or worse impairs access, harm to landscapes surrounding visitor destinations, or other project-related damage. The acreage of lands harmed, by land use (e.g., agriculture, residential, etc.), should be tallied, as should the number of impacted homes and businesses. To adequately inform business owners, their employees, and residents, the EIR should list the names of businesses and the addresses of homes likely to be impacted, much as the EIR lists the species found in habitat areas affected by the project. Special uses that contribute to community cohesion should be highlighted, including groceries, post offices, schools, churches, libraries, and community centers.

To assess impacts on affordable housing, typical rents of homes adversely affected by the project should be estimated. In addition, given the tight housing markets in the affected areas, construction workers' demand for housing should be carefully forecast, considering the project's labor requirements, existing capacity of necessary skilled labor in the region, and the current and forecast utilization of construction workers residing in the region. A thorough analysis of housing impacts should replace the BDCP/WaterFix EIR's assumption that the preponderance of project workers will already reside in the region, particularly given the current state housing mandates that local governments are struggling to meet.

Recommended Approach to Developing and Evaluating Mitigation Measures: In preparing the draft EIR, DWR should provide mitigation that adequately addresses the nature of impacts on land use and communities. At a minimum, the EIR should incorporate the applicable land use policies, standards and Best Management Practices (BMPs) in the applicable local government's general plan and zoning ordinance and adopt the mitigations recommended in Delta Plan recommendation WR R1 2(b)(2)(I) and the Delta Plan Mitigation, Monitoring and Reporting Program (MMRP).

Mitigation measures for land use and all other environmental aspects of the project should be structured to use careful phasing of project construction to minimize disruption, including cumulative disruptions simultaneously affecting multiple areas of the Delta. Because the duration of the project contributes to its damage to Delta land use, measures should be proposed that provide incentives for timely project completion

or penalties for deviations from agreed-upon schedules, without increasing short-term impacts.

To mitigate impacts to affordable housing, replacement housing for acquired or impaired homes should be provided as required by the Delta Plan MMRP. Any home that may be acquired should be carefully maintained and, at the end of the construction period, rehabilitated as needed and sold at affordable prices to prior or new occupants. Contributions to support development of new affordable and work-force housing, including farm labor housing, should also be considered, as were provided in the LAX (Los Angeles International Airport) master plan¹. The text below identifies other measures that should be proposed to reduce harm to specific land uses, such as agriculture and tourism, or mitigate specific impacts that affect land use, such as noise or traffic congestion.

Wherever feasible, mitigation measures should support or enhance existing Delta land use. For example, could the project's greenhouse gas (GHG) emissions be offset by a fair-share contribution that covers the capital costs faced by Delta agricultural land owners who wish to grow rice or other crops that sequester carbon and reverse land subsidence, including costs for land preparation (e.g., land leveling and water management features such as checks and ditches)? The Sacramento-San Joaquin Delta Conservancy has identified these costs as a significant barrier to carbon-sequestering farming systems in the Delta.

Involve Local Agencies, Businesses and Residents. Delta agencies and affected residents should be consulted as these mitigation measures are developed, evaluated, and implemented. Now is the time for DWR to engage in serious conversations with Delta counties, other local agencies, the Commission, and the Sacramento-San Joaquin Delta Conservancy, as well as other state agencies such as Caltrans and the Department of Parks and Recreation about effective mitigation measures. For example, DWR should propose an adaptive strategy for monitoring project effects on Delta land use, residents, and businesses, monitoring outcomes and responding to unanticipated impacts. The mitigation strategy used by the High Speed Rail project to address traffic impacts on agricultural land use could be evaluated in consultation with affected Delta property owners to assess the effectiveness of providing crossings or alternate routes that can accommodate farm equipment, allowing continued use of agricultural lands and facilities.

The EIR should also propose mitigation measures to reduce economic blight and other cumulative impacts on Delta land use, as major public works projects throughout the

¹ (<https://www.lawa.org/en/lawa-our-lax/studies-and-reports/mitigation-monitoring-reporting-program>).

state or elsewhere have done. One example is the Business Interruption Fund used to mitigate effects of Los Angeles' Metro subway². The fund should provide quickly accessible funds to offset the loss of business income or other damage to land uses due to construction impacts. It could also fund expansion and implementation of the Commission's Delta Community Action Planning effort, invest in public facilities that can compensate for damage to Delta communities and infrastructure through the Delta Investment Fund (PRC section 29778.5), or support agricultural, cultural, recreational, and tourism programs and projects through a Delta charitable entity such as the Delta Regional Foundation. The Commission's Economic Sustainability Plan (ESP) and the Delta Plan propose numerous recommendations in support of Delta as an evolving Place. DWR should consult with Sacramento Area Council of Governments (SACOG), San Joaquin Council of Governments (SJCOG), and Association of Bay Area Governments (ABAG) to assess whether the Mega-Region Economic Model they are developing could be helpful in understanding the project's population, housing, and employment impacts in the Delta and could contribute to developing a strategy to compensate for economic damage from the project.

AGRICULTURE

Protect agriculture. Agriculture is the Delta's principal land use, the foundation of its rural economy, and a pillar of its culture. Every effort to protect it should be taken. Project actions, including wildlife, fish, and habitat mitigation measures, that will directly or indirectly affect agriculture should be described. These should be based on the most recent information about Delta farms, including information we have gathered to update the ESP. Estimates of farmland lost for project facilities, tunnel material management and storage, and wildlife, fish, and habitat mitigation should be reported by total acres, acres by crop type, acres by soil type, and acres under Williamson Act contract. Impacts to local irrigation, drainage, and flood control facilities should be considered, as should loss or impairments of crop processing facilities, such as packing sheds and wineries, project-related congestion on farm-to-market roads, and farm labor housing. Selection of tunnel material, management sites, habitat restoration areas, and other facilities should place a high priority on avoiding prime farmland.

Fully describe avoidance and mitigation actions now. Actions taken to avoid and mitigate impacts to farmland should be described in the EIR, rather than deferred to some future date after the project has been approved, as was proposed in the BDCP/WaterFix EIR. Affected farmers, Delta county Farm Bureaus, county agricultural commissioners, U. C. Cooperative Extension agents, the California

² <https://www.metro.net/projects/westside/final-eis-eir/>;
https://media.metro.net/projects_studies/westside/images/final_seis/WPLE_Final_SEIS_and_Section_4f.pdf

Department of Food and Agriculture, and other agricultural interests and experts should be involved in discussions to develop these measures. The menu of potential actions outlined in the BDCP/WaterFix EIR's agricultural land stewardship plans is one good source of mitigation options, but the EIR needs to describe now how these would be applied to specific areas along the project right-of-way. DWR should propose a model good neighbor agreement to farmers operating on or adjoining its proposed right-of-way, into which these measures could be incorporated as appropriate, including a process to resolve disputes and compensate for farm income losses.

Where specific impact areas cannot yet be described, such as some restoration areas to compensate for habitat damage, the EIR should include clear standards or triggers that explain the extent of mitigation, how its adequacy will be determined, and how those affected will be involved in its development. At a minimum, these measures must comply with or be equivalent to those of the Delta Plan's MMRP sections 7-1 to 7-4. These restoration projects should be subject to subsequent CEQA review.

Avoid and reduce tunnel material impacts. Much of the permanent impact to agriculture reported in the BDCP/WaterFix EIR was for management and storage of tunnel material. In addition to avoiding prime farmland when locating tunnel material facilities, further measures to reduce impacts of these facilities should be employed. Soil conditioners used in creating tunnel material management areas should be selected carefully so that disturbed areas can be returned to agricultural use after the project is completed. Measures to recover compacted soils at these sites should be proposed.

A specific plan for reusing tunnel material must be developed, beginning with review of the feasibility of reuse. A review of spoils disposed from navigation and flood control channel dredging throughout the Delta and Sacramento Valley shows that little has been reused even decades after it was disposed, either because it was unsuitable for other uses or because local users could not afford trucking and other costs required to reuse it. The results of DWR's soil boring investigations should enable classification of the potential uses of excavated material. If feasible, excavated tunnel material should be handled and stored in ways that segregate materials of different quality so they can more easily be reused. Material suitable for reuse to maintain or improve levees should be hauled to those reclamation districts that want it. Costs of hauling tunnel material to reuse sites should be borne by the project, rather than by those who may reuse it, as this mitigation measure is properly a cost of the project's contractors pursuant to Water Code section 85089.

Use conservation easements to compensate for cumulative farmland losses.

DWR, through its habitat restoration actions, is the biggest source of farmland loss in the primary zone of the Delta. These actions include both habitat projects at Dutch Slough and McCormack-Williamson Tract and SWP mitigation projects, such as the Lookout Slough tidal marsh restoration project. Farmland lost to this project, even if project features are sited and operated to reduce impacts, will likely add thousands more acres to this accumulating toll. This continual re-purposing of the land underlying the Delta's core activity is unacceptable.

Site specific measures to avoid or reduce impacts on farmland can reduce local impacts, but the purchase of conservation easements over Delta farmland that would otherwise be threatened by development can compensate for unavoidable cumulative losses. Farmland conservation easements are part of the High Speed Rail project's agricultural mitigation program³. DWR has agreed to obtain them to partially mitigate the effects of the Lookout Slough tidal marsh restoration project. The Delta Plan's MMRP requires such compensatory mitigation at a ratio of 1 acre protected for each acre permanently damaged. Most Delta local governments require higher mitigation ratios. Rural farmland in the Delta's primary zone is already secure from development under the provisions of the Delta Protection Act, so the purchase of conservation easements should target areas as buffers in the Delta's secondary zone or areas immediately adjoining the Delta where long-term development pressure is higher. Areas proposed to be secured for sandhill crane habitat or other wildlife-friendly farming should not be considered as compensating for the project's contribution to cumulative farmland losses, since agricultural uses of those lands will be constrained, not unreservedly preserved, by those wildlife-friendly practices and because those lands will be protected in any case.

The assertion that securing such agricultural conservation easements may be infeasible is not supported by any evidence. Successful farmland conservancies operate in each Delta county and our own assessment shows that, during the decade before approval of the WaterFix project, they and other agencies secured conservation easements in and adjoining the Delta primary zone in excess of the acreage of conservation easements that would have been required to compensate for that project's permanent destruction of farmland. This indicates that acquiring a similar acreage during this project's construction period should also be feasible. It is understandable that Delta farmers directly affected by this project may be reluctant to cooperate with DWR, but a creative partnership with

³ Final Project Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the Fresno to Bakersfield Section of the California High-Speed Rail (HSR) Project

the California Department of Conservation may make a program of purchasing conservation easements more feasible.

Finally, business losses by Delta farmers and agricultural businesses should be eligible for compensation through a business interruption fund, as described under the land use section above. A contribution to the Delta Investment Fund could help compensate for other economic losses to the Delta's agricultural economy.

LEVEES AND DRAINAGE

Protect levees and drainage facilities. The current Delta is a creation of its network of levees and drainage works. Any threat to them risks lives, property, agriculture, legacy communities, recreational destinations, important wildlife habitats, and the region's unique culture. The facilities already face threats to their stability and durability. This project should not add to those perils, but rather should reduce them where feasible. Such an outcome would further the project's objective of anticipating rising sea levels and reducing the risk of levee breaches that may degrade the water quality and threaten water supplies.

Assess and mitigate impacts to levees and drainage facilities using up-to-date information. Impacts to levees and drains cannot be assessed without up-to-date information about their locations and condition. This information should be gathered along the alternative project corridors now, including affected reclamation districts' five-year plans, background information from the Delta Plan's levee investment strategy, and conversations with levee engineers from affected districts. Pursuant to Water Code section 85089, DWR or the DCA should reimburse reclamation districts for any costs they incur assisting DWR in gathering this information. The Central Valley Flood Protection Board's (CVFPB) permit fee schedule may offer insights into appropriate rates of reimbursement for this consultation.

The EIR should assess impacts to levees for the full range of activities from project construction and operation. Construction activities that should be considered include levee encroachments, dewatering, grading, tunneling, tunnel material handling and storage, construction-related traffic on levee-top roads, project-related habitat restoration, and other activities. Operational impacts to consider include filling and draining project forebays, changes in Delta flows, especially those that could affect siphons, seepage, or drainage at affected reclamation districts, construction-related structures such as pilings and in-channel coffer dams, and the effect of project fills and embankments on flood flows in the event of a breach of nearby levees.

Mitigate adverse effects to levees and drainage networks. Recommendations from Delta reclamation district engineers should be a primary source of mitigation measures

to reduce or compensate for project-related risks to Delta levees or drains. At a minimum, these measures should conform with Delta Plan MMRP 5-1 through 5-5, 11-3, 11-7, and 11-9. Other potential mitigation measures may be outlined in the CVFPB's encroachment regulations concerning levees, retaining walls, miscellaneous encroachments, and pipelines, conduits, and utility lines, as they may apply.

Move tunnel material suitable for levee improvements to willing reclamation districts. As noted under the agriculture section above, DWR's soil boring investigations should allow classification of the potential reuses of excavated material. If feasible, excavated tunnel material should be handled and stored in ways that segregate materials of different quality so they can more easily be reused. Material suitable for reuse to maintain or improve levees should be hauled to those Delta reclamation districts that want it. This would further the project's objective of anticipating rising sea levels and reducing the risk of levee breaches that may interrupt or degrade the quality of exported water, while diminishing damage to farmland and possibly modestly reducing the imbalance between the project's damage in the Delta and the benefits it provides there. Costs of hauling tunnel material to reuse sites should be borne by the project, rather than by those who may reuse it, as this mitigation measure is properly a cost of the project's contractors pursuant to Water Code section 85089.

Make Delta reclamation districts whole. DWR and the DCA should be held to the same standard that DWR and the CVFPB apply when encroachments affect their levees and drainage works. For example, DWR/DCA should pay local reclamation districts an inspection fee to cover inspection costs, including staff and/or consultant time and expenses, for any inspections before, during, post-construction, and regularly thereafter as deemed necessary by the reclamation district. DWR/DCA should agree that, in the event that levee or bank erosion injurious to a reclamation district's facilities occurs at or adjacent to the project, it will repair the eroded area and propose measures, to be approved by the reclamation district, to prevent further erosion. DWR/DCA should be responsible for the repair of any damages to levees, channel, banks, drains, siphons, or other reclamation district facilities due to construction, operation, or maintenance of the proposed project. DWR/DCA should agree to defend, indemnify, and hold harmless affected reclamation districts against all claims, liabilities, charges, losses, expenses, and costs (including their attorneys' fees) that may arise from the project. If any claim of liability is made against a reclamation district, DWR/DCA should defend and hold them harmless from any claim.

RECREATION

Recreation in the Delta must be protected and improved. The Delta is a "dreamland for boaters, birders, and outdoor enthusiasts", according to the Visit California, the State's tourism promotion organization. Its waterways, historic villages, nature areas, wineries,

and food draw millions of visitors annually, and support a recreation and tourism economy that provides 3,000 jobs and \$275 million in economic activity in the Delta counties – second only to agriculture as the key economic sector in the Delta’s primary zone. Its diversity of recreation is available at a wide range of price points, serving local anglers who slip down a levee trail to fish on the way home from work, boaters with dockside homes, or international travelers.

As an element of the SWP, the project has a responsibility to protect and improve these recreation assets, both in areas along the project’s right-of-way suitable for multiple use and in habitat areas that may be restored to mitigate this project’s adverse effects. State law authorizing the SWP, in its Davis-Dolwig Act, provides that recreation is to be among the purposes of state water projects and that facilities for recreation should be ready and available for public use when each state water project having a potential for such use is completed. Public facilities for outdoor recreation activities including picnicking, fishing, water sports, boating, and sightseeing, and the associated facilities such as picnic areas, parking areas, viewpoints, boat launching ramps, water and sanitary facilities, and any others necessary to make project areas available for use by the public are to be an element of any plan for SWP facilities. Plans for recreation are to be developed during DWR’s project formulation activities through full and close consultation with local agencies, DFW, and the Department of Parks and Recreation (Water Code sections 1190-1191). When new recreation facilities would mitigate this conveyance project’s adverse effects on the environment, their cost is the responsibility of the SWP’s contractors (Water Code section 85089).

Previous conveyance proposals and associated environmental review neglected to address this responsibility. This project and its EIR should not. It is one way the project could provide some few benefits within the Delta that can begin to balance, if only partly, the harm it will do in the region.

Assess and mitigate recreation impacts using up-to-date information. The project as proposed, including its construction-related traffic, barge installations, noise, and cultural and aesthetic impacts would significantly damage key Delta visitor attractions. The magnitude of this damage cannot be estimated, nor adequate mitigation proposed in the absence of up-to-date and accurate information about recreation use in those areas. The Commission has information as we update our ESP, especially about recreation facilities and Delta-wide recreation use, that can be made available. But new surveys are needed to gather up-to-date data on recreation in areas affected by the project, just as wildlife or fish would be surveyed in a critical habitat to be damaged by the project. These areas include:

- Legacy communities. In Hood, Clarksburg, Courtland, Locke and Walnut Grove, information about visitor use for food, wine, boating, and heritage tourism should be

gathered through surveys of visitors to restaurants, wineries, museums, and historic districts.

- Recreational boating and fishing. As proposed, the project would adversely affect very popular boating and angling areas, including the Lost Slough-Snodgrass Slough-Delta Meadows anchorages and marina complexes at Walnut Grove and New Hope Landing, the Mokelumne River south toward the confluence with the San Joaquin River, including the anchorages at Sycamore Slough and the nearby Tower Park Marina, and in the south Delta, Bullfrog Marina and anchorages at Mildred Island and Horseshoe Bend. These areas are critical to recreational boating and angling, just as other areas are for fish and wildlife, and deserve an equivalent level of attention as the EIR is developed.

Delta-wide information on recreational boating has recently been gathered by DBW, but its report does not detail areas of special use by Delta boaters. The *Sacramento River Boating Guide* by Bill Corp, *Franko's Map of the California Delta*, Visit the Delta's *Heart of California* map, and Hal Schell's book, *Dawdling on the Delta* have useful information on popular local boating and fishing areas that are along the project route. We recommend that DWR augment these reports by gathering current information in two ways. First, we suggest that aerial photographic surveys of boater use be undertaken on both weekdays and weekends during each Delta boating and fishing season so that photointerpretation can be used to identify locations and quantity of these activities. Such approaches are common on other waterways and in waterfowl surveys. Second, we encourage you to meet directly with marina operators in and near the project area to obtain their information about levels of boating use and popular areas and activities among their customers. The SEC process has recently included comments from participants about areas rarely mentioned by outsiders but beloved by locals, such as the "bedrooms."

- Driving for pleasure. This is another popular recreation for Delta visitors that would be harmed by project-related disturbance and traffic congestion. The Commission's ESP identifies "right-of-way" activities as among the most popular in the Delta. Survey research could be used to quantify the level of this use as well as popular routes.
- Wildlife viewing. USFWS and The Nature Conservancy should be contacted for estimates of visitation at Stone Lakes NWR and Staten Island.

As with other topics we have discussed, we raise these issues at this early scoping stage because there is enough time to gather this information now as the EIR is drafted. To do otherwise would not be using the best available science to assess impacts on activities that are so important to the Delta's economy and culture.

Avoid or mitigate recreation impacts now. Avoiding or reducing noise, construction-related disturbance and traffic congestion, barge traffic that hinders recreational boating, and aesthetic disturbances around important recreation destinations and recreational travel routes is essential. Because recreation is such a vital element of the Delta's resources, measures to avoid or mitigate adverse effects should be described now, while the project is being formulated, as the Davis-Dolwig Act requires, rather than being deferred until after the project has been approved, as was proposed by the BDCP/WaterFix EIR. Recreational operators affected by the project, whether public agencies or private visitor-serving facilities, as well as organizations representing boaters, bicyclists, and other visitors, should be involved early in devising these measures. At a minimum, these measures should comply with the Delta Plan MMRP 18-1 through 18-3. Visitor-serving businesses adversely affected by the project should be eligible for assistance through a business interruption fund, as described under the land use section.

Special note should be taken of the Delta Plan MMRP's provision that where impacts to existing recreation facilities are unavoidable, lead agencies must compensate for impacts through *mitigation, restoration, or preservation off-site or creation of additional permanent new replacement facilities* (emphasis added). Such mitigation should be capable of fully offsetting the project's damage to recreational uses and areas, as would be expected of habitat restoration to offset lost wetlands, separate from and in addition to upgrades or repair of existing recreation areas, rather than unspecific assistance to unidentified future projects, as was proposed in the BDCP/WaterFix EIR.

The process of consultation recommended above should be employed to identify potential mitigation measures, but we suggest three potential actions as examples that could be considered to compensate for otherwise unavoidable damage:

- (1) Develop a boating trail and boat-in recreation facilities, including angling, waterfowl hunting, and boat-in day and overnight facilities, at the Cache Slough-Lookout Slough-Liberty Island-Prospect Island habitat restoration complex, to be managed out of local marinas or resorts or new facilities to be developed in Rio Vista, to compensate for lost recreational boating routes and anchorages on the Mokelumne River and its tributaries.
- (2) Cooperate with the East Bay Regional Park District to improve its property on Palm Tract adjoining Orwood Resort, linked to a boating trail extending north to Rock Slough, down Old River and its connecting sloughs to the Dutch Slough park and marsh restoration site, Big Break, and Antioch's marinas, to offset damage to south Delta recreation uses;
- (3) Develop walking tours of Locke and Walnut Grove, including pedestrian improvements to link the communities across the old Sacramento Southern right-of-way

at the Delta Cross Channel, interpretive materials, fishing access at the Cross Channel, connected to a bicycle path along the old Sacramento Southern right-of-way extending north to Hood or beyond, to compensate for damage to recreation at Sacramento River legacy communities.

None of these measures may ultimately be sufficient, desirable or feasible. They are offered only to illustrate the scale of compensatory mitigation that may be needed to offset the project's adverse effects on Delta recreation.

CULTURAL RESOURCES

The Delta is culturally significant. In designating the Delta as a national heritage area, Congress concluded that the area's historic, cultural, and natural resources combine to form a cohesive, nationally important landscape. In testimony endorsing the national heritage area's designation, the National Park Service's associate director for cultural resources called the Delta "a hidden gem located at a key geographic and historic crossroads of our country. It is a land of ethnic diversity, innovation, industry, enduring history, and both fragile and robust physical features". Our own exploration of the Delta's cultural significance emphasizes it as an exemplar of the American experience in nature and its multicultural immigrants' pursuit of the American dream, free from the restrictions of more traditional societies, where the good life is possible. These cultural values must be respected.

The Delta comprises a significant cultural landscape. The Delta cannot be reduced to a list of historic buildings and archaeological sites. As defined by the National Park Service, a cultural landscape is a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibits other cultural or aesthetic values. The Delta is a landscape that has evolved through use by the people whose activities or occupancy shaped that landscape, which the Park Service calls a "historic vernacular landscape". Examples provided by the National Park Service fit the Delta areas affected by the project: rural villages; agricultural landscapes such as farms and ranches, including landscapes with a total absence of buildings, and landscapes encompassing linear resources including transportation systems, such as the Sacramento River or the River Road. A district of historic farms along a river may be an example of a significant cultural landscape, the Park Service notes, but the presence of buildings is not required. Scenic highways such as Highway 160 are another example of a culturally significant landscape.

The Delta, including lands bordering the Sacramento River from Freeport through Sherman Island, adjoining legacy communities, neighboring islands and distributaries of the river, Highway 160, and the rural islands of the south Delta are all integral elements

of this important cultural landscape. Its levees and drainage works are reminders of the region's post-Gold Rush reclamation and the efforts of California Debris Commission, an early landmark in national flood control. Its vineyards and orchards today occupy much the same lands as they did 75 years ago. Many of its multi-generational farms are operated from century-old farmsteads. The packing sheds and remnant wharves lining the river developed to transport these farms' products to market. The legacy communities, from Freeport to Isleton, several of which are listed historic districts or contain listed historic buildings, grew to serve the region's commerce and became home to Asian and European immigrants who worked in Delta farms and agricultural businesses. Asian New Year celebrations, Portuguese *festas*, Juneteenth commemorations, and other ethnic festivals, as well as Courtland's Pear Fair and other celebrations of agriculture, demonstrate these cultures' continuing vitality. Railroads and later Highway 160 and other roads, with their assortment of historic swing and lift bridges, extended into the region with the advance of trains, cars and trucks, bringing anglers, boaters, and other recreationists.

The resulting Delta landscape, observed landscape architect Frederick Law Olmsted Jr. in his 1928 report to California's State Park Commission, "commanded delightful views of the river and its margins and of miles of beautiful orchards and farming lands outside of and below the levees....Along the course of this great system of waterways, levees, and roads there are numerous delightful spots...and the route as a whole is in effect, even at present, a river parkway on a vast scale, of great landscape beauty, and enjoyed by thousands of people". This is still an apt description nearly a century later. In recognition of these charms, Highway 160 and Sacramento County's River Road are designated as a State Scenic Highway. Local routes and corridor have been similarly recognized by Sacramento, San Joaquin, and Contra Costa counties.

Given these historic landscape resources, whose importance has been recognized by Congress, U.S. Department of Interior, National Park Service, State of California and local governments, the EIR should protect the Delta as the culturally significant landscape that it is, rather than limiting its impact assessment to only archaeological sites and individual historic structures and districts. Measures to avoid or reduce damage to these resources should be consistent with the Secretary of the Interior's Guidelines for Preserving Cultural Landscapes.

Strengthen protection of historic and archaeological sites. In addition to protecting cultural landscape resources consistent with the Secretary of the Interior's Guidelines, measures to avoid or reduce damage to historic building and archaeological sites should be strengthened from those proposed in the BDCP/WaterFix EIR.

Representatives of California native Indian tribes should be consulted regarding protection of archaeological sites as should local Delta historical societies, museums, Locke Foundation, historians, and community groups when historic resources are

affected. Dr. Robert Benedetti's testimony in Sacramento County's appeal of the CA WaterFix Delta Plan consistency certification should also be reviewed to identify historic resources at risk from tunnel constriction. All measures included in the Delta Plan MMRP 10-1 through 10-4 should be used, as applicable.

If historic buildings must be acquired, they should be adequately protected, including stabilizing walls and windows, controlling mold and other damage throughout the construction period, and then rehabilitated consistent with the Secretary of the Interior's Standards for Rehabilitation for reuse upon the project's completion. A useful measure from the mitigation plan for San Francisco's central subway is monitoring vibration of historic structures adjacent to tunnels to ensure that historic properties do not sustain damage during construction. Contract documents should specify maximum peak vibration levels. If at any time the construction activity exceeds this level, that activity must immediately be halted until an alternative construction method can be identified that results in lower vibration levels.

Inadvertent damage to historic properties or historical resources must be repaired, consistent with a written general protocol for inadvertent damage to historic architectural resources and a listing of specific properties that should be the subject of an individual plan because of their immediate proximity to the project, as provided in the High Speed Rail Authority's mitigation plan. Inadvertent damage from the project to any of the historic properties or historical resources near construction activities should be repaired in accordance with the Secretary of the Interior's Standards for Rehabilitation. Another useful measure from the High Speed Rail Authority's EIR is providing interpretive information regarding specific historic properties or historical resources affected by the project, including brochures, videos, websites, study guides, teaching guides, articles or reports for general publication, commemorative plaques, or exhibits.

AESTHETICS

The Delta's landscape is integral to its qualities as a place. The Delta is characterized by many diverse and often contradictory visual attributes: it is a vast flat sweep of land and water, yet with its willow and cottonwood-lined levees, farm buildings and historic communities, water towers and, on its horizons, wind turbines and Mount Diablo, it is not a featureless landscape. The aesthetic appeal of the Delta is as varied as the character of the farmed landscape, the waterways and marinas, the towns and communities surrounding favorite recreation areas.

County general plans identify especially prized scenic routes and corridors near the project's proposed footprint:

- Sacramento County: Highway 160, a State scenic highway; River Road, also a State scenic highway; Isleton Road; the Sacramento River, and other Delta roads atop levees bordering Delta sloughs.

- San Joaquin County: Interstate 5 north of Stockton; Eight Mile Road on Kings Island and Bishop Tract; West Lower Jones Road and Zuckerman Road surrounding McDonald Island; Bacon Island Road along Middle River; and Highway 4 west of Bacon Island Road.
- Contra Costa County: Highway 4 west of Old River; and the Byron Road.

In recent surveys of residents and visitors, a common theme volunteered was that coming to the region is like stepping back in time, and how extraordinary that such a place could exist within an hour or two of the Bay and Sacramento metropolitan areas. One of the last lowland areas of the state to be tamed and settled, the Delta continues to be relatively hidden and remote. Few roads traverse it, most of its bridges are historic structures, and a few crossings are still accomplished by ferry. A great quiet and a slow pace rule. These qualities provide a baseline that should be preserved by minimizing the project's alteration of Delta landforms.

The Delta's landscape ranks high among the qualities that make the Delta "home" to residents and frequent visitors. It is often observed that people come to the Delta to get away from city life. They can do so with relative ease because the Delta Protection Act and county general plans have ensured that urban-type development stays for the most part at the outer edges in the secondary zone. These aesthetic qualities should be protected as carefully as key attributes of wildlife and fish habitats. The visual resources of the Delta are literally the outward manifestation of the existing land uses. Thus, all adverse project impacts affecting land use will play out visually and with a compounding, profound effect.

The Project's Decade and a Half of Landscape Alteration Brings Radical, Not Evolving Change. The principal elements of the conveyance project are mainly constructed in the primary zone, which otherwise receives the highest level of protection from changes that would radically alter its landscape, as described in the Land Use section. These principal elements include the two Sacramento River intakes, three or more tunnel boring machine (TBM) launch shafts along the tunnel's route, and roughly ten reception and maintenance shafts at various locations along the 40-mile alignment. Below are described some of the concerns related to each of the principal elements.

- Project intakes. The project intakes, regardless of configuration (Intakes 2 and 3 or 3 and 5), would permanently damage scenic resources viewed by boaters on the Sacramento River or motorists on Highway 160 and the River Road, designated State scenic highways, that pass through the communities of Clarksburg, Hood and Courtland. The visual impacts of the facilities including the intakes themselves, new haul roads, road widening and bridge modifications of Hood-Franklin Road, and interchange improvements (in the Intake 2 and 3 configuration, potentially an entirely new interchange at Lambert Road and I-5) would be significant and unavoidable.

- Launch Shaft Sites. At the launch sites, construction support complexes would be necessary with high-voltage power supply to operate the TBMs, sufficient area to dewater and stockpile tunnel material until it is moved offsite, and where concrete batch plants would be co-located. The launch sites are also where the 40-foot diameter concrete tunnel liner sections would be delivered by truck, train or barge, necessarily surrounding the sites with a web of transportation corridors.

Launch shaft sites would have a massive visual impact on the landscape. The visual blight would extend through the Stone Lakes NWR where widening Hood-Franklin Road is likely. Potential avoidance strategies to reduce traffic or other impacts to existing roads, such as constructing haul roads, would increase visual impacts. Mitigation measures, such as landscape and vegetation barriers, visitor centers or kiosks, interpretive signs, and viewpoints, could provide some relief but would not prevent the permanent alteration of this landscape by the project.

Barge landings and related dredging would degrade scenic waterways, such as Snodgrass Slough, the Meadows, and Sycamore Slough.

Some siting approaches that appear to be under consideration by the DCA such as the northerly launch shaft site at "Glanville" Tract (located in Granville Tract) push the impacts of the 290-acre "consolidation" facilities east towards and in that case beyond I-5, outside the boundary of the legal Delta. This would reduce local visual impact somewhat but construction of new haul roads and widening of Diersson Road would be required, as well as a conveyor system to carry tunnel material from the launch shaft across fields to the consolidation facilities between Diersson Road and Twin Cities Road.

For the Eastern Corridor alignment, a Lower Roberts Island launch shaft concept presented at the SEC meetings shows the massive launch shaft complex straddling Black Slough near Holt. This site includes a potential barge landing immediately upstream of Windmill Cove and new haul and access roads and a rail spur on the San Joaquin River banks opposite Buckley Cove Park, near the River Point Landing Marina, Buckley Cove boat launch and home to the Stockton Sailing Club and Delta Sculling Center. Boaters accessing the San Joaquin River from these locations and from Whiskey Slough marinas such as Tiki Lagoon and kayakers to destinations such as Mandeville Tip would all experience a highly altered and industrialized landscape that would be inconsistent with San Joaquin County-designated scenic corridors and roadways.

The Byron launch shaft site at Clifton Court Forebay pumping station would result in even greater impact on views from scenic Byron Road due to the landform alteration involved in constructing the proposed 750-acre surface area Southern Forebay. The walls of the proposed forebay would be constructed from some 5 million cubic yards of tunnel material. What cannot be used in immediate onsite construction at or near each of the launch sites would be stockpiled for eventual removal. The area required

for storage depends on several factors including the TBM speed, production of tunnel material, and height that the stockpile could be – or on how quickly it could be transported to other re-use locations such as in levee upgrades or subsidence remediation. Examples provided by the DCA in SEC presentations based on 10-foot high stockpiles would require 240 acres just for the stockpile at each launch shaft site. Clearly the visual impact and its effect on surrounding communities like Discovery Bay, Byron, Mountain House and Tracy will be massive and lasting.

- Reception and Maintenance Shafts. Based on presentations at the SEC meetings, the Sacramento River intakes would also be the site of reception shafts for the tunnel boring machines (TBMs), with maintenance shafts constructed at a range of intervals from two to five miles between the Launch Shaft and the reception shafts, depending on the final design. With construction and operation of the reception and maintenance shafts for either the central or eastern alignment, the visual impacts would mar the Delta legacy communities of Locke, Walnut Grove and potentially Thornton.

While reception shafts could and should be removed and their sites restored after construction is complete, as reported at SEC meetings some maintenance shafts could remain. To meet projected sea level rise impacts, these shafts would be constructed with concrete walls 30 to 50 feet high, likely rising higher than existing levees. The shafts would have lasting impacts on the landscape, and without careful planning and design could end up looking like oversized gopher mounds. Maintenance shafts for the Central Corridor alignment driving to or from a Bouldin Island Launch shaft would potentially impact views enjoyed by recreational boaters and by visitors to Tower Park Marina. Tranquil Staten Island fields that provide opportunities for viewing sandhill cranes may also be affected.

- Transportation. Finally, transportation logistics is a key consideration in the siting of the launch shafts. According to materials presented at the SEC meetings, for a 6,000 cubic feet per second (cfs) tunnel, deliveries of tunnel liner segments by truck could require 25 trips per day every 25 minutes for ten hours per day over 25 days. By rail car that could be reduced to 20 rail cars or 2000 ton barge, every 3 to 5 days. Throughout the construction period, the commotion of this level of trucking or railroad traffic would degrade the tranquil, scenic attributes of affected Delta landscapes.

Recommended Visual Impact Analysis Approach: Lessons Learned. The BDCP/ WaterFix EIR utilized an approach to visual analysis that combined the three most-accepted visual assessment methodologies used by Federal agencies including the Federal Highway Administration, Bureau of Land Management, and USDA Forest Service that have overlapping assessment principles. A qualitative analysis combined with a quantitative analysis of simulations was used together with narrative descriptions of how the visual environment would be altered. However, simulations could have been more meaningfully used to convey the effects of change on the landscape.

To complement the EIR's narrative, impacts should also be portrayed through simulations of scenic conditions both during and after construction from a variety of Delta resident and visitor perspectives. Views from recreational waterways, including portions of the Sacramento, Mokelumne, San Joaquin, Middle, and Old Rivers affected by construction and from Whiskey Slough should be portrayed. This analysis should also portray drivers' views from affected portions of Highway 160, River Road, and locally designated scenic routes and corridors.

DWR should work closely with the affected Delta communities to map and characterize the baseline visual landscape, drawing on existing community planning priorities and elements of the natural, historical and cultural experience to establish threshold visual quality objectives for the communities and for the natural and farmed landscapes. Such objectives should then be used to develop measures to minimize outright visual damage as well as the potential for incremental physical deterioration over the course of the construction timeframe. For example, during EIR development and continuing through the design phase, DWR or the DCA should work with the communities on the design of project features that will remain on the landscape, such as the potentially 30 – 50-foot high tunnel shafts. Like the CA High Speed Rail project, DWR and/or DCA could work with communities to develop aesthetic guidelines for project elements, both temporary and permanent, that provide contextual design responses to site-specific or unique conditions, or "context-sensitive solutions". Context sensitive solutions mean structural aesthetics must respond to local settings with concern for the human scale, building scale, and the vantage points from which the structures will be viewed.

Design principles should include the requirement that the structures enhance local environments and community context to the maximum extent feasible. Especially along Highway 160, the River Road, and local scenic routes and corridors, landscaping could be used to visually integrate project structures into the local context with plantings that recreate the natural or agricultural setting into which they are placed. The aesthetic design of project structures, in combination with landscape and urban design that serve the local community can create a positive contribution to the surrounding visual context and minimize the potential for physical deterioration. If tunnel material is suitable for reuse on areas that will be returned to farming, then the EIR should assess the feasibility of using it to gradually contour slopes surrounding the maintenance shafts, especially when highly visible from heavily travelled roads or locally designated scenic routes and corridors, to minimize abrupt discontinuities in the landform. Using tall crops, such as orchards, to shield maintenance shafts from view should also be considered where soils are suitable. High voltage power lines, batch plants, and other intrusions should be removed when construction is complete. Local government general plan policies that protect scenic routes and corridors also include provisions that suggest potential mitigation measures: maintaining agricultural land in farming use, sign controls, limiting roadway improvements to protect scenic corridors, placing riprap on levees no higher than the average annual high water, and maintaining natural roadside vegetation.

Where unavoidable visual impacts remain, the Delta Plan MMRP requires “compensatory mitigation for visual or aesthetic resources by providing improvements to areas of existing diminished scenic quality”. A potential example that should be examined with local communities could be a façade program to upgrade deteriorating storefronts or buildings in legacy communities or other visitor destinations affected by the project.

TRANSPORTATION/TRAFFIC

Transportation routes are lifelines. The key modes of transportation that move people and goods in the Delta are roads, water, and rail. Interstates 5, 80, and 580 provide major transportation and trucking routes skirting the Delta. The three major state highways in the Delta (State Routes 4, 12, and 160) are typically two lanes, sometimes built on top of levees. Originally meant for lower traffic volumes at moderate speeds, the state highways are now heavily used for regional trucking, recreational access, and commuting. More than 50 bridges, including approximately 30 drawbridges, span the navigable channels of the Delta. Regional rail traffic between the Bay Area and the Central Valley passes through the Delta, as do commuter rail services such as the Amtrak San Joaquin.

Two major ports lie in the Delta, the Ports of West Sacramento and Stockton, accessed by the Sacramento River and Stockton Deep Water Ship channels, respectively. The Sacramento channel is 30 feet in depth, and thus is a non-container port. The Stockton channel has a depth of 35 feet and can handle up to 55,000 ton ships fully loaded or up to 80,000 ton ships partially loaded. Several million tons of diversified products are shipped through the Delta each year. Primary cargos in the Port of West Sacramento are rice exports and cement imports. The port can also handle heavy machinery such as wind turbines, steel generators and transformers. The Port of Stockton handles raw and finished goods and has 7 million square feet of warehousing and facilities for handling liquid bulk and dry bulk commodities. According to the U.S. Army Corps of Engineers Waterborne Commerce Statistics Center (WCSC), a total of 898,044 tons of import/export cargo transited the Sacramento Deep Water Ship Channel in 2018. For the same period the Port of Stockton handled a total of 5.2 million tons of import/export cargo and reported a total of 252 ship calls. Both ports hope to expand in the future, which would result in an increase in ship and barge traffic through the Delta.

These transportation assets are essential to the region’s economic pillars – agriculture and recreation – to the quality of life of Delta residents, and the enjoyment of Delta visitors.

Involve Stakeholders. The Delta is not only a water hub for the state but also a vast multi-dimensional transportation web of freeways, state highways, county and local levee roads, waterways, ports, railways, and the private and public logistics systems that manage them. This web is so important to the larger regional economy that a multitude of stakeholders have a grip on one or more of the supporting threads –

county, state and federal agencies, local reclamation districts on whose levees some roads travel, and constituents in many industries all have an interest in Delta transportation and depend on this system to support the function of business, commerce and daily life.

To name but a few of these stakeholders, three different Caltrans districts maintain and plan for the Delta's transportation future, in cooperation with three different Councils of Governments (COGs) who represent Delta counties and municipalities in developing Regional Transportation Plans (RTPs) to recommend funding and prioritization of transportation projects and more recently sustainable communities planning. Some counties have transportation planning authorities in addition. The California Highway Patrol (CHP) also has three different districts responsible for highway safety in the Delta. The Delta Officers Intelligence Team (DOIT) convened by the U.S. Coast Guard Station – Rio Vista meets monthly with federal, state and local marine law enforcement, search and rescue agencies such as fire protection districts, and other interested agencies such as State Lands Commission and DBW to coordinate information relative to Delta marine safety and operations. Citizen organizations such as the Highway 12 Association attempt to coordinate with some of these authorities and publicize their activities and projects – especially when it comes to roadway maintenance and improvements.

Account for Pre-Existing Conditions. Traffic congestion and safety is widely acknowledged by all these players to be an ongoing issue in the Delta. Existing congestion on Highways 4, 12, and 160 already impairs travel within the Delta and beyond to the metropolitan areas of the East Bay, Stockton-Tracy, and Sacramento. Accidents are frequent, often fatal, and lead to related hazards such as fires or vehicles in the water. Some safety improvements have been implemented such as installation of "K-rail" in the median of State Route 12, but many more safety projects are a challenge due to the high traffic volumes affected, lack of right-of-way for traffic management, and other unique Delta conditions such as peat soil. Seasonally, safe movement of slow or over-size farm equipment from one location to another is risky. Aging bridges are frequently fully or partially closed for repair and maintenance and ferries may be taken offline, causing significant re-routing or delays of travel.

Rely On the Experts. Successfully avoiding or mitigating transportation impacts to an already over-taxed transportation environment will be difficult. Some transportation and circulation impacts will likely be significant and unavoidable. Addressing transportation impacts will require a construction transportation management system with flexibility and creativity. We urge DWR and/or the DCA to acknowledge the severity of the baseline condition and marshal the knowledge and resources of the local and state agencies that are the most familiar with Delta transportation challenges. Most if not all of

these have spent considerable time developing plans and programs to improve conditions for their citizens but may lack the resources to carry them out.

Start With Best Available Data and Science. We again encourage gathering the best available data and science at this early stage to support the analysis in the draft EIR. The land suitability analysis presented at the SEC meetings appears to be assembling some of the data needed to adequately analyze the project impacts. Identifying roads, rails, and barge-worthy waterways is a start. But the EIR must evaluate more than just the factors considered in design and construction planning.

The Commission is encouraged that DWR and the DCA have initiated new traffic counts in the past several months. To avoid repeating the mistakes of the BDCP/WaterFix EIR, additional information will be needed about (1) the operational status of ferries and movable bridges affected by project traffic (percentage of time when operations are limited by repairs or maintenance), (2) bridge clearance above water levels and existing channel depths and configurations at proposed barge routes under a range of water conditions (to assess their suitability for barge traffic and impact of barge travel on bridge operations and related highway congestion), and (3) recreational boat traffic on proposed barge routes to aid in assessing impacts to marine safety. Data from traffic studies currently being completed should be shared with local transportation agencies or on the state's Data Portal.

It will also be essential for the EIR analysis to start with a thorough database of Delta-wide transportation and circulation policies, plans and programs at all levels. We highlight here a few of the important data sources, obvious perhaps, but nevertheless noteworthy in the consistency of cross-jurisdictional priorities.

The county general plans identify what they can live with, and a survey of all of them quickly shows the high priority for the Delta that each of them sets on:

- Linking communities externally to regional, state, international and virtual destinations through safe and efficient transportation networks and high-speed communications infrastructure.
- Connecting communities internally through an efficient and safe system of roadways, bridges, transit, bikeways, and pedestrian trails and sidewalks. Facilitating the movement of goods by preserving and improving transportation corridors including road and rail.
- Community residents and farm equipment move together safely on well managed and maintained roads.
- Including specific transportation and circulation policies to preserve roadway levels of service (LOS) and ensure existing and future operations of important economic hubs. An example of this: Yolo County's policies protecting the Port of Sacramento and its integration with designated truck routes such as State Route (SR) 84 in the

transportation of agricultural products to and from the Clarksburg and Delta regions. Clarksburg Road from SR 84 to South River Road is a targeted trucking corridor for improvements to support agricultural transport.

- Ensuring gateway entry points for visitors to the Delta region seeking agri-tourism, eco-tourism, cultural and recreational experience opportunities.
- Encouraging multi-modal access to alternate transportation to alleviate roadway congestion and enhance the visitor experience.
- Including pedestrian walkways and bikeways on bridges or overpasses that are new or modified.
- Preserving agriculture and the agricultural economy.
- Envisioning strong and vibrant Delta communities whose economies are diverse and serve as a source of food and agricultural commodities; a destination for tourists; and a supply of high-tech and manufactured products.

Additional sources should include the current RTPs and other program documents of Sacramento Area COG (SACOG), San Joaquin COG (SJCOG), and Association of Bay Area Governments (ABAG), which represent the Delta counties and municipalities. Thresholds for traffic impacts should be developed using not only the most up-to-date methodology from the most recent edition of the Highway Capacity Manual but in close consultation with all three Caltrans districts with responsibility for Delta roads, bridges and ferries – Districts 3, 4 and 10. With the traffic count data that DWR is collecting, operational analysis should be completed to help evaluate alternative designs. Recent climate vulnerability assessments completed by the three Caltrans districts should also provide source material.

Account for the Project's Cumulative and Interrelated Impacts. As implied by the foregoing baseline description, either of the project alignments shown in the NOP would exacerbate a multitude of existing transportation challenges. SR 160, 12, and 4 and many county roads would be adversely impacted by increases in any type of traffic. For example, Hood-Franklin Road from Interstate 5 to SR 160 and Lambert Road from Herzog Road to Franklin Blvd are already operating at "Deficient" levels. Increased traffic on the roadways potentially to be used during construction of intakes or construction and operation of the potential Granville Tract launch shaft site, including Hood-Franklin Road, Lambert Road, Twin Cities Road and River Road, would adversely impact public safety in transit to Locke, Walnut Grove, and the Stone Lakes NWR.

At least two dozen bridges on the Sacramento, Mokelumne, and Middle rivers, and multiple sloughs would be affected by increased barge, rail and truck transit. New rail spurs or access and haul roads could also interfere with access to farmland. An adequate assessment of the project's impacts on transportation should integrate information on all these interrelated factors affecting congestion and traffic flows.

As suggested in the Land Use section, the EIR should tabulate the acreage and map areas where congestion to LOS D or worse impairs access to properties, including residences, commercial properties, schools and other important community resources.

Engage Others to Mitigate Complex Impacts More Effectively. We recommend a comprehensive approach to transportation impact mitigation, with targeted local avoidance and mitigation wherever feasible. Mitigating transportation impacts will likely be complex, requiring extensive coordination with other entities, each of which has their own pre-existing obligations and responsibilities. These entities range from the school district transportation coordinator to Caltrans, from the CHP and other emergency responders to the residential trash pick-up contractors, from county public works departments to bridge operators.

To streamline coordination, DWR and the DCA should consult with SACOG, SJCOG, and ABAG, with the three Caltrans Delta districts (3,4 and 10) and with Caltrans headquarters. Collectively the COGs and Caltrans comprise the transportation managers of the “mega-region” and have the experience to provide practical input on avoidance and mitigation. Caltrans and some of the county agencies may also have encroachment or other permit authority for certain aspects of the project, so their early input would be particularly valuable. DWR should anticipate reimbursing COGs and local government public works agencies for their time spent on this coordination.

We suggest comprehensive programmatic mitigation as well as more specific localized mitigation.

- Work with county public works or transportation agencies, SACOG, SJCOG and ABAG, and Caltrans to:
 - a. Prepare traffic mitigation plans with detour maps for road closures or where construction-related traffic is likely to congest key roads. Maps should be developed and available for public comment in the draft EIR, similar to those in the San Francisco Municipal Transportation Agency (SFMTA)’s EIR for its Central Subway project through Chinatown⁴.
 - b. For priority project transportation routes, consider upgrading unreliable transportation features, such as bridges and ferries, affected by project-related traffic prior to project initiation.
 - c. Where water diversion structures are under construction, designate, sign, and improve as necessary an alternate route for recreational traffic that avoids Highway 160 sections by using parallel sections of River Road on the river’s west bank.
 - d. As in the LA Metro Westside Subway Extension Project, establish staging areas and truck haul headways to avoid platoons of trucks upon local roads and

⁴ <https://www.sfmta.com/reports/central-subway-final-seisiseir>

- freeways. Establish a vehicle dispatching system at construction areas and offsite locations to monitor and address truck headway issues as they arise.
- e. Restricting nighttime truck haul operations/times for each route, as was done for the LA Metro Westside Subway Extension Project. Truck haul operations should be avoided during peak morning and evening hours, during noise restriction hours, special events, and public holidays.
 - f. Consider transit alternatives for construction workers, including park and ride lots in Elk Grove, Stockton, Tracy, Fairfield, or other locations and dedicated bus service to project construction sites.
- To communicate about detours, highway congestion, barge operations, and other project-related traffic conditions, utilize all appropriate methods of communication including but not limited to roadway signs, 511-type notices and alerts, websites, and hotlines.
 - Establish a transportation/construction coordination office for the life of the project, as in the LA Metro Westside Subway Extension Project, to oversee mitigation measures' implementation, coordinate deliveries and barge movements, monitor traffic conditions, advise motorists and those making deliveries about detours and congested areas, and monitor and enforce delivery times and routes. The office should coordinate its transportation actions with roadway projects of other agencies. It should also coordinate with police, sheriff, fire, and water safety personnel regarding emergency access and response times.
 - To provide a mechanism for adaptive management of transportation impacts and mitigation measures, the coordination office should analyze traffic conditions throughout the construction period to determine the need for additional traffic controls. It should also work with neighbors to address concerns regarding construction traffic, including a mechanism for the public to report anomalies, changes, un-planned work, etc.
 - When traffic impacts cause loss of business for local businesses, use the Local Business Interruption Fund proposed under the Land Use section. Such programs have been used for the LA Metro and other major public works projects.
 - To mitigate the project's transportation or greenhouse gas emissions (GHG), consider helping local transportation agencies to implement local programs or projects in the Delta that reduce congestion and locally-generated vehicle miles traveled.

NOISE

Reduce project-related noise. The Delta is quiet. Its loudest sounds are often a dog barking at a nearby home or farm machinery in a neighboring vineyard or farm. For this reason, noise can be one of the most disruptive impacts of the proposed project. In addition to its direct effects, it also contributes to changes in land use, disturbs recreation, and has other secondary impacts. Every approach to reducing it should be employed.

Thresholds of significance used to assess noise impacts should reflect the Delta’s existing conditions and the land use in areas where noise effects would occur. One threshold would be noise that exceeds the background sound level by at least ten (10) dBA during daytime hours (seven a.m. to ten p.m.) and by at least five dBA during nighttime hours (ten p.m. to seven a.m.). Noise standards of applicable local government general plans and ordinances should provide another set of thresholds, as these reflect local land use, residents’ expectations and other local conditions. Where local standards are unavailable, or where there are special uses, such as parks, nature areas, recreation sites, schools, libraries, churches, or other especially sensitive uses, these federal guidelines should be considered.

Ldn < 55 dB	Outdoor activity interference and annoyance
Leq (24) < 55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
Ldn < 45 dB	Outdoor areas where people spend limited amounts of time, such as schoolyards, playgrounds, etc. Indoor activity interference and annoyance
Leq(24) < 45 dB	Indoor residential areas. Other indoor areas with human activities such as schools, etc.
Leq(24) < 70 dB	Hearing loss All areas.
Source: U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Section 4, Identified Levels of Environmental Noise In Defined Areas. March 1974. Leq(24) = the sound energy averaged over a 24-hour period. Ldn = the Leq with a 10 dB nighttime penalty	

Because these thresholds are, in part, derived from current noise levels, it is important that the EIR be based on recent monitoring of noise conditions in affected areas, rather than textbook estimates as were used in the BDCP/WaterFix EIR. The schedule for the EIR’s preparation should provide time for this monitoring, as would be provided for monitoring wildlife and fish if recent data were unavailable. To do otherwise would not reflect the best available science.

Noise impacts should be calculated for all construction activities, including construction-related traffic, and for project operations. These calculations should be based on the equipment proposed to be used in project construction, such as types of piles and pile drivers. To help public understanding of noise impacts, areas where cumulative project-related noise would exceed any of these thresholds, as applicable, should be identified

as adversely affected. Individual structures adversely affected by this noise, as well as lands affected, characterized by land use, should be identified and mapped, so that the number of homes and businesses, and the acres of land harmed can be reported. When especially sensitive uses, such as nature areas, recreation sites, schools, day care facilities, libraries, or churches would be adversely affected, they should be named. Information about construction staging should be used to indicate the duration of these noise effects.

Do not defer noise mitigation. Plans to mitigate noise impacts should be proposed now, not deferred until after the project is approved, as was proposed in the BDCP/WaterFix EIR. To avoid noise that exceeds significance thresholds, these plans should deploy a full menu of measures, such as those cataloged by the Federal Highway Administration (https://www.fhwa.dot.gov/ENVIRONMENT/noise/construction_noise/handbook/handbook07.cfm). They should describe equipment that will be used to reduce noise and vibration, such as pressed in pile installations, vibratory pile drivers, or University of Washington quiet piles. Residences, businesses, and schools that will be exposed to excessive noise should be eligible for funding from DWR/DCA to install sound insulation by replacing doors and windows, as well as adding insulation and ventilation systems where necessary, so that the interior noise level is reduced to 45 dB and achieves at least a 5 dB reduction from previous noise thresholds, as Los Angeles residents are offered under the LAX Master Plan.

Where noise cannot be reduced to acceptable levels, a voluntary acquisition program, plus relocation assistance should be offered to both owners and tenants in compliance with the Uniform Relocation Act.

At a minimum, these measures must comply with the Delta Plan's MMRP measures 15-1 through 15-3. Local agencies, community members, and affected residents and businesses should be involved in developing these measures. Because construction-related traffic strongly influences noise impacts, these measures should be coordinated with plans to manage construction-related traffic.

ENVIRONMENTAL JUSTICE

Promote environmental justice in the Delta. The Delta's multiracial population is often at as much risk as the fish who swim past their communities. Too many residents and workers have low incomes. To reach jobs and conduct other daily activities, many rely on Delta roads that will be impacted by project-related congestion. Others rely on water-dependent farms and tourism that the project will harm. Those who live or work in Hood, Clarksburg, Courtland, Locke, or Walnut Grove may have their lives disrupted by noise, traffic, and other disturbances for years by a project that benefits only others far away.

All suffer the stress of decades of State water and ecosystem planning efforts that threaten to harm Delta resources and upend its way of life.

The ESP reported that the age and household composition of the Delta's population is younger and with larger families than is California as a whole. Over a quarter are children younger than 18 years old. In contrast, the population of the primary zone is composed primarily of older people without children, living in smaller households. Most Delta residents describe themselves as white or Hispanic, with the next largest ethnic groups being Asian, other races, and African American or black. About one-third describe themselves as Hispanic. Areas with concentrations of lower income residents include Stockton, Walnut Grove, Locke, Courtland, Clarksburg, and Hood.

Government Code section 11135(a) provides that no person in California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by any state agency, is funded directly by the state, or receives any financial assistance from the state. This provision requires agencies to consider fairness in the distribution of environmental benefits and burdens, so that they (a) foster equal access to a clean environment and public health benefits; and (b) do not cause unmitigated concentration of polluting activities near low income, minority, or other at-risk communities, such as those in the Delta affected by this project. Provisions of CEQA and its guidelines, including CEQA Guidelines § 15064(e), require that lead agencies consider how the environmental and public health burdens of a project might specially affect these communities.

The BDCP/WaterFix EIR did not include a section addressing how the project considers environmental justice in the Delta. This EIR should, including updated analysis of demographics, income levels, and other protected characteristics of communities that the project impacts. Disruptions in community character, lost housing, noise, lost recreation opportunities, traffic that impedes travel to employment, damage to cultural resources, or other impacts that cause disproportional impacts on children, the aged, racial minorities, lower-income or other protected populations, should be highlighted,

Mitigate environmental justice impacts. Measures should be proposed to avoid, reduce, or compensate for disproportionate impacts. The best way to do so would be to adopt the Commission's recommended alternative for continued through-Delta conveyance rather than building an isolated tunnel. Another way is to carefully mitigate community disruption, noise, traffic congestion, and damage to agriculture, housing, recreation, and cultural resources, as described in our comments on those issues. Other feasible measures could provide some project-related benefits for Delta residents. Some could

be adapted from those adopted to protect southern Californians harmed by the LAX Master Plan.

1. Create and utilize existing resource centers to assist historically under-represented and at-risk Delta residents to find construction and other substantive jobs with the project during both its construction and operation. Also, create a community database of project-related job opportunities by coordinating data gathering, outreach, and counseling through the following:
 - Research and assess existing specialties and current capabilities of existing workforce to assist with targeted training and outreach efforts.
 - Develop and maintain a complete data base of minority contractors
 - Produce a data base of potential jobs and specialties needed to assist in targeted training and outreach efforts.
 - Produce a data base of potential jobs and specialties needed and disseminate the information through the communities affected and to minority business enterprises
 - Commit to hiring Delta-area residents to ensure that there will be benefit to the local population.
2. Include community participation, including a diverse group of residents, stakeholders, environmental scientists, and community leaders, in monitoring the implementation of the project's MMRP, including regular meetings, to ensure agency compliance and accountability.
3. Work with local school districts to provide educational and trade training for project-related careers, targeting students in affected communities to provide them with increased career opportunities in water management, engineering, and environmental sciences.
4. Work with local school districts to offer curricula about water, engineering, agriculture, environmental sciences, and Delta history and culture at elementary schools, middle schools, and colleges of affected communities.

Finally, other local, project-related benefits could be provided by contributing funds to the Delta Investment Fund (PRC section 29778.5) to invest in public facilities, expand and implement the Commission's Delta Community Action Plan project, or support agricultural, cultural, recreational, or tourism programs and projects.



Delta Stewardship Council

A CALIFORNIA STATE AGENCY

October 16, 2020

Mr. Zachary Simmons
U.S. Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922

Sent via email: Zachary.M.Simmons@usace.army.mil

RE: Comments on Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

Dear Zachary Simmons:

Thank you for the opportunity to review and comment on the Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for construction of the Proposed Delta Conveyance Project (Delta Conveyance Project or project). The NOI states that the EIS will analyze construction of the project, as proposed by the project proponent or applicant, the California Department of Water Resources (DWR). Project construction would include new conveyance facilities in the Sacramento-San Joaquin Delta, including intake facilities on the Sacramento River, tunnel reaches and tunnel shafts, and a southern Forebay that would connect to existing State Water Project infrastructure. Because the proposed action would alter Federal levees and cross under a federal navigation project, permission from the U.S. Army Corps of Engineers (USACE) is required under Section 14 of the Rivers and Harbors Act (RHA) (33 U.S.C. 408) (Section 408). In addition, the proposed work in navigable waters and discharge of dredge or fill material into waters of the U.S. requires authorization from USACE under Section 10 of the RHA (33 U.S.C. 403) and Section 404 of the Clean Water Act (33 U.S.C. 1344).

The Delta Stewardship Council (Council) previously commented on DWR's Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the project. The Council's April 17, 2020 comment letter on DWR's NOP is provided as Attachment 1 to this letter.¹ We are providing comments to USACE to highlight areas of interest to the Council. These

¹ The Council's comment letter on the Delta Conveyance Project NOP is also available online at <https://deltacouncil.ca.gov/pdf/council-meeting/outgoing-correspondence/2020-04-17-conveyance-notice-of-preparation-comment-letter.pdf>.

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comments are provided primarily to identify areas of clarification and to encourage close coordination between USACE and DWR so that the USACE's EIS and DWR's EIR appropriately, consistently, and fully assess potential impacts.

The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009, codified in Division 35 of the California Water Code, sections 85000-85350 (Delta Reform Act). The Delta Reform Act charges the Council with furthering California's coequal goals of providing a more reliable water supply and protecting, restoring and enhancing the Sacramento-San Joaquin River Delta (Delta) ecosystem. (Wat. Code, § 85054.) The Delta Reform Act further states that the coequal goals are to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. The Council is charged with furthering California's coequal goals for the Delta through the adoption and implementation of the Delta Plan. (Wat. Code, § 85300.)

Pursuant to the Delta Reform Act, the Council has adopted the Delta Plan, a comprehensive long-term management plan for the Delta and Suisun Marsh that furthers the coequal goals. The Delta Plan contains regulatory policies, which are set forth in California Code of Regulations, Title 23, sections 5001-5015. A state or local agency that proposes to undertake a covered action is required to prepare a written Certification of Consistency with detailed findings as to whether the covered action is consistent with the Delta Plan and submit that certification to the Council prior to implementation of the project. (Wat. Code, § 85225.) As described in the Council's April 17, 2020 NOP comment letter to DWR (see Attachment 1), the proposed project appears to be a covered action and the Council urges close coordination between USACE and DWR.

Comments Regarding EIS Scope and Crosscutting Topic Areas

The Council provides the following comments related to the EIS scope, potential relationships to DWR's EIR, and topic areas that may require special attention or clarification.

Scope of Analysis

According to the NOI, the EIS will analyze the environmental effects of construction on the aquatic environment and all other impacts that fall within the USACE jurisdiction.

Potentially significant issues to be analyzed in depth include impacts to waters of the United States (including wetlands), the federal flood control project, and air quality. Other impacts include biological resources, special status species, hydrology and water quality, land use, navigation, water supply, aesthetics, recreation, and socioeconomic effects. The NOI notes that:

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"USACE's jurisdiction is limited to construction activities resulting in the discharge of dredge or fill material within waters of the U.S., work or structures within navigable waters, and modifications to the federal levees and navigation projects. The scope of the USACE NEPA review for operations of the new facilities is limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall State Water Project (SWP) and water deliveries."²

USACE notes that the project elements anticipated to require a permit from USACE include:

Intakes:

- a. Intake structures and facilities
- b. Setback levees
- c. Two tunnel shafts
- d. Temporary construction areas

Tunnel:

- a. 13 Crossings of navigable waters
- b. Eight tunnel shafts
- c. Access roads and improvements
- d. Staging areas
- e. Tunnel material storage areas
- f. Barge landing(s)

Southern Forebay:

- a. A new southern forebay at Byron Tract
- b. Three tunnel shafts
- c. One crossing of a navigable water
- d. Pumping plant
- e. Outlet and control structure
- f. Tunnel material storage area
- g. Temporary construction areas

These project elements are distributed across the Delta. The size, extent, and nature of the proposed infrastructure mean that there is potential for secondary and cumulative impacts beyond those associated with a single location or smaller project. According to the Map of Waters of the U.S. (verified by USACE on June 18, 2020), the EIS will include a study area

² Source:

https://www.spk.usace.army.mil/Portals/12/siteimages/001_2020.08.20_Notify%20of%20Intent.pdf?ver=2020-08-21-152944-083

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of 135,639 acres, in which there are approximately 5,683 acres of wetlands and 10,132 acres of other waters. This includes broad areas along the project tunnel alternative routes. However, it does not include all of the Sacramento River below the proposed intake locations, other lands and waterways outside of an identified tunnel route, or lands or waters associated with the Bethany Alternative that DWR is currently analyzing within the EIR.

Project Operations

As described in the NOI, the Council understands that future operations of the proposed diversions for the Central Valley Project (CVP) are outside of the USACE control and responsibility. However, operations are relevant to compliance with several laws, including the Endangered Species Act (Section 7 consultation), National Historic Preservation Action (Section 106 consultation), and the Clean Water Act (Section 401 certification, under the jurisdiction of the State Water Resources Control Board).

The EIS should clearly describe how operations, project features, and potential impacts of Federal government activities associated with the Delta Conveyance Project beyond USACE jurisdiction are analyzed. If such analyses will be conducted by DWR and/or by another Federal entity, we request that USACE coordinate with such entities. For example, according to the NOI, the USACE has invited the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the U.S. Environmental Protection Agency to participate as cooperating agencies in the preparation of the EIS. If analyses will be conducted by DWR or another Federal entity such as USFWS and NMFS, we request that USACE coordinate closely to ensure that potential impacts are addressed in either the EIS or the EIR and, if not covered in the EIS, clearly identify that such impacts will be addressed elsewhere.

Secondary and Cumulative Impacts

The Delta Reform Act charges the Council with furthering California's coequal goals for the Delta. (Wat. Code, § 85054.) The coequal goals address both water supply and ecosystem restoration, as well as the unique values of the Delta as an evolving place. While we recognize the limits of USACE's jurisdiction, impacts within this jurisdiction could impact statewide water supply reliability, ecosystem restoration, and communities and existing and planned uses within the Delta. As such, the EIS should consider – either directly, or through incorporation of work conducted by others – impacts to the coequal goals that go beyond direct construction impacts occurring within USACE's jurisdiction.

Given the broad scope of the proposed project, the EIS should analyze secondary and cumulative impacts, including topics relevant to Delta Plan regulatory policies that may arise from avoidance, minimization, and mitigation measures. A range of potential cumulative impacts were identified in the Council's comments on DWR's NOP, including

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cumulative impacts to water quality, agricultural productivity, and water-based recreation, among others.

The Delta Conveyance Design and Construction Authority's (DCDCA) Stakeholder Engagement Committee (SEC) process has developed additional information regarding the proposed project elements, size, and location, than was available at the time the Council prepared its comments on DWR's NOP. This information indicates the potential for secondary effects from proposed avoidance and minimization measures. For example, in order to minimize truck trips and consequent air quality impacts, the DCDCA has proposed to increase the size of the proposed sedimentation basins at the intake locations. Increasing the size of the basins may cause secondary impacts by converting additional agricultural land. Similarly, to minimize noise impacts from pile driving, the DCDCA has proposed a new configuration for in-river intake structures that enables vibratory installation methods. However, the new configuration, materials, and construction timing associated with this effort may cause secondary impacts to aquatic species. These and other potential secondary effects associated with avoidance, minimization, and mitigation measures should be analyzed in the EIS.

Climate Change

Climate change is projected to dramatically impact the Delta and the State of California in the coming years and decades (<https://www.climateassessment.ca.gov/>). The Council is encouraged that the USACE has a climate change program (<https://www.usace.army.mil/corpsclimate/>). Climate change should be considered as part of all relevant impact areas considered in the EIS, including, but not limited to flood protection and biological resources. Furthermore, climate change assumptions, underlying scientific data, and analysis methods should be based on best available science (described further below, under Delta Plan Policy G P1(b)(3)). To aid stakeholders in understanding the potential impacts of climate change, we also request that climate change assumptions and analyses be aligned with the analyses to be conducted by the project lead, DWR, in their EIR.

Relationship and Timing of EIS and EIR

It is our understanding that the USACE EIS and the DWR EIR will be conducted in separate, but parallel processes, resulting in separate documents, both expected to be finalized in 2022. The Council encourages close coordination between USACE and DWR so that the USACE's EIS and DWR's EIR appropriately, consistently, and fully assess potential impacts. To the degree possible, it will be helpful to align baselines and assumptions used between the documents, to ensure that the respective scopes do not create gaps in potential impact areas or inconsistencies, and to release the documents on a similar schedule so that they can be reviewed concurrently. If the documents are not released on a similar schedule, we

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also request an extended period of review for the final EIS before USACE's record of decision is issued in order to allow for full review of both the USACE EIS and the DWR EIR.

Comments Regarding Delta Plan Policies and Potential Consistency Certification

As noted above, we have attached and provided a link to previous comments submitted on DWR's NOP. These comments focused on the Council's regulatory policies and covered actions process (<https://coveredactions.deltacouncil.ca.gov/>). While the covered actions process does not apply to USACE, the content of the EIS is relevant to the Delta Plan and its regulatory policies due to the wide range of potential anticipated impacts in the Delta, and given the potential for DWR to submit a certification of consistency that relies, in part, on the EIS and its administrative record. In addition to considering comments the Council offered on DWR's NOP, we also recommend that USACE consider the subset of Delta Plan policies that may be especially relevant to preparation of the EIS offered below.

General Policy 1: Detailed Findings to Establish Consistency with the Delta Plan

Delta Plan Policy **G P1** (Cal. Code Regs., tit. 23, § 5002) specifies what must be addressed in a Certification of Consistency by a state or local public agency proposing a project that is a covered action. The following is a subset of policy requirements which a project shall fulfill to be considered as consistent with the Delta Plan:

Best Available Science

Delta Plan Policy **G P1(b)(3)** (Cal. Code Regs., tit. 23, § 5002(b)(3)) states that actions subject to Delta Plan regulations must document use of best available science as relevant to the purpose and nature of the project. The Delta Plan defines best available science as "the best scientific information and data for informing management and policy decisions." (Cal. Code Regs., tit. 23, § 5001 (f).) Best available science is also required to be consistent with the guidelines and criteria in Appendix 1A of the Delta Plan (<https://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1a.pdf>).

Establishing a scientifically-robust understanding of baseline and future conditions with climate change is critical to understanding the proposed project, alternatives, and potential impacts. As relevant to USACE jurisdiction, best available science should be considered for potential impact areas, including but not limited to aquatic resources. For example, the EIS should document use of best available science to support climate change projections, hydrologic and life-cycle model selection and assumptions, timesteps, and cascading model interactions and uncertainty.

Mitigation Measures

Delta Plan Policy **G P1(b)(2)** (Cal. Code Regs., tit. 23, § 5002(b)(2)) requires covered actions not exempt from the California Environmental Quality Act (CEQA) must

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include all applicable feasible mitigation measures adopted and incorporated into the Delta Plan as amended April 26, 2018 (unless the measures are within the exclusive jurisdiction of an agency other than the agency that files the Certification of Consistency), or substitute mitigation measures that the agency finds are equally or more effective. These mitigation measures are identified in Delta Plan Appendix O and are available at: <https://deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf>.

Given the scope of the project it is likely that several mitigation measures will apply. USACE should review Appendix O and, in coordination with DWR and any Federal partners, ensure inclusion all applicable feasible mitigation measures adopted and incorporated into the Delta Plan or substitute mitigation measures that USACE finds are equally or more effective.

Ecosystem Restoration Policy 1: Delta Flow Objectives

Delta Plan Policy **ER P1** (Cal. Code Regs., tit. 23, § 5005) requires that the State Water Resources Control Board's Bay Delta Water Quality Control Plan flow objectives shall be used to determine consistency with the Delta Plan. The EIS should analyze and document how the project may impact or alter Delta flows that are subject to meeting the Bay Delta Water Quality Control Plan flow objectives.

The U.S. Bureau of Reclamation has coordinated exports from the Delta with DWR through a joint agreement. The EIS should include operating assumptions for such future exports that are aligned with DWR analyses in their EIR. Furthermore, we request that the EIS consider the potential impacts of a range of possible flows, and potential cumulative impacts to the Delta, as well as downstream areas within USACE, National Marine Fisheries Service, and U.S. Fish and Wildlife Service jurisdiction in Suisun Marsh, and the greater estuary and coastal areas.

Delta as Place Policy 2: Respect Local Land Use when Siting Water or Flood Facilities or Restoring Habitats

Delta Plan Policy **DP P2** (Cal. Code Regs., tit. 23, § 5011) reflects one of the Delta Plan's charges to protect the Delta as an evolving place by siting water management facilities, ecosystem restoration, and flood management infrastructure to avoid or reduce conflicts with existing or planned future land uses when feasible, considering comments from local agencies and the Delta Protection Commission. As described in the NOI, the project includes substantial new infrastructure that would be sited within the Delta. The construction of such infrastructure could extend over multiple years, and have secondary and cumulative effects on areas outside of direct USACE jurisdiction. The USACE should describe or include the necessary information for the project lead, DWR, to assess potential impacts to areas such as land use, noise, economics, aesthetics, recreation and tourism, community, culture, and quality of life. In addition, as referenced above, operations may be

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relevant due to secondary impacts to water quality or other factors that affect multiple impact areas.

Closing Comments

As the USACE proceeds with the EIS for the project, the Council invites USACE and DWR to engage Council staff in early consultation (prior to DWR's submittal of a Certification of Consistency) to discuss project features and mitigation measures that would promote consistency with the Delta Plan.

Council staff are available to discuss issues outlined in this letter as USACE proceeds in the next stages of its project and approval processes. Please contact Daniel Constable at (916) 282-8433 or daniel.constable@deltacouncil.ca.gov with any questions.

Sincerely,



Jeff Henderson, AICP
Deputy Executive Officer
Delta Stewardship Council

Attachment 1: April 17, 2020 Delta Stewardship Council letter to California Department of Water Resources re: Notice of Preparation of an Environmental Impact Report for the Delta Conveyance Project

CC: Marcus Yee, Department of Water Resources
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Carrie Buckman, Department of Water Resources
(Carolyn.Buckman@water.ca.gov)
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April 17, 2020

Renee Rodriguez
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Sent via email: DeltaConveyanceScoping@water.ca.gov

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RE: Comments on Notice of Preparation of an Environmental Impact Report for the Delta Conveyance Project

Dear Ms. Rodriguez:

Thank you for the opportunity to review and comment on the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Department of Water Resources (DWR) Delta Conveyance Project (Project). The Delta Stewardship Council (Council) recognizes the stated purpose of the Project is to develop new diversion and conveyance facilities in the Sacramento-San Joaquin Delta (Delta) in order to ensure a reliable water supply south of the Delta. (NOP, p. 2) Stated project objectives include, but are not limited to, addressing anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events, minimizing potential for health and safety impacts from reduced quantity and quality of water deliveries south of the Delta resulting from a major earthquake, protecting the ability of the State Water Project (SWP) (and potentially the Central Valley Project (CVP)) to deliver water under varying hydrologic and regulatory conditions, and providing operational flexibility to improve aquatic conditions in the Delta and better manage impacts of further regulatory conditions on SWP (and potentially CVP) operations. (NOP, p. 2).

The Council is an independent state agency established by the Sacramento-San Joaquin Delta Reform Act of 2009, codified in Division 35 of the California Water Code, sections 85000-85350 (Delta Reform Act). The Delta Reform Act charges the Council with furthering California's coequal goals of achieving a more reliable water supply and restoring the Delta ecosystem, to be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place. (Wat. Code, § 85054.)

"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."

Pursuant to the Delta Reform Act, the Council has adopted the Delta Plan, a legally enforceable management framework for the Delta and Suisun Marsh for achieving the coequal goals. The Delta Reform Act grants the Council specific regulatory and appellate authority over certain actions that take place in whole or in part in the Delta and Suisun Marsh, referred to as “covered actions.” (Wat. Code, §§ 85022(a) and 85057.5.) The Council exercises that authority through its regulatory policies (set forth in Title 23 of the California Code of Regulations, Sections 5002 through 5015) and recommendations incorporated into the Delta Plan. State and local agencies are required to demonstrate consistency with the Delta Plan when carrying out, approving, or funding a covered action. (Wat. Code, §§ 85057.5 and 85225.)

Covered Action Determination and Certification of Consistency with the Delta Plan

Water Code section 85057.5(a) provides a multi-part test to define what activities would be considered covered actions. Based on the Project location and scope described in the NOP, the Project appears to meet the definition of a covered action because it:

1. Will occur in whole or in part within the boundaries of the Legal Delta (Wat. Code, §12220) or Suisun Marsh (Pub. Res. Code, §29101). The new Project alignments (i.e., central tunnel corridor and eastern tunnel corridor shown on NOP Figure 1, p. 4) and facilities (i.e., intakes, tunnel reaches and shafts, forebays, pumping plant, and South Delta conveyance facilities described on NOP p. 3) would be located in the Legal Delta.
2. Will be carried out, approved, or funded by the State or a local public agency. DWR, a State agency, would carry out and approve the Project.
3. Will have a significant impact on the achievement of both of the coequal goals or the implementation of a government-sponsored flood control program to reduce risks to people, property, and State interests in the Delta. The Project would construct and operate new conveyance facilities in the Delta, including a single-tunnel facility designed to increase reliability of water supply, and would add to existing SWP infrastructure. The Project proposes to size new north Delta facilities to convey up to 7,500 cfs of water from the Sacramento River to SWP facilities in the south Delta to increase reliability of water supply under varying earthquake, climate change, and regulatory conditions. It would also include mitigation and operational characteristics that would contribute to ecosystem restoration. Therefore, the Project would have a significant impact on achievement of both coequal goals.
4. Is covered by one or more of the regulatory policies contained in the Delta Plan (Cal. Code Regs., tit. 23, §§ 5003-5015). Delta Plan regulatory policies that may apply to the Project are discussed below.

In addition, DWR previously submitted a Certification of Consistency with the Delta Plan to the Council for the proposed California WaterFix project (which was subsequently withdrawn). Although the NOP describes a new project, the Project scope and facilities described in the NOP are similar to California WaterFix and will likely implicate a similar range of Delta Plan policies.

Comments Regarding Delta Plan Policies and Potential Consistency Certification

The following information is offered to assist DWR in preparing environmental documents to support a certification of consistency. It describes regulatory Delta Plan policies that may apply to the Project based on the available information in the NOP. The information below may also assist DWR in describing the relationship between the Project and the Delta Plan in the EIR.

The NOP includes a range of flow capacities and describes potential federal participation. These two topics should be further explained in the EIR project description and addressed to the degree possible throughout the EIR.

The Council notes that, on behalf of DWR, the Delta Conveyance Design and Construction Authority (DCDCA) is currently exploring alternative configurations of Project features described in the NOP as part of a public process with a Stakeholder Engagement Committee (SEC). The DCDCA also recently received and published input from an Independent Technical Panel (ITP) regarding, among other things, alternative tunnel alignments that do not correspond to those described in the NOP. Thus, additional details regarding potential Project components and alternatives not described in the NOP are publicly available and being publicly discussed. The Council looks forward to receiving and reviewing the scoping and alternatives report DWR intends to prepare following the NOP review period and reserves the right to offer additional public comments regarding applicable Delta Plan policies considering more detailed alternative alignments and configurations of Project features at that time.

General Issues

As a preliminary matter, in 2018 DWR submitted a Certification of Consistency with the Delta Plan for the California WaterFix project. This certification was appealed by nine parties, who alleged that for various reasons the project was not consistent with one or more Delta Plan policies. Council staff reviewed both the certification and appeals and provided a staff draft determination for the Council's consideration in November 2018.¹

The staff draft determination describes the certification and appeals and makes staff recommendations regarding whether the certification was supported by substantial evidence in the record with respect to issues raised in the appeals. The staff draft determination stated that the certification was not supported by substantial evidence in the record for multiple Delta Plan policies:

- G P1, subd. (b)(1) (Cal. Code Regs., tit. 23, § 5002, subd. (b)(1)) (“G P1(b)(1)”): Full consistency infeasible, but on the whole the covered action is consistent with the coequal goals

¹ The staff draft determination is available upon request from archives@deltacouncil.ca.gov.

- G P1, subd. (b)(3) (Cal. Code Regs., tit. 23, § 5002, subd. (b)(3)) (“G P1(b)(3)”): Best Available Science
- WR P1 (Cal. Code Regs., tit. 23, § 5003) (“WR P1”): Reduce Reliance on the Delta through Improved Regional Water Self Reliance
- ER P1 (Cal. Code Regs., tit. 23, § 5005) (“ER P1”): Delta Flow Objectives
- DP P2 (Cal. Code Regs., tit. 23, § 5011) (“DP P2”): Respect Local Land Use When Siting Water or Flood Facilities or Restoration Habitats

Although DWR ultimately withdrew the certification, Council staff recommended that the matter be remanded to DWR for reconsideration to address several issues outlined in the staff draft determination regarding these policies. Because the Project appears similar to California WaterFix in some areas, based on the previous record for California WaterFix, the Council recommends that DWR review the staff draft determination as it relates to the Project and engage with the Council in robust early consultation to ensure that the EIR addresses these matters in detail.

General Policy 1: Detailed Finding to Establish Consistency with the Delta Plan

Delta Plan Policy **G P1** (Cal. Code Regs., tit. 23, § 5002) specifies what must be addressed in a certification of consistency for a covered action. The following is a subset of Policy G P1 requirements that a project must meet to be considered consistent with the Delta Plan:

Coequal Goals

Delta Plan Policy **G P1, subsection (b)(1)** (Cal. Code Regs., tit. 23, § 5002, subd. (b)(1)) allows for covered actions, in a certification of consistency, to include a determination that despite inconsistency with one or more other Delta Plan policies, the covered action is consistent with the Delta Plan because, on the whole, it is consistent with the coequal goals.

In the EIR, DWR should analyze and document potential impacts – whether positive or negative – on the coequal goals. It may be useful to describe the impacts of the Project on the coequal goals to the public in the EIR to establish a record for a future certification of consistency.

Mitigation Measures

Delta Plan Policy **G P1, subsection (b)(2)** (Cal. Code Regs., tit. 23, § 5002, subd. (b)(2)) requires that actions not exempt from CEQA and subject to Delta Plan regulations must include all applicable feasible mitigation measures adopted and incorporated into the Delta Plan as amended April 28, 2018, or substitute mitigation measures that are equally or more effective. Mitigation measures in the Delta Plan's Mitigation Monitoring and Reporting Program (Delta Plan MMRP) are available at:

<https://www.deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf>.

If the EIR identifies significant impacts that require mitigation, Council staff recommends that DWR review the Delta Plan MMRP and, when feasible, apply the mitigation measures adopted and incorporated into the Delta Plan. Given the scope of the Project, it appears likely that numerous mitigation measures would be relevant.

Best Available Science

Delta Plan Policy **G P1, subsection (b)(3)** (Cal. Code Regs., tit. 23, § 5002, subd. (b)(3)) states that covered actions must document use of best available science as relevant to the purpose and nature of a project. The regulatory definition of "best available science" is provided in Appendix 1A of the Delta Plan (<https://www.deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1a.pdf>). Best available science is defined in the Delta Plan, Appendix 1A. Six criteria are included in Appendix 1A: relevance, inclusiveness, objectivity, transparency and openness, timeliness, and peer review. (Cal. Code Regs, tit. 23, § 5001, subd. (f).) This policy requires that the lead agency clearly document and communicate the processes and information used for analyzing project alternatives, impacts, and mitigation measures of proposed projects, in order to foster improved understanding and decision making.

As it develops the EIR, DWR should identify and document use of best available science when analyzing and assessing impacts, including but not limited to the following areas:

- Documentation of consideration of best available science in analyzing the selected project alternatives.
- Best available science on climate change, including sea-level rise projections appropriate to the type of project and planning horizon selected.
- Consideration of best available science related to invasive species and water quality issues such as salinity, nutrients, harmful algal blooms, and contaminants.
- If a range of uncertainty is associated with the scientific data or information used to support design decisions or environmental analysis, DWR should document or communicate the uncertainty as required by the best available science Transparency and Openness criterion.

Adaptive Management

Delta Plan Policy **G P1, subsection (b)(4)** (Cal. Code Regs., § 5002, subd. (b)(4)) requires that ecosystem restoration and water management covered actions include adequate provisions, appropriate to the scope of the action, to assure continued implementation of adaptive management. This requirement is satisfied through: a) the development of an adaptive management plan that is consistent with the framework

described in Appendix 1B of the Delta Plan (<https://deltacouncil.ca.gov/pdf/delta-plan/2013-appendix-b-combined.pdf>), and b) documentation of adequate resources to implement the proposed adaptive management plan.

Considering the water management components of the Project, an adaptive management plan will be required that addresses Project construction activities, implementation, and ongoing operations. Ecosystem restoration components of the Project would also require DWR to prepare an adaptive management plan.

Water Resources Policy 1: Reduce Reliance on the Delta through Improved Regional Water Self-Reliance

Delta Plan Policy **WR P1** (Cal. Code Regs., tit. 23, § 5003) requires proposed actions that export water from, transfer water through, or use water in the Delta to contribute to reduced reliance on the Delta and improve regional self-reliance.

The Project proposes to increase water supply reliability, among other objectives, by constructing new facilities, including an isolated conveyance facility to be used in conjunction with existing through-Delta conveyance. The Council understands that as proposed, the Project would not alter existing water rights or contractual amounts.

Because the Project proposes to export water from, transfer water through, or use water in the Delta, this policy is applicable. DWR should describe in detail how all water suppliers (defined as both wholesalers and retailers)² that would receive water from the Delta as a result of the Project have adequately contributed to reduced reliance on the Delta and improved regional self-reliance consistent with the Delta Plan. DWR should provide information for each water supplier that includes: (1) identifying which water agencies have a current Urban or Agricultural Water Management Plan; (2) the identification, evaluation, and commencement of implementation activities identified in an Urban or Agricultural Water Management Plan that would reduce reliance on the Delta; and (3) the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance.

As for any large project that would trigger this policy, DWR should ensure that the record supporting the certification of consistency for the Project specifically addresses the following items:

- Listing of all urban and agricultural water users that would receive water as a result of the Project.
- Inclusion of quantifiable data documenting reduced reliance, as described by this policy, or a discussion of why this is not feasible.

² Water suppliers are defined in Cal. Code Regs., tit. 23, § 5001.

- Analysis of reduced reliance under different export scenarios, considering the current range in Project capacity described in the NOP (3,000 to 7,500 cfs).

In addition, the Council notes that at this time it is not clear how the CVP may or may not be involved in the Project. To the extent feasible, the EIR should clarify involvement of the Federal Government and clearly define which water suppliers would receive water as a result of the Project. This specificity would help the Council and other stakeholders understand the full range of potential impacts of the Project.

Water Resources Policy 2: Transparency in Water Contracting

Delta Plan Policy **WR P2** (Cal. Code Regs., tit. 23, § 5004) requires the contracting process for water from the SWP and/or the CVP be done in a publicly transparent manner consistent with applicable DWR and Bureau of Reclamation (Reclamation) policies. The Council notes that DWR has proposed extension of the SWP contracts as a separate project. However, the NOP states that the Delta Conveyance Project may involve modifications to one or more of the SWP water supply contracts to incorporate the Project. (NOP, p. 6).

To the extent that the Project includes the types of contract modifications described generally in the NOP, the EIR project description should clearly identify such modifications, and the EIR should assess potential environmental impacts associated with reasonably foreseeable potential contract modifications (as described in the NOP, p. 6). In a future certification of consistency, DWR should describe if and how it proposes to modify SWP water supply contracts and how such contracting was conducted in a transparent, public manner aligned with applicable DWR and Reclamation policies.

Ecosystem Restoration Policy 1: Delta Flow Objectives

Delta Plan Policy **ER P1** (Cal. Code Regs., tit. 23, § 5005) requires the State Water Resources Control Board's (Water Board) *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary* (Bay-Delta Plan) flow objectives be used to determine consistency with the Delta Plan for a project that could significantly affect flow in the Delta. This policy applies to the Project because the Project proposes new intakes at two locations along the Sacramento River, which have potential to significantly affect flow.

The EIR should document DWR's analysis of how the Project may impact or alter Delta flows that are subject to the Bay-Delta Plan flow objectives. While these flow objectives are currently described by Decision-1641, the Water Board is undertaking updates to the Bay-Delta Plan. In addition, the ongoing voluntary agreements process could influence flow objectives on a timeline similar to the EIR. As part of a certification of consistency, the relevant flow objectives would be those in effect at the time of certification. Given this, we encourage DWR to consider updates to flow objectives during the EIR development process and analyze those as part of the document. Specifically, the following items related to Delta flow objectives may be relevant to include in the EIR:

- Documentation of ability to meet the requirements of the Bay-Delta Plan, as it exists at time of development of an EIR and at the time of a certification of consistency with the Delta Plan.
- Consideration of a range of operations and climate scenarios when conducting flow and compliance modeling.
- Documentation of model implementation and potential uncertainties.

In addition, the Council strongly encourages DWR to obtain a permit for a Change in Point of Diversion from the Water Board prior to submitting a certification of consistency for the Project to the Council. The Council acknowledges that the schedule for a certification is unknown at this point. However, DWR should include the permit in the record supporting the certification to demonstrate consistency with Delta Plan Policy ER P1.

Ecosystem Restoration Policy 2: Restore Habitats at Appropriate Elevations

Delta Plan Policy **ER P2** (Cal. Code Regs., tit. 23, § 5006) requires habitat restoration to be consistent with Appendix 3 (<https://deltacouncil.ca.gov/pdf/delta-plan/2013-appendix-b-combined.pdf>), which describes the many ecosystem benefits related to restoring floodplains. The elevation map included as Figure 4-1 in Appendix 4 (<https://deltacouncil.ca.gov/pdf/delta-plan/2013-appendix-b-combined.pdf>) of the Delta Plan should be used as a guide for determining appropriate habitat restoration actions based on an area's elevation.

The NOP does not describe any habitat restoration associated with the Project, other than a general statement that other ancillary facilities may be built to support construction of conveyance facilities, including mitigation areas (NOP, p. 3). The EIR project description and/or mitigation measures should identify locations of proposed habitat restoration or mitigation sites, and the EIR should analyze the elevation proposed for each site in relation to current or long-term average water levels and best available science for projected sea level rise, documenting how the proposed restoration project is an appropriate habitat restoration action.

Ecosystem Restoration Policy 3: Protect Opportunities to Restore Habitat

Delta Plan Policy **ER P3** (Cal. Code Regs., tit. 23, § 5007) states that within priority habitat restoration areas (PHRAs) depicted in Appendix 5 (<https://deltacouncil.ca.gov/pdf/delta-plan/2013-appendix-b-combined.pdf>), significant adverse impacts to the opportunity to restore habitat at appropriate locations must be avoided or mitigated.

Based on the NOP project description and ongoing discussions with the SEC, Project construction activities and operations could have significant adverse impacts on habitat restoration within the Cosumnes/Mokelumne Confluence PHRA. However, the locations of specific facilities that have potential to impact the Cosumnes/Mokelumne Confluence PHRA are not disclosed in the NOP. In the EIR, DWR should disclose whether ancillary facilities will be located within the PHRA and analyze the potential for construction activities and operations

of these facilities to result in significant adverse impacts to the opportunity to restore habitat in the PHRA. Proposed mitigation measures should clearly identify how such potential impacts would be avoided or mitigated.

Ecosystem Restoration Policy 4: Expand Floodplains and Riparian Habitats in Levee Projects

Delta Plan Policy **ER P4** (Cal. Code Regs., tit. 23, § 5008) requires levee projects to evaluate and, where feasible, incorporate alternatives to increase floodplains and riparian habitats. As described in ongoing discussions at the SEC, modifications of Delta levees will be required to construct two intakes and potentially for tunnel launch shafts and other ancillary facilities. Therefore, this policy applies to the Project.

ER P4 requires evaluation of setback levees in several areas of the Delta, including the Sacramento River between Freeport and Walnut Grove, Steamboat Slough, and Sutter Slough. The EIR should evaluate the potential to incorporate setback levees at locations within these areas where Delta levees would be modified to accommodate Project or ancillary features, identify alternatives that would expand floodplains and riparian habitats, and describe the feasibility of such alternatives. Council staff encourage DWR to review the January 2016 report "Improving Habitat along Delta Levees".³ This report recommends habitat designs along levees that may provide greater benefits to target native species (with an emphasis on salmon and riparian birds).

In addition, the ongoing SEC meetings have informed the public about potential Project infrastructure (e.g., intakes, alignments/corridors, a southern forebay) with greater specificity than is included in the NOP. To the degree relevant, such information should be used to develop the EIR project description and should be analyzed in the EIR.

Ecosystem Restoration Policy 5: Avoid Introductions of and Habitat Improvements for Invasive Nonnative Species

Delta Plan Policy **ER P5** (Cal. Code Regs., tit. 23, § 5009) requires that the potential for new introductions of or improved habitat conditions for nonnative invasive species, striped bass, or bass must be fully considered and avoided or mitigated in a manner that appropriately protects the ecosystem.

The EIR should analyze how the Project would avoid or mitigate introductions or improved habitat conditions for nonnative invasive species, striped bass, or bass. Proposed mitigation and minimization measures should be consistent with, and equally or more effective than, those identified in the Delta Plan MMRP (<https://www.deltacouncil.ca.gov/pdf/delta-plan/2018-appendix-o-mitigation-monitoring-and-reporting-program.pdf>), including Delta Plan Mitigation

³ Available upon request by contacting archives@deltacouncil.ca.gov

Measure 4-1, which requires development and implementation of an invasive species management plan for any project where construction activities or operations could introduce or facilitate establishment of invasive species.

Delta as Place Policy 1: Locate New Urban Development Wisely

Delta Plan Policy DP P1 (Cal. Code Regs., tit. 23, § 5010) requires that new residential, commercial and industrial development be restricted to areas described in Delta Plan appendices 6 and 7.

The NOP does not describe residential, commercial or industrial development as part of the Project, but does describe ancillary features that could be constructed. The EIR should analyze the Project's potential to create both temporary and permanent residential, commercial, and industrial development in applicable areas and describe the resulting potential impacts.

Delta as Place Policy 2: Respect Local Land Use when Siting Water or Flood Facilities or Restoring Habitats

Delta Plan Policy **DP P2** (Cal. Code Regs., tit. 23, § 5011) requires the siting of project improvements/facilities to avoid or reduce conflicts with existing or planned future land uses when feasible. DP P2 may also apply if mitigation habitat is required within the Delta. Independent from state law related to local land use authority and CEQA requirements, DP P2 is a directive to state and local public agencies proposing covered actions, and it specifically requires water management facilities, ecosystem restoration projects, and flood management infrastructure to be sited to avoid or reduce conflicts with existing uses or those uses described or depicted in city and county general plans for their jurisdictions or spheres of influence when feasible, considering comments from local agencies and the Delta Protection Commission.

DP P2 considers a range of effects that extend beyond CEQA requirements. The EIR should describe the project process to avoid or reduce conflicts with existing or planned future land uses. This is a wide-ranging policy relevant to many resource areas in the Delta. Given the importance of agricultural land use, presence of Legacy towns, and the unique culture and history of the region, DWR should include in the EIR detailed analyses of potential impacts as well as documentation of how existing and planned land uses would be protected, or how potential conflicts with planned land uses would be mitigated, when feasible.

Based on the record for California WaterFix, similarity of the proposed central tunnel alignment, and ongoing discussions with the SEC, the following issues should receive particular focus in the EIR to demonstrate that DWR has avoided or reduced underlying conflicts with existing or planned Delta land uses when feasible:

- Potential conflicts with local land use plans
- Potential conflicts with existing Delta communities

- Potential conflicts with existing Delta parks and recreation uses
- Potential conflicts with existing agricultural lands
- Potential conflicts with community land uses or economic conditions in legacy Delta communities that rely on agriculture
- Potential conflicts with existing land uses due to:
 - Cultural and historical resource impacts
 - Traffic impacts
 - Noise and vibration impacts
 - Visual and aesthetic resource impacts
 - Public health and hazards impacts
 - Wastewater discharge facility impacts

In addition, as part of the previous WaterFix project, DWR committed to “the implementation of a Community Benefits Fund, or its equivalent. This fund would incorporate good neighbor policies to avoid negative impacts on agricultural lands, residents and businesses by providing a mechanism for communication with local government and community members and disburse funds to protect and enhance the Delta as an evolving place.” ([DWR Certification of Consistency for California WaterFix, DP P2, pp. 21-22](#)). The NOP does not describe a similar mechanism as part of the Project. If such a fund is proposed as part of the Project or as mitigation for potentially significant or significant impacts, it should be described in the EIR and in a future certification of consistency. DWR should describe how the fund would be managed and administered, how fund expenditures would reduce significance of Project impacts contributing to conflicts with existing land uses, and how the fund would constitute an enforceable commitment to reduce such impacts.

Risk Reduction Policy 1: Prioritization of State Investments in Delta Levees and Risk Reduction

Delta Plan Policy **RR P1** (Cal. Code Regs., tit. 23, § 5012) calls for the prioritization of discretionary State investments in Delta flood risk management, including levee operation, maintenance and improvements. Policy RR P1 further establishes interim priorities to guide such investments.

The EIR should describe if and how DWR has incorporated the prioritization of state investments in Delta levees and risk reduction to the extent that modifications of Delta levees will be required as part of the Project.

Risk Reduction Policy 2: Require Flood Protection for Residential Development in Rural Areas

Delta Plan Policy **RR P2** (Cal. Code Regs., tit. 23, § 5013) requires that “New residential development of five or more parcels shall be protected through floodproofing to a level 12 inches above the 100-year base flood elevation, plus sufficient additional elevation to protect

against a 55-inch rise in sea level at the Golden Gate, unless the development is located within:

- (1) Areas that city or county general plans, as of the date of the Delta Plan's adoption, designate for development in cities or their spheres of influence;
- (2) Areas within Contra Costa County's 2006 voter-approved urban limit line, except Bethel Island;
- (3) Areas within the Mountain House General Plan Community Boundary in San Joaquin County; or
- (4) The unincorporated Delta towns of Clarksburg, Courtland, Hood, Locke, Ryde, and Walnut Grove, as shown in [Appendix 7.](#)"

As described in the NOP, the Project does not appear to involve residential development in rural areas. If such development is proposed, the EIR should analyze and describe such development.

Risk Reduction Policy 3: Protect Floodways

Delta Plan Policy **RR P3** (Cal. Code Regs., tit. 23, § 5014) restricts encroachment in floodways that are not either a designated floodway or a regulated stream. RR P3 states that "no encroachment shall be allowed or constructed in a floodway unless it can be demonstrated by appropriate analysis that the encroachment will not unduly impede the free flow of water in the floodway or jeopardize public safety".

The EIR should describe how construction activities and operations of Project and ancillary features would not impede the free flow of water in the floodway or jeopardize public safety.

Risk Reduction Policy 4: Floodplain Protection

Delta Plan Policy **RR P4** (Cal. Code Regs., tit. 23, § 5015) states that no encroachment shall be allowed or constructed in the floodplain areas specified within the regulation – including the Yolo Bypass, the Cosumnes-Mokelumne River Confluence, and the Lower San Joaquin River Floodplain Bypass area – unless it can be demonstrated by appropriate analysis that the encroachment will not have a significant adverse impact on floodplain values and functions.

The EIR should describe how construction activities and operations of Project and ancillary features would not result in encroachment on a designated floodplain.

CEQA Regulatory Setting

For each resource section in which a Delta Plan policy is applicable, the EIR's description of the regulatory setting should include the Delta Reform Act, the Delta Plan and a reference to the specific applicable regulatory policy or policies. The Council encourages DWR to consider including a section in the EIR that specifically describes alignment with Delta Plan policies,

identifying where supporting information can be found throughout the document and supporting appendices.

Closing Comments

As DWR proceeds with design, development, and environmental impact analysis of the Project, we invite you to continue to engage the Council in early consultation (prior to submittal of a Certification of Consistency) to discuss Project features and mitigation measures that would promote consistency with the Delta Plan. We also encourage DWR to continue to present Project updates at Council meetings.

In addition, information on the Conveyance, Storage, and Operation amendment to the Delta Plan (April 2018) can be found online at <http://deltacouncil.ca.gov/pdf/delta-plan/2018-04-26-amended-chapter-3.pdf>. This amendment updated Delta Plan Chapter 3 to include new recommendations (Recommendations WR R12a through WR R12j) supporting the concept of dual conveyance that are relevant to the Project. We encourage DWR to review these and incorporate them in the Project and its environmental analysis as appropriate.

More information on covered actions, early consultation, and the certification process can be found on the Council website at <https://coveredactions.deltacouncil.ca.gov/>. Council staff are available to discuss issues outlined in this letter as you proceed in the next stages of the Project. Please contact Daniel Constable at (916) 322-9338 (daniel.constable@deltacouncil.ca.gov) with any questions.

Sincerely,



Jeff Henderson, AICP
Deputy Executive Officer
Delta Stewardship Council

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CALIFORNIA CENTRAL VALLEY
FLOOD CONTROL
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<i>Vice President</i>	LEWIS BAIR
<i>Treasurer</i>	PETE GHELFI

October 19, 2020

U.S. Army Corps of Engineers,
Sacramento District Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922
Attn: Zachary Simmons

Delivered via Email: Zachary.M.Simmons@usace.army.mil

SUBJECT: CCVFCA Scoping Comments on Delta Conveyance Project Notice of Intent

Dear Mr. Simmons:

The CA Central Valley Flood Control Agency (CCVFCA/Association) submits these scoping comments on the U.S. Army Corps of Engineers (USACE) Notice of Intent for preparation of an Environmental Impact Statement (EIS) for the Delta Conveyance Project (DCP) to identify potential flood risks associated with the design, operation, and construction of the project that should be analyzed in the EIS.

In existence since 1926, the Association was established to promote the common interests of its membership in maintaining effective flood control systems in the Central Valley and Delta for the protection of life, property, and the environment. Association members include reclamation and levee districts, plus cities and counties with flood management responsibilities along the Sacramento and San Joaquin Federal Flood Control Projects and non-project levee systems within the Sacramento-San Joaquin Delta. The Association's specific interest is assuring that the construction, mitigation, and operation activities proposed in the DCP will not in any way impede, diminish, or impair the flood flow capacity, functionality of the State and Delta's levee systems, or the performance of flood safety duties by Reclamation Districts.

DELTA FLOOD PROTECTION BACKGROUND

In 1850 Congress approved the Arkansas Act granting several states title to all of the Swamp and Overflowed Lands, including approximately 2 million acres in California.¹ The State considered the reclamation of these swampy lands essential because of their extraordinary fertility when drained (reclaimed) and also because they posed a significant public health risk due to outbreaks of malaria from the mosquito breeding. The State and Federal government therefore proceeded to actively encourage the reclamation of these lands for purposes of productive farming.

More than 40 percent of Northern California's runoff flows to the Delta via the Sacramento, Feather, San Joaquin, and Mokelumne Rivers, with peak winter flows resulting in substantial flooding in the valley floor about every ten years. In its natural condition, about one-quarter of the Central Valley extending along more than 14 counties was subject to annual or periodic overflow, so the first flood-control projects were the low levees the farmers built to protect their lands from inundation.

Flood damage in the Sacramento Valley and Delta occurs almost entirely from precipitation. Currently, most snow-melt run-off is stored or diverted for beneficial uses or flows to the ocean, but prolonged high-water stages can cause seepage through levees if they are not vigilantly maintained and improved to withstand flood events with excessive run-off draining through the Central Valley and Delta.

SRFCP PURPOSE AND HISTORY

Authorized by Congress in 1917, the Sacramento River Flood Control Project (SRFCP) and San Joaquin River Flood Control Project (SJRFCP) is a system of "Project levees" and flood bypasses designed and built by the U.S. Army Corps of Engineers (USACE/Corps) for three purposes:

- 1) Flood control;
- 2) Reclamation of marshy lands for farming and other productive uses;
- 3) Improvement of navigation.

By 1949, over 90 percent of the SRFCP and SJRFCP project works had been completed and in operation. Today, there are more than 1,600 miles of State-federal project levees in the Central Valley, 385 miles of which are located in the Delta. This leaves about 700 miles of additional levees in the Delta classified as "non-project." A key component of the SRFCP system is the Yolo Bypass, which carries 80 percent of the Sacramento River water during high-water flood events. All of these project and non-project levees and flood bypasses serve to protect \$70 billion in infrastructure in the Central Valley, including the state and federal government water conveyance infrastructure in the Delta (State Water Project and Central Valley Project).

¹ Arkansas Swamp Lands Act, Act of September 28, 1850, codified at California Public Resources Code Section 7552, 7552.5.

RISKS TO FLOOD CONTROL PURPOSE, FUNCTION, EFFECTIVENESS

In 1953, the SPFC works were transferred to the Central Valley Flood Protection Board (CVFPB) with a memorandum of understanding (MOU) confirming the State's obligation to operate and maintain all completed works/facilities and to hold the federal government harmless.² In addition, the State has signed assurance agreements with the U.S. Army Corps of Engineers to maintain the San Joaquin River Flood Control Project in accordance with the 1955 MOU. Collectively, the facilities, lands, programs, conditions, and mode of O&M for the State-federal flood protection system in the Central Valley and Delta are referred to as the State Plan of Flood Control (SPFC).³ Annual inspections of the SPFC levee system are conducted twice annually by DWR.⁴ This comprehensive interconnected system of levees is absolutely critical to public health and safety, including the protection of the region's transportation, agriculture, business, homes, and even water conveyance.⁵ Levees in the Delta provide this protection at all times, during two daily high tides and seasonal high-flow events.

Under California law, no modification to the SPFC system (encroachment or project) may be constructed on or near the Sacramento and San Joaquin Rivers or their tributaries until plans have been reviewed and the projects have been approved or a permit issued by the CVFPB.⁶ The Board authorizes use of the SPFC facilities by issuing encroachment permits only *if the project is compatible with the flood system and will not hamper the State's O&M responsibilities.*

The EIS should include a Flood Chapter that identifies the design, operation, and construction components that propose altering the SPFC or could potentially increase flood risks in the Delta due to altered hydrodynamics. Following are elements that should be analyzed in a Flood Chapter:

A. Substantial Alteration of the Location, Configuration, and Purpose of SPFC

Specific examples of anticipated DCP construction activities that may impact existing flood protection facilities and system design flow capacities:

² 1953 Memorandum of Understanding (USACE and The Reclamation Board, 1953) and Supplements. Available at ftp://ftp.water.ca.gov/mailout/CVFPB%20Outgoing/Orientation%20Materials/Item%203C%20-%20LM%20Assurance%20Agreements/Example%201%20-%20srfc_mou_1953%20--%20jsp%20copy.pdf.

³ Public Resources Code (PRC) Section 5096.805 (j). A complete description of these assets and resources has been compiled by DWR into the *State Plan of Flood Control Descriptive Document*, available at http://www.water.ca.gov/cvfm/docs/DRAFT_SPFC_Descriptive_Doc_20100115.pdf

⁴ 2013 Inspection and Local Maintaining Agency Report of the Central Valley State-Federal Flood Projection System (providing that "DWR, under the authority of Water Code § 8360, § 8370, and § 8371, performs a verification inspection of the maintenance of the SRFCP levees performed by the local responsible agencies, and reports to the USACE periodically regarding the status of levee maintenance accomplished under the provisions of Title 33, Code of Federal Regulations (CFR), Section 208.10. While there are no specific water code provisions directing DWR to inspect and report on Maintenance of the San Joaquin River Flood Control System, DWR has performed inspections and provided reports for many years as a matter of practice that is consistent with Title 33, CFR.") Available at http://cdec.water.ca.gov/current_reports.html.

⁵ DWR *A Framework for Department of Water Resources Integrated Flood Management Investments in the Delta and Suisun Marsh* (September 24, 2013)

⁶ Central Valley Flood Protection Board, *A Century of Progress: Central Valley Flood Protection Board 1911-2011* (2011). Available at http://www.cvfpb.ca.gov/Publications/DWR100Years_05.pdf

- Construct 2 intakes on Sacramento River eastside levee within 4-mile stretch;
- Install multiple in-water cofferdams in Sacramento River and several Delta channels for intakes and barge loading facilities;
- Construct cutoff walls down middle of levees to prevent seepage;
- Increase sediment loading at intake locations;
- At each of the intakes, install multiple large gravity collector box conduits penetrating through the levee prism to convey flow to the sedimentation system on the landside;
- Potentially construct barge loading docks on various levees;⁷
- Modify several miles of levees, on either a temporary or permanent basis;
- Blocking, re-aligning, re-routing, and removal of state highways, county and private roads with levees underneath pavement;
- Storage/disposal of millions of cubic yards of tunnel muck on Delta islands;
- Disposal of millions of cubic yards of dredged material into Delta waterways and local drainage canals; and
- Installation of power lines over existing levees.

Potential impacts related to DCP construction activities that specifically require more analysis, disclosure, and mitigation in the EIS:

- Damage to levee integrity and stability from tunnel muck haulage and other construction activities (that go way beyond the design and intended use of these rural flood control facilities), seepage and erosion scour, intensive pile driving, and increased subsidence and sink holes from dewatering;
- Deflection and obstruction of flood flows in selected Delta channels due to cofferdam construction for two new diversion intakes (3,000 cfs each) and potential barge loading docks, levee reconfigurations, sediment loading, and other construction activities that may redirect flows and alter flood risks throughout the fourteen-year construction timeframe;
- Impairment of ditches, pumps and other interior drainage facilities vital to the maintenance of low-lying Delta lands caused by the discharge from dewatering activities, disconnection of existing interconnected drainage systems, and seepage waters exceeding existing local drainage capacity;
- Obstruction of levee maintenance, flood fighting and emergency response activities through the clogging of Delta levee roadways and channels with construction traffic and equipment, and through the monopolization of barges and levee repair rock materials;
- Interference with long-standing levee maintenance and repair programs in the Delta through usurpation of habitat mitigation opportunities on which these programs depend;
- Cumulative effects on the flood control system, particularly SPFC facilities and operations.
- Regulatory constraints associated with implementing EIS mitigation measures (e.g., USACE's no vegetation on project levees policy, obtaining anticipated dredging permits);
- A reduction of the current level of flood protection in the Delta achieved with recent Prop. 13, 1E, and 84 bond investments;

⁷ DWR announced it may construct a new rail line to deliver construction materials in lieu of bringing in by barge, which may eliminate installation of docks on levees.

- Evacuation plans for communities (residents, businesses, schools, tourists, etc.) in the Plan Area.
- Financial impacts to RDs in the Plan Area (e.g., reduced assessment revenues during the 14-year construction, increased maintenance costs to deal with seepage/erosion damage from altered hydrodynamics, increased drainage pumping costs, etc.);
- Increase in FEMA flood insurance rates and building restrictions, or PL 84-99 eligibility problems as a result alteration of the Delta levee system.

B. Long-Term Disruption of Levee Inspections, Maintenance, And Improvements

Local Reclamation Districts (RDs) are responsible for daily inspection of levee conditions for issues such as cracks, slippage, encroachments, seepage, burrowing animals, etc., as well as for performing routine maintenance activities on and around the levees in order to meet USACE and FEMA standards required to be eligible for federal levee repair funding. DWR conducts levee inspections of the SPFC project levees twice a year and the USACE conducts more extensive Periodic Inspections every 5 years. There is significant concern that DCP 14-year construction will interfere with the ability of numerous RDs to conduct levee inspections, maintenance, improvements, and even floodfighting.

C. Interference with Local Drainage

Local RDs are also responsible for operation and maintenance of drainage facilities on Delta islands in order to keep the land reclaimed for farming. DCP construction would involve extensive excavation, grading, stockpiling, soil compaction, and dewatering, resulting in temporary and long-term alteration and disruption of drainage patterns, paths, and facilities. The existing drainage facilities are intricate networks of canals, ditches, pipes, and pumps which means they have been carefully designed to function as a system and located to work with gravity and the natural land contours and drainage patterns that exist on the Delta islands. Therefore, any disconnection or obstruction caused by DCP construction potentially renders the whole system inoperable, resulting in localized inundation.

Dewatering would also result in significant volumes of discharge into local irrigation/drainage ditches, but there is no extra capacity in these local facilities and therefore cannot be used during DCP construction. Increased water volumes from 24/7 dewatering by large pumps stationed every 50-75 around perimeter of multiple construction sites will be discharged into the rivers and waterways. These discharges will increase surface water elevations locally, and potentially cause erosion and scour on adjacent levees depending on the velocities and volumes of water being discharged.

CCVFCA recommends the EIS:

- Examine existing conditions in terms of interconnected drainage systems and whether DCP construction will disconnect or disrupt the existing drainage facilities' ability to function/drain effectively;
- Identify specific discharge locations, how many locations, the capacity of the discharge location, and acknowledge local usage/needs (winter drainage or summer irrigation)
- Quantify the daily discharge rates and volumes from construction dewatering;
- Identify how long dewatering and subsequent discharges will occur at each location;

- Analyze changes in water quality that would occur at each discharge location.

D. Increased Land Subsidence

Primarily limited to interior portions of the Central Delta, land subsidence has slowed in recent years in the Delta according to recent LiDAR surveys, which has allowed landowners and reclamation districts to manage it over time. However, DCP construction could potentially increase land subsidence and sinkholes as a result of the widespread and intensive 24/7 dewatering and pile driving that will occur during the 14-year construction period.

With dewatering pumps placed every 50 to 75 feet around the entire perimeter of all the DCP facilities under construction, each pumping between 240 to 10,500 gallons per minute, groundwater will be lowered several feet on a large radius around each pump. This amount of intensive, long-term dewatering has the potential to destabilize the soils, including levees, resulting in sink holes and subsidence in a large area in the North Delta where the intakes with connecting pipelines will be built as well as the length of the 34-mile-long tunnel. Damage to the existing interconnected drainage and irrigation systems due to sinking land will increase localized inundation of crops, fruit packing sheds, and homes. These individual and cumulative impacts need to be analyzed, disclosed, and mitigated. The EIS should also include a map depicting the levees and drainage facilities (ditches/pipes/canals/pumping stations) that may be exposed to subsidence or liquefaction due to dewatering and pile driving activities.

E. Risks to Levee Stability

Concerns over levee stability and their performance during a seismic event is one of the purposes identified in the Notice of Preparation. However, DCP construction activities will involve intensive and sustained ground-shaking from hundreds of construction trucks on levee roads 24/7, numerous dewatering pumps, and millions of pile-driving strikes occurring in multiple construction sites that will adversely affect the stability of nearby levees. The sustained intensive localized vibration for such a long duration could cause stress fractures and possibly levee failures.

The EIS should include technical analyses, data, and scientific research evaluating how the excessive pile driving during DCP construction will affect the integrity and stability of nearby levees and effects on the overall performance of the SPFC in a high-water flood event. The cumulative effects of pile driving and dewatering on reducing levee stability and increasing land subsidence/sink holes in the DCP construction area should be acknowledged and mitigated in the EIS. A map should be included in the EIS depicting the locations of all pile driving for DCP facilities (including but not limited to intakes, forebays, pipelines, tunnels, shafts, sedimentation basins, barge loading facilities, etc.) and the radius of influence for any related land subsidence.

F. Increased Traffic will Damage Levees

Most of the roads and highways in the Delta are in fact pavement on top of a levee. The thousands of construction trucks making multiple daily trips on Delta roads 24/7 for 14 years of DCP construction will create wear and tear on levees that will need to be repaired on an annual basis. The potential for impacts to the levees includes the possibility of deformation and crest depression due to non-uniform settlement and damage to levee slopes due to use of levee hinge

points for vehicle turn-outs. The EIS should disclose the number of construction vehicles that will be on the road each day with the number of daily trips each vehicle will make and identify locations where there will be road blockage, re-routing or access issues that will interfere with the ability of RDs to inspect, operate, maintain, repair and floodfight levees.

G. Emergency Response and Flood Recovery Conflicts

Risk from levee failures can be reduced, but not eliminated, so being prepared for a flood emergency is the best defense. This requires having an effective strategy for preventing failures with ongoing levee improvements and maintenance, protocols for responding with emergency flood fighting activities, a plan for evacuation, and recovery after the flood event.

Based on the flood history in the Delta, the DCP is guaranteed to experience at least one major flood event during the 14-year construction period. In addition to modification of the SPFC levee system, DCP construction will require extensive alteration of the existing Delta road configuration, including re-routing and blocking local roads and highway segments. These changes in transportation routes will impede floodfighting response and the safe evacuation of local residents during a flood emergency.

The inability to quickly floodfight and repair a damaged levee will result in loss of life and property, and could have the domino effect of causing neighboring levee failures if DCP construction activities/equipment prevent the local RD's access to the levee break or impede movement of key floodfighting personnel and supplies. These impacts and emergency response measures need to be disclosed and mitigated in a Flood Chapter in the EIS.

CONCLUSION

The DCP proposes one of the largest alterations of the SRFCP since it was originally constructed and will therefore have significant impacts to the Delta's flood protection system that need to be disclosed, analyzed, and mitigated in an EIS. The Association requests the EIS include a Flood Chapter that discloses impacts to levees and performance of flood protection duties described above and to conduct hydraulic modeling that analyzes impacts to flood flow capacity, levee scouring, and water surface elevations.

Sincerely,



Melinda Terry,
Executive Director



Chairman

Steve Mello

Vice-Chairman

Jack Kuechler

Secretary/Treasurer

Tom Slater

Director

Justin van Loben Sels

Director

Mark van Loben Sels

Manager

Melinda Terry

October 19, 2020

U.S. Army Corps of Engineers,
Sacramento District Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922
Attn: Zachary Simmons

Delivered via Email: Zachary.M.Simmons@usace.army.mil

SUBJECT: Scoping Comments on NOI for the Delta Conveyance Project

Dear Mr. Simmons:

In accordance with the North Delta Water Agency's (NDWA/Agency) statutory mandate to assure the lands within the agency a dependable supply of water of suitable quality sufficient to meet present and future needs,¹ the Agency submits these scoping comments on the U.S. Army Corps of Engineers' (USACE/Corps) Notice of Intent to prepare an Environmental Impact Statement (EIS) for the Delta Conveyance Project (DCP/Proposed Project). The Agency's specific interest is assuring that construction activities and conveyance operations proposed by the DCP shall avoid interference with local water supply infrastructure and not impair the water availability for agricultural and municipal water users within NDWA's jurisdiction.

Comments herein are intended to facilitate DWR's compliance with the 1981 Contract and to ensure that any significant adverse impacts to water users and Delta channels associated with the Proposed Project are properly described, analyzed, and mitigated in accordance with applicable law. The DCP EIS must acknowledge the potential for construction activities and conveyance operations to have adverse impacts on surface and groundwater diversion facilities and should consider whether the damage to water users from DCP construction and operation activities is a violation of standards in NEPA governing disclosure, weighting of impacts, and cumulative effects on environmental, human resources, and local economy. Adverse impacts within the project area to existing water quality, water surface levels, local diversion intakes, and flood flow velocities that can erode levee embankments should specifically be identified and addressed in the EIS.

¹ North Delta Water Agency Act, Chapter 283, Special Statutes of 1973.

NDWA BACKGROUND

The Agency was formed in 1973 by a special act of the Legislature to represent northern Delta water users in negotiating a water supply and quality contract with both the United States Bureau of Reclamation and California Department of Water Resources in order to mitigate the water rights impacts of the Central Valley Project (CVP) and the State Water Project (SWP).

NDWA has an ongoing statutory mandate under California law to assure that the lands within the North Delta have a dependable supply of water of suitable quality sufficient to meet present and future beneficial uses.² Representing nearly one-half of the legal Delta, the Agency's boundaries encompass approximately 300,000 acres. This includes all of that portion of the Sacramento-San Joaquin Delta, as defined in Water Code Section 12220, situated within Sacramento, Yolo and Solano Counties, including New Hope Tract, Canal Ranch and Staten Island in northeastern San Joaquin County.

In 1981 the NDWA and Department of Water Resources (DWR/Department) executed the *Contract for the Assurance of a Dependable Water Supply of Suitable Quality* (1981 Contract). The 1981 Contract requires DWR to meet certain water quality criteria that vary from month to month, and from year to year, based on the Four River Basin Index; with the criteria at seven water quality monitoring locations based on the 14-day running average of mean daily electrical conductivity (salinity levels). The 1981 Contract also contains provisions pertaining to physical changes that obligate DWR to avoid or repair damages from hydrodynamic changes, and if necessary, require limitations on the operations of the SWP pumps and reservoirs in order to maintain water quality compliance.

PROJECT ALTERNATIVES

When developing alternatives and mitigation measures in the EIS, we encourage the Corps to consider how the size, location, and operation of new SWP conveyance facilities can be designed to improve, rather than degrade, water quality in the Delta. The alternative analysis in the EIS should not be limited to tunnel projects with only variations in tunnel and intake sizing, and only east side conveyance alignments. Consistent with existing law in the 2009 Delta Reform Act to "reduce reliance on the Delta in meeting California's future water supply needs" (Water Code Section 85057.5), the EIS should include analysis of alternatives that incorporate actions to reduce the demand for water exports from the Delta, e.g., water use efficiency actions, desalination, and other local self-reliance projects in export areas.

IN-DELTA WATER SUPPLY AND QUALITY IMPACTS

Before government reservoirs began withholding much of the Sacramento River system's high winter flows, the Delta channels stored sufficient fresh water to sustain water quality in the northern Delta throughout and often beyond the irrigation season.

² North Delta Water Agency Act, Chapter 283, California Statutes of 1973.

Primary factors influencing water quality in the Cache Slough Complex are freshwater flows from the Sacramento River that are conveyed through Steamboat and Miner Sloughs and tidal action. In general, the river flow in Steamboat and Miner Sloughs is higher when the Delta Cross Channel (DCC) is closed, so tidal exchange varies with both Sacramento River flow and DCC operation. The installation of two 3,000 cfs diversion intakes on the Sacramento River will alter the hydrodynamics in the Delta both upstream and downstream of the intakes, including freshwater flows to the Cache Slough Complex.

The primary source of domestic water for homes and businesses located in the Delta is groundwater from individual wells. Counties require permits for these wells and therefore have a database of their location. Irrigation of farmland in the Delta relies on both diversion of surface water and occasionally pumping of groundwater. If the elevation differential between landside and water surface elevations (referred to as "head") is not sufficient, the siphon will not work. When water surface elevations in Delta channels are lowered, longer durations are necessary to apply the same amount of water under existing conditions.

If an electric pump is needed to replace a gravity siphon, the costs are quite substantial. On many islands, power lines are not present at the land side base of the levee and there is not enough voltage to supply the power needed for new power draws on the existing utility company system. For example, the cost of stringing new wires and poles are approximately \$50,000 per quarter mile, a new pump column, impellor and motor of sufficient size to replace a 12-inch siphon's water flow costs an additional \$25,000, and the labor to install the pumping facility is an additional \$8,000. Permit costs and timelines need to be factored in as well.

There are thousands of individual diversion pipes, primarily agricultural gravity siphons located in the Delta channels, and many municipal and agricultural groundwater wells that will need to be protected from construction and operation of the Proposed Project. The EIS should provide an adequate analysis of the project's impacts to water supply and quality, water diversion infrastructure, and to the water channels and embankments. DWR should commit to immediately repair any damage to existing water supply infrastructure, including underground wells, caused by the Proposed Project construction and operation; and be required to provide alternative water source (temporary or permanent) to impacted water users, if necessary. In addition, the water quality of these agricultural and municipal water supplies must not be impaired by dewatering and discharge activities during Proposed Project construction or by the operation of three new proposed intakes on the Sacramento River.

The Water Supply Chapter in prior EIR and EIS documents prepared for the BDCP and WaterFix failed to include a section describing the impacts to local water supplies (groundwater wells and surface diversions) within the project area as a result of construction and operation of new water conveyance and export facilities. Instead, these documents only analyzed impacts to water supplied in export areas outside of the area of the Proposed Project.

Specific components NDWA requests being addressed in the EIS for the DCP are:

- Include a section in the Water Supply Chapter describing impacts to the hundreds of municipal and agricultural underground wells and diversion intakes in the rivers and channels located in the Project Area, including changes in water surface levels affecting performance of individual diversion intakes;
- Avoid or mitigate interference with operation and performance of local underground wells and surface water diversion infrastructure.
- Avoid or mitigate degradation of local water quality supplies.
- Analyze how operational requirements such as spring outflow criteria will affect reservoir water storage necessary to maintain 1981 Contract salinity criteria.
- Effects Analysis should include modeling of changes in salinity levels at all seven water quality monitoring stations identified in the 1981 Contract.
- Effects Analysis should include modeling of changes in water surface levels and hydrodynamics (water velocities and reverse flows).
- Consider providing an alternative water source to mitigate adverse impacts to existing water supply infrastructure and water quality in the north Delta.
- Conduct cumulative effects analysis on water quality in the Cache Slough Complex from the operation of two new 3,000 cfs intakes on the Sacramento River when combined with restoration of fish habitat in Cache Slough Complex, including the Yolo Bypass.

CONCLUSION

The DCP proposes an extensive alteration of the Delta's hydrodynamics that will affect water quality, a 14-year construction timeline, and hundreds of potential adverse impacts in the Project Area during construction and operation of the new conveyance facilities. We encourage the Corps to organize the EIS in a way to allow the true nature of the scope, duration, and severity of these environmental impacts to be discernible to the general public and permit decision-makers.

Thank you for considering our comments regarding water quality and supply impacts in the Project Area to be evaluated when developing the EIS for the Delta Conveyance Project.

Sincerely,



Melinda Terry,
Manager



Pacific Fishery Management Council

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Marc Gorelnik, Chair | Charles A. Tracy, Executive Director

October 19, 2020

US Army Corps of Engineers
Sacramento Regulatory Division
Attn: Mr. Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814-2922

RE: National Environmental Policy Act Scoping for the Delta Conveyance Project

Dear Mr. Simmons:

The Pacific Fishery Management Council (Council) is submitting the following scoping comments for the Army Corps of Engineers (Corps) National Environmental Policy Act (NEPA) analysis for the construction of California Department of Water Resources' proposed Delta Conveyance Project (DCP)¹.

The project includes various configuration options, all of which include construction and operation of a new North Delta Diversion facility, consisting of two diversion intakes in the Sacramento River south of Sacramento for the conveyance of water to the existing State Water Project pumping facilities in the South Delta. The volume of water to be diverted from the Sacramento River by the DCP is not specified at this time but is proposed to be between 3,000 and 7,500 cfs. The estimated permanent impact to wetlands and other waters from the construction of the project is over 240 acres, with another 100 acres temporarily impacted by fill associated with the construction project.

The Corps scoping materials indicated request for comments related to "...probable impacts on the aquatic environment and the secondary and cumulative impacts."² The Council notes the proposed project will have permanent impact to designated essential fish habitat³ (EFH) for salmon and likely have secondary and cumulative impacts to salmon EFH and Council-managed fisheries from the construction and operation of the DCP.

Council Authority under the Magnuson-Stevens Fishery Conservation and Management Act Authority

Under Section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the Council is charged with designating EFH and commenting on Federal agency actions that affect EFH for Council-managed species. For activities that the Council believes are likely to

¹ See 85 *Fed. Reg.* 51420 et seq. (August 20, 2020).

² See The Permit Process for the Delta Conveyance Process, <https://www.spk.usace.army.mil/Missions/Regulatory/Delta-Conveyance/>

substantially affect the habitat of its anadromous species managed salmonids, the Council is obligated to provide comments (MSA §305(b)(3)) on impacts to EFH.

The MSA also requires Federal agencies, including the Bureau of Reclamation and the Corps, to consult with the National Marine Fisheries Service (NMFS) on all proposed actions that may adversely affect EFH (MSA §305(b)(2)) to avoid, minimize, mitigate, or otherwise offset those adverse effects.

Habitat Concerns

Sacramento River fall-run Chinook Salmon support tribal, commercial, and recreational ocean and freshwater fisheries and are the largest contributor to harvests in both California and Oregon ocean fisheries. The Council manages these ocean fisheries to protect Central Valley winter-run and spring-run Chinook salmon from the Sacramento River basin in accordance with Endangered Species Act (ESA) consultation standards. Therefore, the Council is concerned that any impacts to EFH may reduce the productivity and abundance of fall-run Chinook salmon and ESA-listed Central Valley winter and spring-run Chinook salmon.

The Council is particularly concerned about negative impacts to EFH and Council-managed fisheries due to the diversion of water from the Sacramento-San Joaquin Delta. The diversion of water should be evaluated in the NEPA process from the perspective of both direct and cumulative impacts on EFH. Water withdrawals will adversely affect the complex channels, floodplain habitats, and estuarine habitat areas designated as “habitat areas of particular concern” for their importance as migratory and rearing areas for salmon.

The NEPA analysis should include the potential of water diversion to impact juvenile salmon outmigration due to impingement and entrainment of fish at the North Delta Diversion and the impact of altered river flows affecting juvenile migration route. Analysis should also include potential increased water temperatures from lower flows downstream of diversion, reduced access to off-channel salmon rearing habitat resulting from lower flow levels, and limited rearing area for salmon in the lower Delta and San Pablo Bay due to increased salinity.

Any actions to increase water diversions from the Sacramento/San Joaquin River system without regard for the habitat needs of salmon will exacerbate an already dire situation for these stocks and the fishing communities that depend on them.

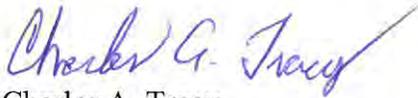
Conclusion and Request

The Council urges you to thoroughly evaluate the proposed Project’s impacts on EFH, including all areas of the Delta and the reaches of the Sacramento River upstream and downstream of the proposed project. Such an evaluation would include differential impacts to EFH of ESA-listed and unlisted Council-managed stocks mentioned above based on geography, life histories, or other factors in light of the reductions in salmon populations that have already occurred, and the impacts that the proposed operational changes pose to Council-managed fisheries and Council-designated EFH. In addition, the analysis should examine potential indirect effects such as improved conditions for predators of juvenile Chinook salmon.

We understand that the environmental impact statement for the DCP will be publicly available and that the Corps will be consulting with NMFS on the potential adverse impacts of the proposed DCP on EFH. We request that the Council be provided a copy of the EFH Assessment when it is submitted to NMFS. Further, this EFH consultation should be included in the final NEPA analysis upon which the record of decision will be based so that the decision maker, the public, and interested agencies and other parties are adequately informed of the impacts of the proposed action and any agency-recommended measures necessary to conserve EFH.

If you have any questions, feel free to contact me or Jennifer Gilden of my staff.

Sincerely,



Charles A. Tracy
Executive Director

JDG:kma

Cc: Pacific Council Members

Dr. Cathy Marcinkevage, Assistant Regional Administrator, California Central Valley Area,
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October 19, 2020

Via Electronic Mail

U.S. Army Corps of Engineers, Sacramento Regulatory Division
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Sacramento, CA 95814-2922
Zachary.M.Simmons@usace.army.mil

Subject: Comments on Notice of Intent for Environmental Impact Statement – Delta Conveyance Project

Dear Mr. Simmons:

The Sacramento Regional County Sanitation District (Regional San) submits the following comments in response to the U.S. Army Corps of Engineers Sacramento Division's (USACE) Notice of Intent (NOI) for the development of an Environmental Impact Statement (EIS) for the Delta Conveyance Project (Project).

I. Background

Regional San provides wastewater conveyance, treatment, and reclamation services for approximately 1.4 million people in the urbanized area of Sacramento County and the City of West Sacramento in Yolo County. The Sacramento Regional Wastewater Treatment Plant (SRWTP) facility, owned and operated by Regional San, is one of the largest wastewater treatment plants in the State of California, employing over 400 people, operating 24 hours a day, seven days per week. Since the 1980s, Regional San has been safely conveying, treating, and discharging treated wastewater to the Sacramento River at Freeport. Over the last decade, its discharge has averaged 133 million gallons per (mgd) day. Regional San's discharge from the SRWTP is authorized and regulated under a National Pollutant Discharge Elimination System (NPDES) permit issued by the California Regional Water Quality Control Board (RWQCB), Central Valley Region. Regional San is also in the process of constructing its EchoWater project, a nearly \$2 billion investment that will produce disinfected tertiary treated water suitable for recycling and reuse for a broad range of beneficial uses.

With the Delta Conveyance Project, the Department of Water Resources (DWR) would construct and operate two intakes to be selected from three potential intake sites downstream of the SRWTP's treated wastewater discharge location in the Sacramento River. The uppermost potential intake site, Intake 2, is approximately one mile downstream of the effluent discharge point, which is within the edge of

Mr. Zachary Simmons

Re: Regional San Comments on Notice of Intent for Environmental Impact Statement – Delta Conveyance Project

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the existing harmonic mean flow-based human health mixing zone provided in the SRWTP's existing NPDES permit. (Exhibit A, Power Point Presentation of Thomas Grovhoug, SRCSD-35 (Mar. 23, 2018).) The NPDES permit requires SRWTP treated effluent to be diverted to emergency storage basins (ESBs), rather than being discharged, when the river-to-effluent ratio is below 14:1. These types of diversions typically occur when the Sacramento River flows are low and the tide is high (reverse flow in the Sacramento River); under this combination of factors, the Sacramento River flow at Freeport can reverse direction and temporarily flow upstream.

II. Comments on the Scope of the Impact Analysis

A. The Scope of the National Environmental Policy Act (NEPA) Review Must Be Expanded to Include Potential Effects of Operation of the Intakes

The NOI describes the scope of USACE's jurisdiction as "limited to construction activities" and the scope of USACE's review under NEPA for operations of the new facilities as "limited to potential effects to navigation and long-term operations and maintenance of the modifications of federal levees" – explicitly excluding "[t]he future operation of the intakes after completion of construction" from USACE's "control or responsibility." However, this approach improperly constrains the required analysis under NEPA, as USACE has the requisite control and responsibility to expand its review to impacts of, and alternatives to, the operation of the intakes, particularly, given the magnitude of the Delta Conveyance Project.

1. Operations of the Intakes Are Within USACE Jurisdiction

USACE's regulations implementing its NEPA responsibilities require it to conduct an environmental analysis for portions of the project "over which [USACE] has sufficient control and responsibility to warrant Federal Review." 33 C.F.R. pt. 325, app. B §§ 7(b)(1), 8(d) (applying the scope of analysis outlined in paragraph 7(b) to USACE's preparation of an EIS). The scope of USACE's analysis "should include direct, indirect and cumulative impacts on all Federal interests within the purview of the NEPA statute." *Id.*, pt. 325, app. B § 7(b)(3). For the purposes of NEPA, indirect effects include reasonably foreseeable effects on water related to induced changes in growth or the pattern of land use. 40 C.F.R. § 1508.8. The purpose of the levee modifications is to enable the long-term diversion of water from the Sacramento River from facilities located on or within the levees. Accordingly, USACE's review of potential effects to long-term operations and maintenance of the modifications of Federal levees necessarily includes consideration of the operations of the intakes. Because modifications of Federal levees is an integral component of the proposed water diversion and conveyance system, review of Federal levee construction under NEPA must include consideration of the ongoing significant environmental consequences of the intake operations.

2. The Extent of Cumulative Federal Control and Responsibility Warrant Extending USACE's NEPA Review Beyond its Jurisdiction

Additionally, or alternatively, the cumulative Federal control and responsibility of the Project require that USACE expand its NEPA analysis beyond mere construction activities and must

Mr. Zachary Simmons

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include operation of the intakes. Sufficient “control and responsibility for portions of the project beyond the limits of Corps jurisdiction” exists “where the environmental consequences of the larger project are essentially products of the Corps permit action.” 33 C.F.R. pt. 325, app. B§ 7(b)(2). Relevant to this consideration is “[t]he extent of cumulative Federal control and responsibility[,]” where “environmental consequences of the additional portions of the project are essentially products of Federal financing, assistance, direction, regulation, or approval,” and/or where “other Federal agencies are required to take Federal action under the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Endangered Species Act,” and other environmental laws and orders. *Id.*, pt. 325, app. B § 7(b)(2)(iv)(A)-(B) (citations omitted).

First, as relevant here, the Project is being designed to provide operational flexibility not only for the State Water Project (SWP), but also the Central Valley Project (CVP), a federally owned and operated water supply project. The notice of preparation issued pursuant to the California Environmental Quality Act (CEQA) by the Project applicant, the California DWR, identifies the potential use of the Project to “restore and protect the reliability of . . . [CVP] water deliveries south . . . of the Delta . . .” and the Project includes facilities designed to accommodate use for CVP operations. *See* Exhibit B, Notice of Preparation (NOP) of Environmental Impact Report (EIR) for the Delta Conveyance Project, DWR, Jan. 15, 2020, at pp. 2, 3.¹ The NOI makes no mention of these foreseeable Federal aspects of Project operations. To limit the scope of NEPA review to construction activities ignores the Project’s stated purpose (*see La Wildlife Fed’n, Inc. v. York*, 761 F.2d 1044, 1048 (5th Cir. 1985) [“it would be bizarre if the Corps were to ignore the purpose for which the applicant seeks a permit and to substitute a purpose it deems more suitable”]), and excludes additional portions of the Project which are products of Federal financing, assistance, direction, regulation, and approval.

Therefore, the Project will have environmental consequences resulting from coordinated operations of the SWP and CVP, warranting a broader scope of analysis under NEPA. Even if the Bureau of Reclamation (Reclamation) does not authorize direct participation in the Project by the CVP, the SWP and CVP water infrastructure are operated in a coordinated manner, pursuant to a 1986 Coordinated Operations Agreement. Joint points of diversion allow the use of one project’s diversion facility by the other under certain conditions. The operation of the CVP and SWP diversion facilities will alter the flow in Delta channels, creating reverse flows, stagnant zones and changes to water quality. Due to the inextricably interrelated operations of the SWP and CVP, a decision by the USACE to authorize construction of Project facilities will have clearly foreseeable environmental consequences from their operation that are within the scope of Federal control and responsibility.

¹ As stated on page 3 of DWR’s NOP:

Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants).

Mr. Zachary Simmons

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Second, other Federal agencies are required to take Federal action in the review and approval of the Project. As stated in the NOI, the preparation of USACE’s EIS will require compliance with the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act – all of which are explicitly listed in USACE’s implementing regulations as sufficient Federal involvement to expand the scope of federal action. 33 C.F.R. pt. 325, app. B § 7(b)(2)(iv)(B).

B. The EIS Must Identify and Thoroughly Evaluate Alternative Locations for the Intakes

Where, as here, sufficient Federal control and responsibility over the entire project exists, “the NEPA review [should] be extended to the entire project, including portions outside waters of the United States” 33 C.F.R. pt. 325, app. B § 7(b)(3). NEPA further requires that USACE “[r]igorously explore and objectively evaluate all reasonable alternatives” to the Project, including “reasonable alternatives not within the jurisdiction of the lead agency.” 40 C.F.R. § 1502.14. Accordingly, USACE must address impacts from facility construction or operation resulting from the Project as a whole, including impacts to areas outside of the waters of the United States, which necessarily result from USACE-authorized construction activity, and must take into consideration available alternative intake locations.

Information in the WaterFix EIR Appendix 3F, Intake Location Analyses (pp. 3.F.6-3.F.8), relying on the Fish Facilities Technical Team (FFTT) report, indicates that there are suitable intake locations downstream below Steamboat Slough (identified as intakes 6 and 7), which would reduce the potential for conflicts with and significant impacts to SRWTP operations and have the benefit of being better for salmon. At a minimum, the draft EIS alternatives must include a robust analysis of alternative locations for the intakes that avoid these significant impacts. *See* Exhibit C, Part 2 Testimony of Thomas Grovhoug, SRCSD-37 (Mar. 23, 2018); Part 2 Testimony of Dr. Susan Paulsen, SRCSD-29 (Mar. 23, 2018); Impacts of the California WaterFix Project Affecting Regional San Report, SRCSD-31 (Mar. 23, 2018).

Given the potential for significant water quality impacts in the Delta due to the reduction in freshwater flows, and with proper consideration of Delta Reform Act mandates, the EIS should also fully evaluate a non-structural alternative that includes water reclamation, localized desalination, and increased capture and storage of localized rainfall in lieu of continued or increased Delta exports.

III. Comments on the Methodology of Impact Analyses

A. The EIS Must Use a Baseline that Accurately Depicts Impacts Throughout the Life of the Project

Impact analyses that depend on the Sacramento and San Joaquin River and Delta hydrologic conditions (including impacts to water quality, water supply, and public facilities that discharge into or divert water from the Sacramento-San Joaquin River Delta) must utilize a baseline that accurately reflects conditions at the time the Project is expected to begin operations, as well as reasonably foreseeable future conditions. Operational impacts to Delta water quality and Regional San's operations will occur immediately upon commencement of Project diversions and near-term impacts may be substantially different from those impacts occurring farther in the future, when background hydrologic conditions will be considerably different due to the effects of climate change.

B. The EIS Must Evaluate and Avoid or Fully Mitigate Impacts From Increased Frequency and Duration of Sacramento River Reverse Flow Events

In comments on the WaterFix EIR/EIS and draft Supplemental EIR/EIS, and in testimony submitted in the WaterFix water rights change petition proceeding, Regional San raised concerns about the potential for the WaterFix project to adversely affect operations of the SRWTP through changes in water quality and the frequency and duration of reverse flow events. Due to the similarity of the Delta Conveyance Project to WaterFix, Regional San's specific concerns and evidence regarding the potential impacts of WaterFix on SRWTP operations are also applicable to the Delta Conveyance Project and must be addressed in the EIS using appropriate and best available methodology, assumptions, and analysis. These concerns include changes in water quality and the number and duration of low-flow and reverse-flow periods in the Sacramento River.

Impacts to Regional San's diversion operations are driven by hourly river flow rates at Freeport. Based on evidence submitted by Regional San in connection with WaterFix, it is reasonable to assume that Project operations will alter the conditions of the Sacramento River at Freeport, such that Regional San will need to divert effluent to ESBs for longer durations and in larger quantities than under existing conditions. Essentially, every time the Project causes river conditions that necessitate a diversion greater than would occur in the baseline condition, Regional San will be forced to commit its facilities to correcting conditions created by the Project in order to meet its NPDES permit obligations, thereby reducing Regional San's operational flexibility and creating unknown risks and costs to Regional San's operations. By consuming ESB-capacity that otherwise would be available for SRWTP operations, the Project has the potential to result in significant environmental impacts by necessitating construction of additional storage facilities. The Delta Reform Act requires that a new Delta conveyance project fully mitigate impacts. Therefore, the EIS must not only evaluate and disclose these impacts, but it must also identify alternatives and/or mitigation measures that commit USACE to fully mitigate these impacts.

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In evaluating impacts to Regional San’s operations and facilities, the EIS must employ the appropriate methodology. DWR and Reclamation’s evaluation of the WaterFix effects on SRWTP effluent diversions to ESBs was incorrectly based on treatment plant inflows. An accurate assessment of the frequency and duration of Regional San’s effluent diversion must properly account for discharges of effluent to the river. Effluent flows are the flows regulated by the 14:1 river-to-effluent requirement; inflows are not. Any simulations based only on inflows would not provide meaningful, relevant information, because they would fail to account for the discharge of treated effluent previously diverted to ESBs.

Further, the 14:1 river flow threshold at which effluent must be diverted to ESBs is continuously changing since SRWTP flow rates continuously change – both seasonally and over the course of a day. Therefore, SRWTP diversions (and impacts to diversions) must be simulated on a near-continuous, hour-by-hour basis using best available information, which includes hourly flow rates in the Sacramento River at Freeport and hourly SRWTP operations up to the maximum authorized discharge rate of 181 mgd.

In addition, USACE must not repeat the error made with WaterFix in assuming, without evidence or analysis, that an undefined operational protocol for the Project intakes will be capable of mitigating Project impacts. As it prepares the draft EIS, USACE should consult with Regional San on both the appropriate methodology for impact assessment and to determine whether there are feasible means of avoiding impacts to SRWTP operations.

C. The EIS Must Evaluate Impacts From Locating Intakes Downstream of SRWTP Discharge

The WaterFix diversion structures were characterized by DWR and the SWRCB as “drinking water intakes.” If such a characterization were applied to the Project and accepted by the RWQCB, it could result in substantial additional capital costs and NPDES permit compliance challenges for Regional San.² Notably, for example, it could lead to the loss of the SRWTP human health mixing zone for the calculation of trihalomethane (THM) effluent limitations. This would result in permit compliance issues necessitating costly treatment modifications. Human health criteria are generally based on long-term exposure, and the RWQCB evaluates if the mixing zone meets the requirements of the State Implementation Plan and the Basin Plan requirements to ensure protection of beneficial uses.³

² Project proponents and users of water exported from the Delta have a history of commenting on the NPDES permit and wastewater facility EIR documents prepared by Regional San and other Central Valley publicly owned treatment works (POTWs). They have consistently asked for increasing levels of treatment by Regional San and by other municipalities in the Central Valley (e.g. Stockton, Modesto, Turlock, etc.). State Water Contractors and numerous other export water users submitted comments on the EchoWater project EIR. In those comments, they advocated for additional removal of nutrients and salinity, above and beyond the capability of the EchoWater project. Thus, it is entirely foreseeable that placing the Project diversion structures within the vicinity of the SRWTP discharge to the Sacramento River will result in intensification of such requests by Project proponents and others.

³ Order R5-2016-0020-01 NPDES No. CA0077682 Waste Discharge Requirements for the Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant Sacramento County, accessible at

Mr. Zachary Simmons

Re: Regional San Comments on Notice of Intent for Environmental Impact Statement – Delta Conveyance Project

October 19, 2020

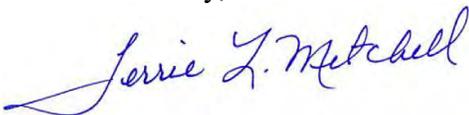
Page 7

If Delta Conveyance Project diversion structures are located within or near the edge of the current mixing zone, the RWQCB may disallow the mixing zone, requiring Regional San to meet end of pipe THM effluent limitations. This is a very important issue to the successful operation of the SRWTP. Regional San is engaged in a massive effort to design and construct facilities required to comply with its existing permit conditions through its EchoWater project. These new facilities will cost Regional San's rate payers an estimated \$2 billion. If the current dilution credit for THMs were eliminated due to concerns regarding the short distance between the edge of the mixing zone and the diversion structures, Regional San could not reliably meet the resulting effluent limitations and would be compelled to cease operation of its new EchoWater project chlorine disinfection facilities. In lieu of chlorine disinfection, Regional San would be forced to construct an alternative disinfection system to meet the THM effluent limitations and California Code of Regulations Title 22 equivalent requirements in its NPDES permit, leading to additional significant environmental impacts from constructing and operating that system. These significant impacts are additional reasons why USACE must rigorously evaluate all the potential impacts of the proposed Project, including evaluation of alternative intake locations sufficiently far from the SRWTP to avoid adverse impacts to the operation of this critical public infrastructure.

IV. Conclusion

USACE has the requisite control and responsibility to change the scope of its review to impacts and alternatives to the operation of the intakes, and its analysis under NEPA must be expanded accordingly. Because the Project is likely to have significant adverse impacts to Regional San's facilities and operations, as well as impacts to Delta water quality, USACE's broadened NEPA analysis must include consideration of the indirect effects on water resources, including a robust analysis of alternative intake locations. Please contact me at 916-876-6092 or at mitchellt@sacsewer.com if you need additional information or would like to discuss these comments.

Sincerely,



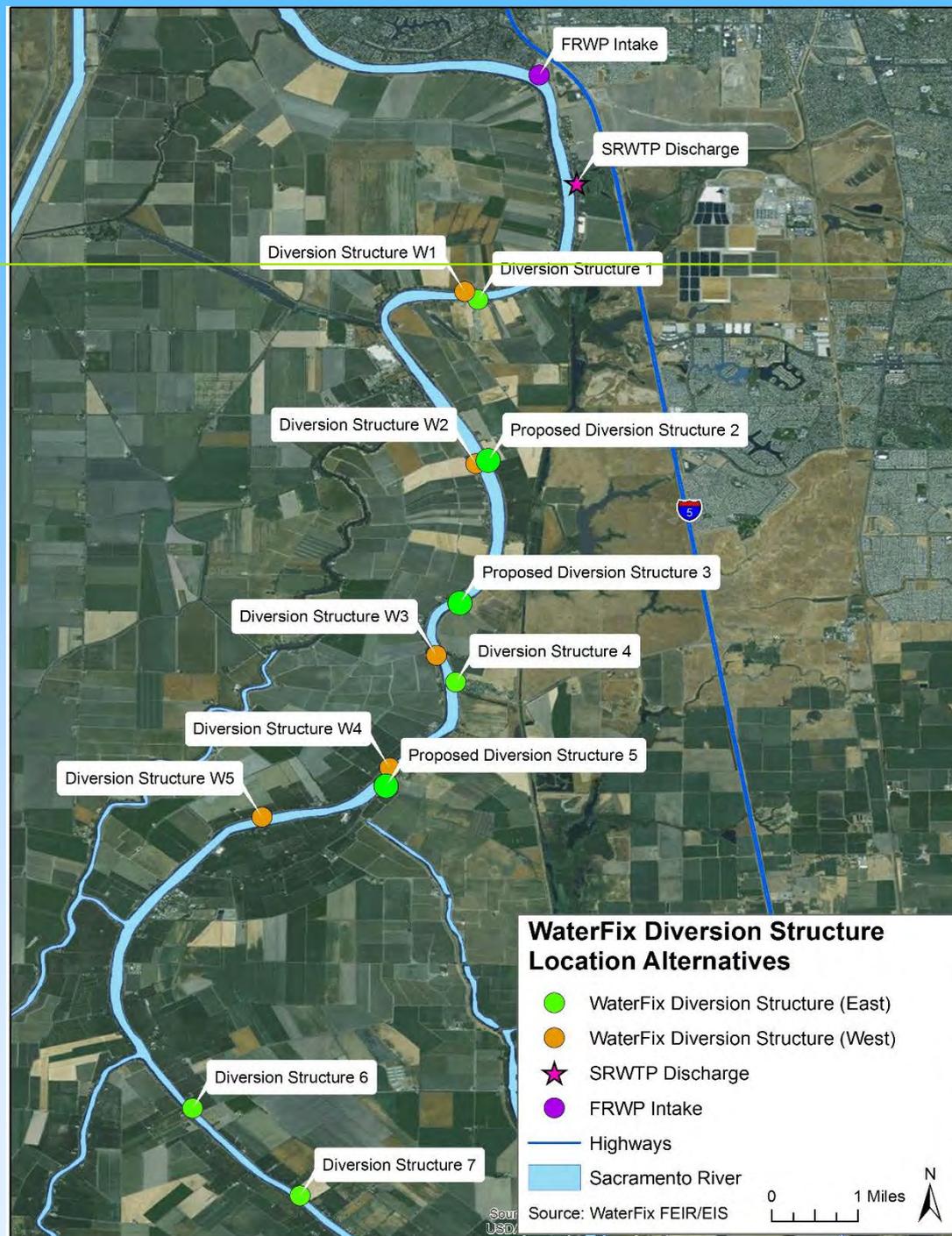
Terrie L. Mitchell
Manager, Legislative & Regulatory Affairs

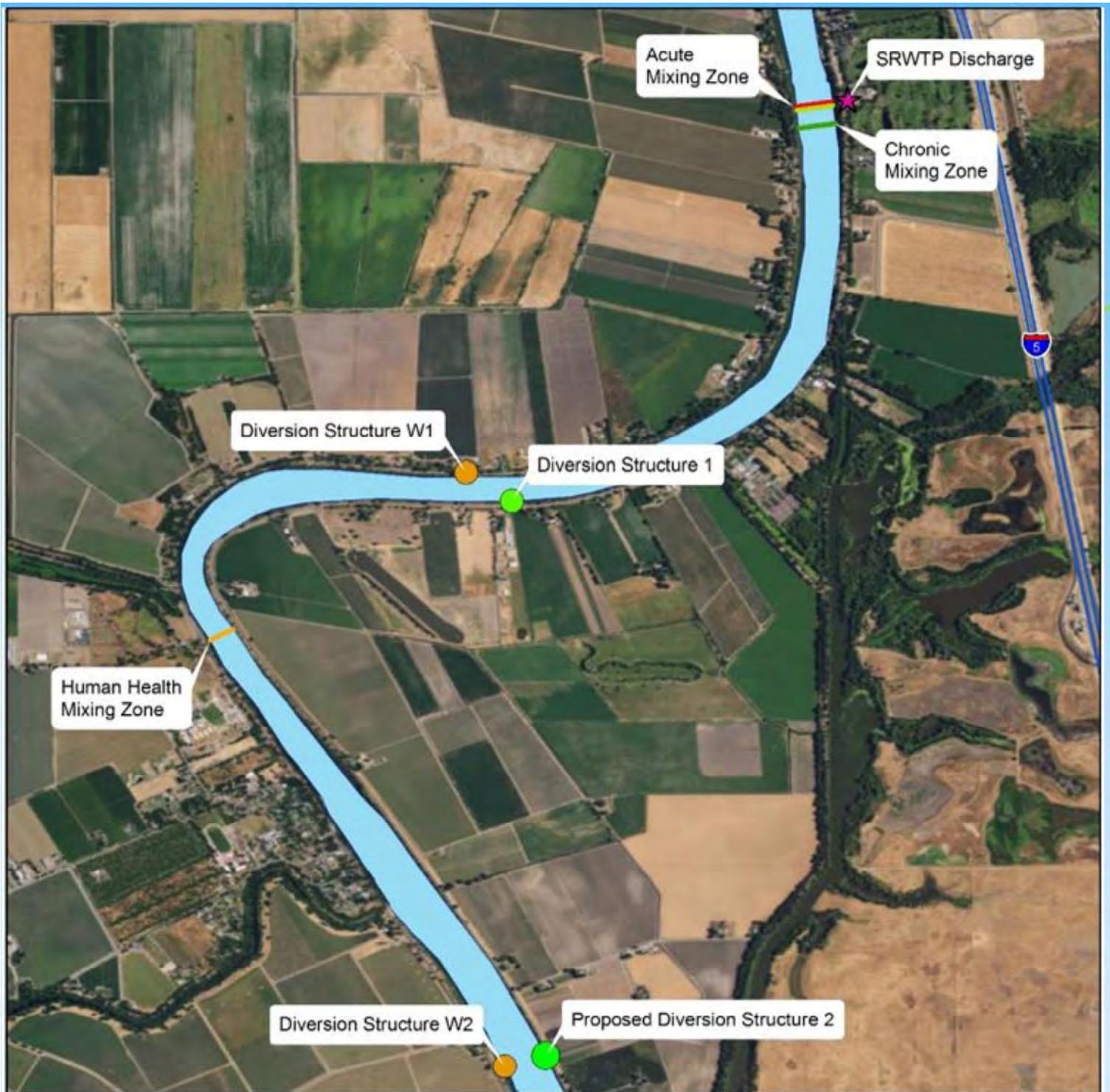
cc: Prabhakar Somavarapu, Regional San District Engineer
Christoph Dobson, Regional San Director of Policy & Planning
Kelley Taber, Somach, Simmons & Dunn

EXHIBIT A

Testimony of TR Grovhoug

On behalf of SRCSD





WaterFix Diversion Structure Location Alternatives in the Vicinity of SRWTP



Source: WaterFix FEIR/EIS

Impacts of Proposed Diversion Structures on SRWTP NPDES Permit

Additional Treatment Requirements due to:

- Mischaracterization of Diversion Structures as Drinking Water Intakes
- Potential loss of Dilution Credit for THMs
- Potential imposition of potable reuse requirements
- Limits resulting from degradation of Delta Water Quality for EC, HABs and Macrophytes

Diversion Structures vs Drinking Water Intakes

- Point must be clarified by State Board and Petitioners that proposed structures are not drinking water intakes
- Makes a big difference to mixing zone PDES permit determinations for SRWTP discharge

Dilution Credit for Trihalomethanes

- SRWTP has dilution credit for THMs
- Resulting effluent limitations can be met by EchoWater Project
- Loss of dilution credit would result in need to convert from chlorination to ultraviolet disinfection with pre-ozonation
- \$400 million increased capital cost, increased O&M costs

Potential Confusion regarding Potable Reuse Requirements

- Point must be clarified by State Board that SRWTP discharge to Sacramento River is not somehow equivalent to either:
 - Raw water augmentation
 - Reservoir water augmentation
- Treatment requirements and Cost implications to SRWTP are significant

Impacts of Delta Water Quality Degradation associated with Water Fix Project

- Water Fix will increase EC levels and increase residence times in portions of the Delta
- Increased residence times promote HABs and macrophyte proliferation
- SRCSD and others should not be required to implement controls to address these impacts
- Petitioners should be required to participate in solutions

EXHIBIT B

NOTICE OF PREPARATION

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT FOR THE DELTA CONVEYANCE PROJECT

January 15, 2020

INTRODUCTION

Pursuant to the California Environmental Quality Act (CEQA), the California Department of Water Resources (DWR) will initiate the preparation of an Environmental Impact Report (EIR) for the Delta Conveyance Project in the Sacramento-San Joaquin Delta, California. DWR is the lead agency under CEQA.

The Delta Conveyance Project will also involve federal agencies that must comply with the National Environmental Policy Act (NEPA), likely requiring the preparation of an environmental impact statement (EIS). Federal agencies with roles with respect to the project may include approvals or permits issued by the Bureau of Reclamation (Reclamation) and United States Army Corps of Engineers. To assist in the anticipated federal agencies' NEPA compliance, DWR will prepare an EIR that includes relevant NEPA information where appropriate. Once the role of the federal lead agency is established, that federal lead agency will publish a Notice of Intent to formally initiate the NEPA process.

BACKGROUND INFORMATION

In July 2017, DWR had previously approved a conveyance project in the Delta involving two tunnels referred to as "California WaterFix." In his State of the State address delivered February 12, 2019, Governor Newsom announced that he did not "support WaterFix as currently configured" but does "support a single tunnel." On April 29, 2019, Governor Newsom issued Executive Order N-10-19, directing several agencies to (among other things), "inventory and assess... [c]urrent planning to modernize conveyance through the Bay Delta with a new single tunnel project." The Governor's announcement and Executive Order led to DWR's withdrawal of all approvals and environmental compliance documentation associated with California WaterFix. The CEQA process identified in this notice for the proposed Delta Conveyance Project will, as appropriate, utilize relevant information from the past environmental planning process for California WaterFix but the proposed project will undergo a new stand-alone environmental analysis leading to issuance of a new EIR.

PROPOSED DELTA CONVEYANCE PROJECT DESCRIPTION

Purpose and Project Objectives

CEQA requires that an EIR contain a "statement of the objectives sought by the proposed project." Under CEQA, "[a] clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers

in preparing findings or a statement of overriding considerations. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits” (State CEQA Guidelines Section 15124[b]).

Here, as the CEQA lead agency, DWR’s underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State’s Water Resilience Portfolio.

The above stated purpose, in turn, gives rise to several project objectives. In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:

- To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events.
- To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta.
- To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements.
- To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations.¹

Description of Proposed Project Facilities

The existing SWP Delta water conveyance facilities, which include Clifton Court Forebay and the Banks Pumping Plant in the south Delta, enable DWR to divert water and lift it into the California Aqueduct. The proposed project would construct and operate new conveyance facilities in the Delta that would add to the existing SWP infrastructure. New intake facilities as points of diversion would be located in the north Delta along the Sacramento River between Freeport and the confluence with Sutter Slough. The new conveyance facilities would include a tunnel to convey water from the new intakes to the existing Banks Pumping Plant and potentially the federal Jones Pumping Plant in the south Delta. The new facilities would provide an alternate location for diversion of water from the Delta and would be operated in coordination with the existing south Delta pumping facilities, resulting in a system also known as "dual conveyance"

¹ These objectives are subject to refinement during the process of preparing a Draft EIR.

because there would be two complementary methods to divert and convey water. New facilities proposed for the Delta Conveyance Project include, but are not limited to, the following:

- Intake facilities on the Sacramento River
- Tunnel reaches and tunnel shafts
- Forebays
- Pumping plant
- South Delta Conveyance Facilities

Figure 1 shows the areas under consideration for these facilities. Other ancillary facilities may be constructed to support construction of the conveyance facilities including, but not limited to, access roads, barge unloading facilities, concrete batch plants, fuel stations, mitigation areas, and power transmission and/or distribution lines.

Under the proposed project, the new north Delta facilities would be sized to convey up to 6,000 cfs of water from the Sacramento River to the SWP facilities in the south Delta (with alternatives of different flow rates, as described in the “Alternatives” section below). DWR would operate the proposed north Delta facilities and the existing south Delta facilities in compliance with all state and federal regulatory requirements and would not reduce DWR’s current ability to meet standards in the Delta to protect biological resources and water quality for beneficial uses. Operations of the conveyance facilities are proposed to increase DWR’s ability to capture water during high flow events. Although initial operating criteria of the proposed project would be formulated during the preparation of the upcoming Draft EIR in order to assess potential environmental impacts and mitigation, final project operations would be determined after completion of the CEQA process, obtaining appropriate water right approvals through the State Water Resources Control Board’s change in point of diversion process, and completing the consultation and review requirements of the federal Endangered Species Act and California Endangered Species Act. Construction and commissioning of the overall conveyance project, if approved, would take approximately 13 years, but the duration of construction at most locations would vary and would not extend for this full construction period.

Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions below. The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants). If Reclamation determines that there could be a role for the CVP in the Delta Conveyance Project, this role would be identified in a separate NEPA Notice of Intent issued by Reclamation.

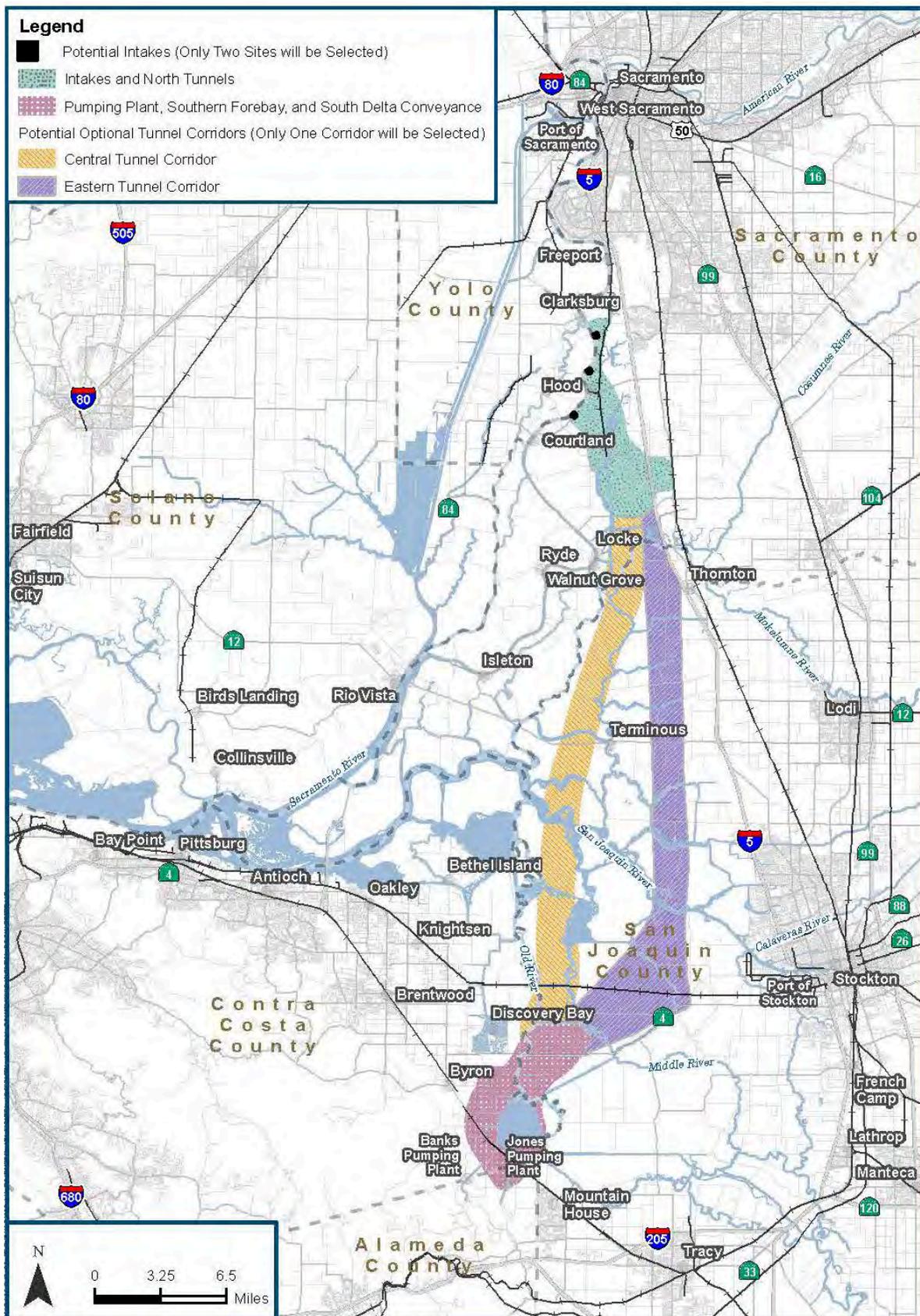


Figure 1. Proposed Project Facility Corridor Options

Intake Facilities

The proposed intake facilities would be located along the Sacramento River between Freeport and the confluence with Sutter Slough, as shown in Figure 1. The proposed project would include two intakes with a maximum diversion capacity of about 3,000 cfs each. The size of each intake location could range from 75 to 150 acres, depending upon fish screen selection, along the Sacramento River and include a state-of-the-art fish screen, sedimentation basins, tunnel shaft, and ancillary facilities. An additional 40 to 60 acres at each intake location would be temporarily disturbed for staging of construction facilities, materials storage, and a concrete batch plant, if needed.

Tunnel and Tunnel Shafts

The proposed project would construct up to two north connecting tunnel reaches to connect the intakes to an Intermediate Forebay (see “Forebays” section below), a single main tunnel from the Intermediate Forebay to a new Southern Forebay, and two connecting south tunnel reaches as part of the proposed project’s South Delta Conveyance Facilities (see “South Delta Conveyance Facilities” section below) to connect to the existing SWP and, potentially CVP, facilities in the south Delta. The single main tunnel would follow one of two potential optional corridors as shown in Figure 1.

The proposed single main tunnel and connecting tunnel reaches would be constructed underground with the bottom of the tunnel at approximately 190 feet below the ground surface. Construction for the tunnel would require a series of launch shafts and retrieval shafts. Each launch and retrieval shaft site would require a permanent area of about four acres. Launch sites would involve temporary use of up to about 400 acres for construction staging and material storage. Depending on the location, the shafts may also require flood protection facilities to extend up to about 45 feet above the existing ground surface to avoid water from entering the tunnel from the ground surface if the area was flooded. Earthen material would be removed from below the ground surface as tunnel construction progresses; this reusable tunnel material could be reused for embankments or other purposes in the Delta or stored near the launch shaft locations.

Forebays

The proposed project would include an Intermediate Forebay and a Southern Forebay. The Intermediate Forebay would provide potential operational benefits and would be located along the tunnel corridor between the intakes and the pumping plant. The Southern Forebay would be located at the southern end of the single main tunnel and would facilitate conveyance to the existing SWP pumping facility and, potentially the CVP pumping facilities. The forebays would be constructed above the ground, and not within an existing water body. The size of the Intermediate Forebay would be approximately 100 acres with an additional 150 acres disturbed during construction for material and equipment storage, and reusable tunnel material storage. The embankments would be approximately 30 feet above the existing ground surface. Additional appurtenant structures, including a permanent crane, would extend up to 40 feet above the embankments.

The Southern Forebay would be located near the existing Clifton Court Forebay and would be approximately 900 acres with an additional 200 acres disturbed during construction for material and equipment storage, potential loading and offloading facilities, and reusable tunnel material storage. The Southern Forebay embankments would be up to 30 feet above the existing ground surface.

Pumping Plant

The proposed project would include a pumping plant located at the new Southern Forebay and would receive the water through the single main tunnel for discharge in the Southern Forebay. The pumping plant would be approximately 25 acres along the side of the Southern Forebay and would include support structures, with a permanent crane for maintenance as the highest feature that would extend approximately 70 feet above the existing ground surface. The temporary and permanent disturbed area for the pumping plant is included in the Southern Forebay area, described above.

South Delta Conveyance Facilities

The proposed project would include South Delta Conveyance Facilities that would extend from the new Southern Forebay to the existing Banks Pumping Plant inlet channel. The connection to the existing Banks Pumping Plant would be via canals with two tunnels to cross under the Byron Highway. The canals and associated control structures would be located over approximately 125 to 150 acres. Approximately 40 to 60 additional acres would be disturbed temporarily during construction. These facilities could also be used to connect the Southern Forebay to the CVP's Jones Pumping Plant.

Contract Amendment for Delta Conveyance

The proposed project may involve modifications to one or more of the State Water Resources Development System (commonly referred to as the SWP) water supply contracts to incorporate the Delta Conveyance Project. Therefore, if modifications move forward, the Delta Conveyance Project EIR will assess, as part of the proposed project, potential environmental impacts associated with reasonably foreseeable potential contract modifications.

PROJECT AREA

The proposed EIR project area for evaluation of impacts consists of the following three geographic regions, as shown in Figure 2, below.

- Upstream of the Delta region
- Statutory Delta (California Water Code Section 12220)
- South-of-Delta SWP Service Areas and, potentially, South-of-Delta CVP Service Areas.

The study areas will be specifically defined for each resource area evaluated in the EIR. Figure 3 shows the SWP South-of-Delta water contractors.



Figure 2. Project Area



Figure 3. SWP South-of-Delta Service Areas

ALTERNATIVES

As described above, the proposed project has been informed by past efforts taken within the Delta and the watersheds of the Sacramento and San Joaquin Rivers, including those undertaken through the Bay Delta Conservation Plan (BDCP)/California WaterFix. As stated in CEQA Guidelines Section 15126.6(a), the “EIR shall describe a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.”

The scoping process will inform preliminary locations, corridors, capacities and operations of new conveyance facilities to be evaluated in the EIR. In identifying the possible EIR alternatives to be analyzed in detail, DWR is currently considering alternatives with capacities that range from 3,000 to 7,500 cfs, with varying degrees of involvement of the CVP, including no involvement. DWR will make its final choice of potentially feasible alternatives to include in the Draft EIR after receipt of scoping comments.

POTENTIAL ENVIRONMENTAL EFFECTS

DWR as the lead agency will describe and analyze the significant environmental effects of the proposed project. DWR did not prepare an initial study so none is attached; the EIR will include the suite of resource categories contained in Appendix G of CEQA Guidelines. Probable effects may include:

- Water Supply: changes in water deliveries.
- Surface Water: changes in river flows in the Delta.
- Groundwater: potential effects to groundwater levels during operation.
- Water Quality: changes to water quality constituents and/or concentrations from operation of facilities.
- Geology and Seismicity: changes in risk of settlement during construction.
- Soils: changes in topsoil associated with construction of the water conveyance facilities.
- Fish and Aquatic Resources: effects to fish and aquatic resources from construction and operation of the water conveyance facilities.
- Terrestrial Biological Resources: effects to terrestrial species due to construction of the water conveyance facilities.
- Land Use: incompatibilities with land use designations.
- Agricultural and Forestry Resources: preservation or conversion of farmland.
- Recreation: displacement and reduction of recreation sites.
- Aesthetics and Visual Resources: effects to scenic views because of water conveyance facilities.
- Cultural and Tribal Cultural Resources: effects to archeological and historical sites and tribal cultural resources.
- Transportation: vehicle miles traveled; effects on road and marine traffic.

- Public Services and Utilities: effects to regional or local utilities.
- Energy: changes to energy use from construction and operation of facilities.
- Air Quality and Greenhouse Gas: changes in criteria pollutant emissions and localized particulate matter from construction and greenhouse gas emissions.
- Noise: changes in noise and vibration from construction and operation of the facilities.
- Hazards and Hazardous Materials: potential conflicts with hazardous sites.
- Public Health: changes to surface water could potentially increase concerns about mosquito-borne diseases
- Mineral Resources: changes in availability of natural gas wells due to construction of the water conveyance facilities.
- Paleontological Resources: effects to paleontological resources due to excavation for borrow and for construction of tunnels and canals.
- Climate Change: increase resiliency to respond to climate change
- Growth Inducement and Other Indirect Effects: changes to land uses as a result of changes in water availability resulting from changes in water supply deliveries

Where the potential to cause significant environmental impacts are identified, the EIR will identify avoidance, minimization, or mitigation measures that avoid or substantially lessen those impacts.

ADDITIONAL BACKGROUND INFORMATION

DWR previously studied a similar project through efforts on the BDCP and subsequently the California WaterFix. The proposed Delta Conveyance Project is a new project and is not supplemental to these past efforts or tiered from previous environmental compliance documents. This section provides background on these past efforts.

In October 2006, various state and federal agencies, water contractors, and other stakeholders initiated a process to develop what became known as the BDCP to advance the objectives of contributing to the restoration of ecological functions in the Delta and improving water supply reliability for the SWP and CVP Delta operations in the State of California.

In December 2013, after several years of preparation, DWR, Reclamation, the United States Fish and Wildlife Service, and the National Marine Fisheries Service, acting as joint lead agencies under CEQA and NEPA, published a draft of the BDCP and an associated Draft EIR/EIS. The Draft EIR/EIS analyzed a total of 15 action alternatives, including Alternative 4, which was identified as DWR's preferred alternative at that time.

In July of 2015, after taking public and agency input into account, the lead agencies formulated three new sub-alternatives (2D, 4A, 5A) and released a Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS) for public comment. Alternative 4A, which is known as "California WaterFix" was identified as DWR and Reclamation's preferred alternative in the RDEIR/SDEIS.

On July 21, 2017, DWR certified the Final EIR and approved California WaterFix. Following

that approval, DWR continued to further refine the project, resulting in reductions to environmental impacts. These project refinements required additional CEQA/NEPA documentation.

On January 23, 2018, DWR submitted an addendum summarizing proposed project modifications to California WaterFix associated with refinements to the transmission line corridors proposed by the Sacramento Municipal Utility District. The Addendum described the design of the applicable modified California WaterFix power features, proposed modifications to those power features (including an explanation of the need for the modifications), the expected benefits of the modifications to the transmission lines, and potential environmental effects as a result of those power related modifications (as compared to the impacts analyzed in the certified Final EIR).

On July 18, 2018, DWR released the California WaterFix Draft Supplemental EIR, which evaluated proposed changes to the certain conveyance facilities of the approved project. (No Final Supplemental EIR was ever completed, due to the change in direction dictated by Governor Newsom's State of the State speech and Executive Order N-10-19.) On September 21, 2018, Reclamation issued the California WaterFix Draft Supplemental EIS, including an alternatives comparison.

SCOPING MEETINGS

The proposed project is of statewide, regional or area-wide significance; therefore, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9, subdivision (a)(2). Public Scoping meetings are scheduled to take place at the following times and locations:

- Monday, February 3, 2020, 1 p.m. – 3 p.m. California Environmental Protection Agency Building, 1001 I Street, Sacramento
- Wednesday, February 5, 2020, 6 p.m. – 8 p.m. Junipero Serra State Building, 320 West Fourth Street, Los Angeles
- Monday, February 10, 2020, 6 p.m. – 8 p.m. Jean Harvie Community Center, 14273 River Road, Walnut Grove
- Wednesday, February 12, 2020, 6 p.m. – 8 p.m. Santa Clara Valley Water District Board Room, 5750 Almaden Expressway, San Jose
- Thursday, February 13, 2020, 6 p.m. – 8 p.m. San Joaquin Council of Governments Board Room, 555 Weber Avenue, Stockton
- Wednesday, February 19, 2020, 6 p.m. – 8 p.m. Clarksburg Middle School Auditorium, 52870 Netherlands Road, Clarksburg
- Thursday, February 20, 2020, 6 p.m. – 8 p.m. Brentwood Community Center Conference Room, 35 Oak Street, Brentwood

Anyone interested in more information concerning the EIR process, or anyone who has information concerning the study or suggestions as to significant issues, should contact Marcus Yee at (916) 651-6736.

WRITTEN COMMENTS

This notice is being furnished to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to consider in developing the EIR. The primary purpose of the scoping process is to identify important issues raised by the public and responsible and trustee public agencies related to the issuance of regulatory permits and authorizations and natural resource protection. Written comments from interested parties are invited to ensure that the full range of environmental issues related to the development of the EIR are identified. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Written comments on this part of the Scoping process will be accepted until 5 p.m. on March 20, 2020 and can be submitted in several ways:

- Via email: DeltaConveyanceScoping@water.ca.gov
- Via Mail: Delta Conveyance Scoping Comments, Attn: Renee Rodriguez, Department of Water Resources, P.O. Box 942836, Sacramento, CA 94236

As required by the CEQA Guidelines, within 30 days after receiving the Notice of Preparation, each responsible and trustee agency is required to provide the lead agency with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the responsible or trustee agency's area of statutory responsibility that will need to be explored in the EIR. In the response, responsible and trustee agencies should indicate their respective level of responsibility for the project.

PLEASE NOTE: DWR's practice is to make the entirety of comments received a part of the public record. Therefore names, home addresses, home phone numbers, and email addresses of commenters, if included in the response, will be made part of the record available for public review. Individual commenters may request that DWR withhold their name and/or home addresses, etc., but if you wish DWR to consider withholding this information you must state this prominently at the beginning of your comments. In the absence of this written request, this information will be made part of the record for public review. DWR will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of, or officials of, organizations or businesses, available for public inspection in their entirety.

EXHIBIT C

1 ROBYN TRUITT DRIVON, ESQ. (SBN 152270)
County Counsel
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12 psimmons@somachlaw.com

13 Attorneys for SACRAMENTO REGIONAL
COUNTY SANITATION DISTRICT

14
15 BEFORE THE
16 CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

17
18 HEARING ON THE MATTER OF
CALIFORNIA DEPARTMENT OF WATER
19 RESOURCES AND UNITED STATES
BUREAU OF RECLAMATION REQUEST
20 FOR A CHANGE IN POINT OF DIVERSION
FOR CALIFORNIA WATER FIX.
21

**PART 2 TESTIMONY OF
THOMAS GROVHOUG, P.E.**

22
23 This testimony is offered on behalf of the Sacramento Regional County Sanitation
24 District (Regional San).

25 **I. INTRODUCTION**

26 My name is Thomas Grovhoug. I am the President of Larry Walker Associates,
27 an environmental engineering and consulting firm specializing in water quality
28 management. I hold bachelor of science and master's degrees in civil engineering from

1 the University of California at Davis. I am a registered professional engineer in the State
2 of California. I have over 40 years of professional experience in wastewater engineering
3 and water quality management. I have worked on water quality management and
4 National Pollutant Discharge Elimination System (NPDES) permitting issues for
5 Regional San for 27 years. I am an expert in Clean Water Act and California Water
6 Code regulatory requirements pertaining to municipal wastewater treatment and work
7 regularly on such matters in the Central Valley. I regularly participate in relevant water
8 quality management and monitoring programs in the Central Valley pertaining to salinity
9 and nutrients, including the Delta Nutrient Research Plan, Central Valley Salinity
10 Alternatives for Long-term Sustainability (CVSALTS), and the Delta Regional Monitoring
11 Program. I have assisted Regional San and the Central Valley Clean Water Agencies in
12 the preparation of comments on both the Draft Environmental Impact
13 Report/Environmental Impact Statement (EIR/EIS) and Final EIR/EIS for the proposed
14 WaterFix project (“WaterFix” or “Project”). (Exhibit SRCSD-17 is a true and correct copy
15 of my statement of qualifications.)

16 My testimony addresses the potential impact that the location and operation of
17 proposed WaterFix diversion structures will have on the future NPDES permit
18 requirements for the Sacramento Regional Wastewater Treatment Plant (SRWTP)
19 including Regional San’s new EchoWater Project at the SRWTP. In my opinion, these
20 impacts have not been adequately identified or addressed in the Draft or Final EIR/EIS
21 prepared for the proposed WaterFix project or any other analysis prepared for the
22 WaterFix project. Similarly, there has been no adequate mitigation proposed for these
23 impacts.

24 II. BACKGROUND

25 Currently, the SRWTP provides secondary treatment of municipal wastewater,
26 followed by disinfection and dechlorination prior to discharge to the Sacramento River
27 through a diffuser located across the bottom of the river, downstream from the Freeport
28 Bridge. The Regional San EchoWater Project has been designed to achieve NPDES

1 permit requirements initially adopted in the SRWTP's 2010 NPDES permit (California
2 Regional Water Quality Control Board, Central Valley Region (Central Valley Water
3 Board), Order No. R5-2010-0114-4) and carried forward with limited modification in the
4 2016 NPDES permit (Order No. R5-2016-0020). (Exhibit SRCSD-3.) The EchoWater
5 Project is currently under construction and is scheduled to be completed in 2023, at
6 which time the facility will provide Title 22 equivalent effluent quality employing filtration
7 and chlorine disinfection. The state-of-the-art EchoWater Project (estimated capital
8 cost of between \$1.7 and \$2.1 billion) will also include nitrification and denitrification,
9 which will reduce ammonia and nitrate levels to meet stringent effluent limitations
10 originally prescribed in the 2010 permit.

11 The SRWTP discharges to the Sacramento River at Freeport, just 2 miles above
12 the closest possible WaterFix diversion structure evaluated in the Final EIR/EIS, and
13 only slightly farther above the closest proposed WaterFix diversion structure identified in
14 Petitioners' petition. (See Exhibit SRCSD-18.) This figure depicts the mixing zones that
15 have been described in the current NPDES permit in relation to the two northernmost
16 WaterFix diversion structure locations under consideration.

17 WaterFix proponents and users of water exported from the Delta have a history of
18 commenting on the NPDES permit and wastewater facility EIR documents prepared by
19 Regional San and other Central Valley publicly owned treatment works (POTWs). They
20 have consistently asked for increasing levels of treatment by Regional San and by other
21 municipalities in the Central Valley (e.g. Stockton, Modesto, Turlock, etc). State Water
22 Contractors and numerous other export water users submitted comments on the
23 EchoWater Project EIR. In those comments, they advocated for additional removal of
24 nutrients and salinity, above and beyond the capability of the EchoWater Project.
25 Based on my observations and experience, placing the WaterFix diversion structures
26 within the vicinity of the SRWTP discharge to the Sacramento River will result in
27 intensification of such requests by WaterFix proponents and others. State Water
28 Contractors submitted comments in December 28, 2015 on the North Valley Regional

1 Recycled Water Program (NVERRWP). These comments requested stringent regulation
2 of high quality recycled water discharges into the Delta Mendota Canal (DMC),
3 including advanced (reverse osmosis (RO)) treatment and phosphorus removal.
4 (Exhibit SRCSD-20 is a true and correct copy of the State Water Contractors'
5 December 28, 2015 letter to the Central Valley Water Board, *Comments on the*
6 *Tentative Order No. R5-2016-XXXX, NPDES No. CA0085316 for Waste Discharge*
7 *Requirements for the City of Turlock Regional Water Quality Control Facility and the*
8 *City of Modesto Water Quality Control Facility, Stanislaus County.*) It is reasonable to
9 expect, given their history of comments on Central Valley POTWs, that WaterFix
10 proponents and Delta export water users will advance identical, or similar, comments
11 and advocacy if the proposed WaterFix intakes are located in the vicinity of the existing
12 SRWTP discharge into the Sacramento River.

13 III. OPINIONS

14 **Opinion 1:** Significant regulatory impacts to Regional San can be anticipated if
15 proposed WaterFix diversion structures are located in the Sacramento River directly
16 downstream of the SRWTP outfall.

17 In my opinion, the location of the WaterFix diversion structures directly
18 downstream of the SRWTP outfall is likely to result in advocacy for, and a very
19 significant likelihood of, significant regulatory impacts to the SRWTP and Regional San's
20 operations. One issue will relate to the misperception and mischaracterization that the
21 proposed WaterFix diversion structures are "Drinking Water Intakes." Drinking water
22 intakes are properly characterized as those facilities associated with individual drinking
23 water treatment plants. Drinking water intakes are facilities that provide a point of entry
24 of untreated "raw" water directly into a drinking water treatment facility. Delta export
25 water users have themselves argued that the state and federal water project
26 conveyance structures (aqueducts) are "drinking water intakes". (Exhibit SRCSD-20, p.
27 9.) ("...the DMC itself serves as a drinking water intake..."). Additionally, the State
28 Water Resources Control Board (State Water Board), in its Order WQ 2012-0013

1 characterized the proposed WaterFix diversion structures as “drinking water intakes,”
2 referencing statements made in a November 2010 progress report on the Bay Delta
3 Conservation Plan (the predecessor to the current WaterFix proposal). (State Water
4 Board Order WQ 2012-0013, *In the Matter of Own Motion Review of Waste Discharge*
5 *Requirements Order No. R5-2010-0114 (NPDES No. CA0077682) for Sacramento*
6 *Regional Wastewater Treatment Plant*, December 12, 2012, p. 11.) In that regard, it is a
7 reasonable concern that the proposed WaterFix diversion structures may be mistakenly
8 characterized as drinking water intakes in the future.

9 Under Clean Water Act and State of California regulations, discharges of treated
10 effluent in the vicinity of drinking water intakes are carefully regulated. For instance, the
11 granting of mixing zones for priority pollutants is restricted in the vicinity of drinking water
12 intakes (State Water Board, Policy for Implementation of Toxics Standards for Inland
13 Surface Waters, Enclosed Bays and Estuaries of California (SIP), Section 1.4, 2005.). In
14 fact, the State Water Contractors make this argument on page 9, Exhibit 1 to their
15 December 28, 2015 comment letter to the Central Valley Water Board regarding the
16 NPDES permit for the NVRWP (“a mixing zone shall not... be allowed at or near any
17 drinking water intake.”) (Exhibit SRCSD-20, p. 9, Exh. 1.) Since the SRWTP relies on a
18 harmonic mean flow-based human health mixing zone to properly account for the actual
19 dilution of treated effluent in the Sacramento River in the calculation of trihalomethane
20 (THM) effluent limitations, this is a very important issue to the successful operation of the
21 facility, as described in greater detail below.

22 In these proceedings, Petitioners have proposed three locations for WaterFix
23 diversion structures, identified as location Nos. 2, 3, and 5, selected from the
24 12 alternative locations identified in the WaterFix Final EIR/EIS. As shown in Exhibit
25 SRCSD-18, the alternative WaterFix diversion structure location No.1 is located within
26 the harmonic mean flow-based human health mixing zone that has been granted in the
27 current NPDES permit for the SRWTP for the derivation of effluent limitations for two
28 THMs, specifically for the disinfection by-products chlorodibromomethane (CDBM) and

1 dichlorobromomethane (DCBM). CDBM and DCBM are priority pollutants regulated
2 under the California Toxics Rule (CTR) and subject to the requirements of the SIP.
3 Chlorine disinfection creates levels of CDBM and DCBM that exceed CTR criteria in
4 undiluted effluent. The CTR criterion for CDBM is 0.0004 milligrams per liter (mg/l) and
5 the CTR criterion for DCBM is 0.00056 mg/l. The projected maximum daily
6 concentrations in effluent from the SRWTP after the completion of the EchoWater
7 Project are 0.012 mg/l for CDBM and 0.035 mg/l for DCBM. (Regional San Technical
8 Memorandum, *Antidegradation Analysis in Consideration of Increased Effluent Limits for*
9 *Chlorodibromomethane and Dichlorobromomethane at the SRCSD AWTP at the*
10 *SRCSD AWTP*, May 31, 2013.) While exceeding the CTR criteria, the sum of CDBM
11 and DCBM in undiluted effluent would not exceed the Drinking Water Maximum
12 Contaminant Level (MCL) for total trihalomethanes of 0.080 mg/l, which is the Safe
13 Drinking Water Act limit applicable to tap water. Although it does not appear that
14 Petitioners propose location No. 1 for approval by the State Water Board as part of the
15 current petition, any order by the State Water Board approving the petitioned changes
16 should confirm that location No. 1 shall not be used as a WaterFix diversion location to
17 avoid the consequences described below.

18 The proposed alternative WaterFix diversion structure location No. 2 is located
19 about one-mile downstream from the edge of the existing harmonic mean mixing zone.
20 As noted above, both WaterFix diversion structure locations Nos. 1 and 2 likely would
21 jeopardize the effluent limits and dilution credits for THMs in the current NPDES permit,
22 if the WaterFix diversion structures were deemed to be “drinking water intakes”. If the
23 current dilution credit for THMs was eliminated as a result of the WaterFix diversion
24 structure location due to concerns regarding the short distance between the edge of the
25 mixing zone and the proposed WaterFix diversion structures, Regional San could not
26 reliably meet the resulting effluent limitations for CDBM and DCBM and would be
27 compelled to cease operation of its new EchoWater Project chlorine disinfection
28 facilities. In lieu of use of chlorine disinfection, Regional San would be forced to

1 construct an alternative disinfection system to meet the THM effluent limitations and
2 Title 22 equivalent requirements in its NPDES permit, at significant cost. Regional San
3 has developed cost estimates for such an alternative system, which would include pre-
4 ozonation followed by ultra-violet (UV) disinfection. The capital costs for that facility
5 have been estimated to be \$319 million (in 2014 costs). (Regional San Technical
6 Memorandum, *Evaluation of Treatment Alternatives to Remove Disinfection Byproducts*
7 *(DBPs) for the Advanced Wastewater Treatment Plant (AWTP)*, May 31,2013).
8 Operational costs for this ultra-violet disinfection process would be an estimated
9 \$5 million per year higher than the costs to operate the chlorine disinfection system.
10 Also, based on my experience and discussion with Ken Abraham, P.E., a leading expert
11 in wastewater treatment plant design and operation and WaterFix design team member,
12 significant additional capital costs of \$63 million for expanded filtration facilities to comply
13 with Title 22 requirements for UV disinfection facilities would be necessitated if Regional
14 San were forced to abandon its new chlorine disinfection system Updating to present
15 day construction costs, the total capital cost to convert from chlorine to UV disinfection
16 with pre-ozonation at the SRWTP would be approximately \$400 million.

17 A second significant issue is the anticipated argument by the export water users
18 and others that the discharge of SRWTP effluent in the vicinity of the proposed WaterFix
19 diversion structures will constitute either “raw water augmentation” or “reservoir water
20 augmentation,” as recently defined in Assembly Bill (AB) 574. (Exhibit SRCSD-21 is a
21 true and correct copy of Assem. Bill No. 574 (2017-2018 Reg. Sess.) October 6, 2017.)
22 AB 574 is a bill signed by the Governor in October 2017 that amends the California
23 Water Code¹ to establish a framework and timeline for adoption of uniform water
24 recycling criteria for direct potable reuse through “raw water augmentation”. AB 574 also
25 includes definitions for “raw water augmentation” and “reservoir water augmentation”.
26 Those definitions are, in part, as follows:

27 _____
28 ¹ AB 574 amends Water Code sections 13560 and 13561 and adds sections 13560.5 and 13561.2.

1 'Raw water augmentation' which means the planned placement of recycled
2 water into a system of pipelines or aqueducts that deliver raw water to a
drinking water treatment plant...

3 'Reservoir water augmentation' means the planned placement of recycled
4 water into a raw surface water reservoir...or into a constructed system
conveying water to such a reservoir.

5 Prior to passage of AB 574, State Water Contractors argued that the discharge of
6 recycled water into the DMC under the NVRWP represented "surface water
7 augmentation." SRCSD (Exhibit SRCSD-20, p. 2 and Exh. 1.) Now that AB 574 has
8 passed, a similar argument by Delta export water users would be anticipated for the
9 SRWTP discharge to the Sacramento River, in particular if WaterFix diversion structures
10 at locations No. 1 or No. 2 were implemented.

11 The implication is that, if the SRWTP discharge to the Sacramento River were to
12 be deemed to be either "raw water augmentation" or "reservoir water augmentation," the
13 SRWTP facilities, even after completion of the EchoWater Project, would need to be
14 significantly upgraded to meet anticipated water recycling criteria for potable reuse.
15 Although proposed regulations for "reservoir water augmentation" (aka Surface Water
16 Augmentation in State Water Board documentation) are under development and water
17 recycling criteria for "raw water augmentation" may not be finalized until 2023, per
18 AB 574, it is projected that treatment criteria for each will include "full advanced
19 treatment," which is likely to include RO, and advanced oxidation. (Exhibit SRCSD-22 is
20 a true and correct copy of SBDDW-16-02, October 12, 2016, State Water Resources
21 Control Board Draft Regulations for Surface Water Augmentation Using Recycled Water,
22 Tit. 22, Div. 4, Ch.3.) Implementation of these additional treatment processes at the
23 SRWTP would result in capital and operational costs that would be significant (on the
24 order of the construction cost of the EchoWater Project).

25 **Opinion 2:** The operation of the proposed WaterFix diversion structures along
26 the Sacramento River will produce water quality degradation in the Sacramento-San
27 Joaquin Delta, which may lead to more restrictive NPDES permit requirements for the
28 SRWTP.

1 As disclosed in the WaterFix Final EIR/EIS, and as further documented in
2 evidence by Regional San and others submitted in these proceedings,² operation of the
3 proposed WaterFix diversion structures along the Sacramento River will produce water
4 quality degradation in the Sacramento-San Joaquin Delta (Delta), worsening existing
5 problems. The adverse impacts of the proposed WaterFix on Delta water quality include
6 the following:

7 1. Electrical Conductivity (EC) – The WaterFix Final EIR/EIS acknowledged
8 that increases in ambient EC concentrations will occur in some areas of the Delta due to
9 operation of the proposed WaterFix diversion structures along the Sacramento River.
10 The Delta is currently listed as impaired for EC under Section 303(d) of the Federal
11 Clean Water Act. Although the Department of Water Resources (DWR) and the U.S.
12 Bureau of Reclamation (Reclamation) are currently obligated to operate their projects to
13 meet EC water quality objectives in the Delta, these obligations have not been met for
14 over two decades (Exhibit SRCSD-23 is a true and correct copy of U.S. Department of
15 the Interior, Bureau of Reclamation, *Special Study: Evaluation of Dilution Flow to Meet*
16 *Interior South Delta Water Quality Objectives to meet Water Rights Order 2010-002*
17 *Requirement 7*. April 8, 2011; Exhibit SRCSD-24 is a true and correct copy of State
18 Water Board Order WR 2010-0002, *In the Matter of Cease and Desist Order WR 2006-*
19 *0006 against the Department of Water Resources and the United States Bureau of*
20 *Reclamation in Connection with Water Rights Permits and License for the State Water*
21 *Project and the Central Valley Project*, April 8, 2011); violations of EC objectives will be
22 worse into the future as a result of the operation of the proposed Water Fix diversion
23 structures. The WaterFix Final EIR/EIS asserts that real-time salinity management by
24 DWR and Reclamation will mitigate these impacts. The unsuccessful history of past
25 attempts by these agencies to meet existing EC objectives in the South Delta through
26

27 _____
28 ² See testimony of Dr. Susan Paulsen, Exhibit SRCSD-29; see also STKN- 047; Antioch-234;
Brentwood-100.

1 various means casts significant doubt on this assertion.

2 Under Clean Water Act requirements, a total maximum daily load (TMDL)³ (or
3 equivalent plan) to address EC impairment in the Delta must be developed, creating
4 probable pressure on Regional San and other POTWs discharging to the Delta to reduce
5 salt loadings to remedy the current problem and, importantly, to offset the significant
6 increases in EC levels caused by the WaterFix project operation. A future EC TMDL for
7 a Delta which is further degraded by the WaterFix project may require EC reductions at
8 SRWTP, which would likely require RO treatment for all or a portion of the EchoWater
9 discharge (at significant expense).

10 In the Central Valley, the CVSALTS program is developing a strategy and
11 implementation plan for sustainable management of salts in the surface and
12 groundwaters of the Central Valley. Phase 1 of the CVSALTS effort will be the
13 development of a Prioritization and Optimization (P&O) study to establish a long-term
14 salinity management plan for the Central Valley, including the Delta. Management of
15 salinity in the Delta is also being addressed through the Bay-Delta planning process
16 managed by the State Water Board. Integration of these plans will be needed to
17 determine an appropriate management approach for salinity in the Delta. The WaterFix
18 Petitioners should be compelled to participate in these programs and subsequent control
19 programs as a means of identifying and implementing effective mitigation requirements
20 for the WaterFix project.

21 2. Harmful Algal Blooms (HABs)/cyanobacteria/*Microcystis*/toxins – Blooms of
22 harmful algae (e.g., cyanobacteria such as *Microcystis*) have become an increasing
23 problem in the Delta since 2000. Recent work completed as part of the Delta Nutrient
24
25

26
27 ³ A TMDL is a regulatory term in the federal Clean Water Act, describing a plan for restoring impaired
28 waters that identifies the maximum amount of a pollutant that a body of water can receive while still
meeting water quality standards.

1 Research Plan process (Berg & Sutula (2015))⁴ as well as evidence submitted by
2 numerous parties in this proceeding, has indicated that residence time and temperature,
3 in combination with elevated nutrients and other factors, are key factors which create
4 conditions conducive to the initiation and proliferation of HABs. These blooms lead to
5 the production of toxins that potentially can impair beneficial uses. The WaterFix Final
6 EIR/EIS acknowledges that the proposed WaterFix project operation will incrementally
7 increase residence times in specific areas of the Delta, exacerbating the conditions that
8 have led to HABs in the Delta. This fact has been confirmed by the modeling work
9 performed by Exponent and Flow Science (Exhibits SRCSD-29, SRCSD-31). The
10 increase in residence times has the potential to increase the magnitude and duration of
11 *Microcystis* and other HABs in the Delta. (Exhibit SWRCB-102, WaterFix Final EIR/EIS,
12 page 8-980, line 33.) Based on the history of the Delta export water users' advocacy
13 efforts in the Delta, the continuation and exacerbation of existing adverse HABs
14 conditions can be expected to result in increased pressure and advocacy for nutrient
15 load reduction by Regional San and other POTWs by the WaterFix proponents. (Exhibit
16 SRCSD-25 is a true and correct copy of Contra Costa Water District Letter to Regional
17 San, *Sacramento Regional County Sanitation District Echo Water Project Draft EIR*, April
18 16, 2014; Exhibit SRCSD-26 is a true and correct copy of Alameda County Water
19 District, Alameda County Flood Control and Water Conservation District, Zone 7, Contra
20 Costa Water District, Kern County Water Agency, Metropolitan Water District of
21 Southern California, San Luis and Delta Mendota Water Authority, Santa Clara Valley
22 Water District, State Water Contractors, Westlands Water District Letter to Regional San,
23 *Comments on the Draft Environmental Impact Report for the Sacramento Regional
24 County Sanitation District EchoWater Project, Control Number 2012-70044, State*

25 _____
26 ⁴ Berg M and Sutula M. 2015. Factors affecting the growth of cyanobacteria with special emphasis on the
27 Sacramento-San Joaquin Delta. Southern California Coastal Water Research Project Technical
28 Report 869 August 2015.

1 Clearinghouse #2012052017, May 9, 2014.) If such advocacy is successful, this will
2 likely lead to a requirement for additional nutrient load reduction actions by Regional San
3 to address degradation caused by the WaterFix project operation, which would require
4 construction of additional enhanced biological treatment facilities, above and beyond the
5 capabilities of the EchoWater Project, or the diversion of discharge from the Sacramento
6 River. The treatment costs for enhanced biological nutrient removal to achieve possible
7 effluent limitations in the range of 1.0 mg/l total nitrogen and 0.1 mg/l total phosphorus
8 would be a significant additional cost, on top of the current EchoWater project cost of
9 \$1.7 to \$2.1 billion.

10 The Delta Nutrient Research Plan, which is being developed by the Central Valley
11 Water Board as part of a stakeholder process, is providing the forum for resolution of the
12 question whether nutrient load reductions will be an effective management action to
13 address HABs in the Delta. Decisions regarding the need for nutrient load management,
14 modified water management, or other control measures in the Delta will be informed by
15 the monitoring, research and modeling that will occur under the Delta Nutrient Research
16 Plan and associated efforts.

17 3. Macrophytes – As described previously for HABs, the occurrence and
18 magnitude of macrophyte blooms in the Delta are recognized to be significantly
19 influenced by residence time and temperature.⁵ Since the proposed WaterFix project
20 operation will increase residence times in the Delta, the extent and duration of blooms of
21 macrophytes will likely be exacerbated by the WaterFix project. As with HABs, it is
22 anticipated that export water users will exert increased regulatory pressure for nutrient
23 load reduction requirements on Regional San and other POTWs to address a problem
24 that will be worsened by the WaterFix project. As noted in the discussion above, the
25 additional cost for enhanced nutrient removal would be a significant increase over and

26 _____
27 ⁵ Boyer, K. and M. Sutula. 2015. Factors Controlling Submersed and Floating Macrophytes in the
28 Sacramento-San Joaquin Delta. Southern California Coastal Water Research Project. Technical Report
No. 870. Costa Mesa, CA.

1 above the cost of the EchoWater Project. As noted above, the Delta Nutrient Research
2 Plan, which is led by the Central Valley Water Board, is providing the forum for resolution
3 of the question whether nutrient load reductions or other water management actions will
4 be an effective approach to address macrophyte blooms in the Delta. Decisions
5 regarding nutrient load management, modified water management, or other control
6 measures in the Delta to address macrophytes will be informed by the monitoring,
7 research, and modeling that will occur under the Delta Nutrient Research Plan and
8 associated efforts.

9 **Opinion 3:** The location of the proposed WaterFix diversion structures threatens
10 significant impacts to Regional San’s operation of the SRWTP, including increased
11 regulatory requirements and adverse Delta water quality impacts that could complicate
12 Regional San’s ability to comply with its NPDES permit and require millions of dollars of
13 additional investment in supplemental treatment facilities and associated increased
14 operating costs. There are terms and conditions that could reduce the likelihood that
15 significant impacts to Regional San’s operation of the SRWTP would occur. This is
16 discussed in the Part 2 testimony of Regional San District Engineer Prabhakar
17 Somavarapu.

18 I declare under penalty of perjury under the laws of the State of California that the
19 foregoing is true and correct.

20 Executed on this 30th day of November 2017 in Sacramento, California.

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28


THOMAS GROVHOUG, P.E.

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10
11 BEFORE THE
12 CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

13
14 HEARING ON THE MATTER OF
CALIFORNIA DEPARTMENT OF WATER
15 RESOURCES AND UNITED STATES
BUREAU OF RECLAMATION REQUEST
16 FOR A CHANGE IN POINT OF DIVERSION
FOR CALIFORNIA WATER FIX.

**PART 2 TESTIMONY OF SUSAN
PAULSEN, Ph.D., P.E. ON BEHALF
OF SACRAMENTO REGIONAL
COUNTY SANITATION DISTRICT**

SRCS D-29

17
18
19 **QUALIFICATIONS**

20 My name is Susan Paulsen, and I am a Registered Professional Civil Engineer in
21 the State of California (License # 66554). My educational background includes a
22 Bachelor of Science in Civil Engineering with Honors from Stanford University (1991), a
23 Master of Science in Civil Engineering from the California Institute of Technology
24 ("Caltech") (1993), and a Doctor of Philosophy (Ph.D.) in Environmental Engineering
25 Science, also from Caltech (1997). My education included coursework at both
26 undergraduate and graduate levels on fluid mechanics, aquatic chemistry, surface and
27 groundwater flows, and hydrology, and I served as a teaching assistant for courses in
28

1 fluid mechanics and hydrologic transport processes.

2 My Ph.D. thesis was titled, "A Study of the Mixing of Natural Flows Using ICP-MS
3 and the Elemental Composition of Waters," and the major part of my Ph.D. research
4 involved a study of the mixing of waters in the Sacramento-San Joaquin River Delta (the
5 Delta). I collected composite water samples at multiple locations within the Delta, and
6 used the elemental "fingerprints" of the three primary inflow sources (the Sacramento
7 River, the San Joaquin River, and the Bay at Martinez), together with the elemental
8 "fingerprints" of water collected at two interior Delta locations (Clifton Court Forebay and
9 Franks Tract) and a simple mathematical model, to establish the patterns of mixing and
10 distribution of source flows within the Delta during the 1996–1997 time period. I also
11 directed model studies to use the chemical source fingerprinting to validate the
12 volumetric fingerprinting simulations using Delta models (including the Fischer Delta
13 Model [FDM] and the Delta Simulation Model [DSM]).

14 I am currently a Principal and Director of the Environmental and Earth Sciences
15 practice at Exponent, Inc. ("Exponent"). Prior to that, I was the President of Flow
16 Science Incorporated, in Pasadena, California, where I worked for 20 years, first as a
17 consultant (1994-1997), and then as an employee in various positions, including
18 President (1997-2014). I have 25 years of experience with projects involving hydrology,
19 hydrogeology, hydrodynamics, aquatic chemistry, and the environmental fate of a range
20 of constituents. I have knowledge of California water supply issues, including expertise in
21 California's Bay-Delta estuary. My expertise includes designing and implementing field
22 and modeling studies to evaluate groundwater and surface water flows, and contaminant
23 fate and transport. I have designed studies using one-dimensional hydrodynamic
24 models, three-dimensional computational fluid dynamics models, longitudinal dispersion
25 models, and Monte Carlo stochastic models, and I have directed modeling studies and
26 utilized the results of numerical modeling to evaluate surface and groundwater flows.

27 I have designed and implemented field studies in reservoir, river, estuarine, and
28 ocean environments using dye and elemental tracers to evaluate the impact of pollutant

1 releases and treated wastewater, thermal, and agricultural discharges on receiving
2 waters and drinking-water intakes. I have also designed and managed modeling studies
3 to evaluate transport and mixing, including the siting and design of diffusers, the water
4 quality impacts of storm water runoff, irrigation, wastewater and industrial process water
5 treatment facilities, desalination brines and cooling water discharges, and groundwater
6 flows. I have designed and directed numerous field studies within the Delta using both
7 elemental and dye tracers, and I have designed and directed numerous surface water
8 modeling studies within the Delta. A copy of my *curriculum vitae* is included as SRCSD-
9 30.

11 BACKGROUND

12 Sacramento Regional County Sanitation District (Regional San) is the primary
13 wastewater treatment agency in the Sacramento area. Regional San operates the
14 Sacramento Regional Wastewater Treatment Plant (SRWTP) near Elk Grove, California.
15 SRWTP is one of the largest publicly-owned treatment works (POTWs) in California.
16 SRWTP discharges treated effluent to the Sacramento River near Freeport through a
17 300-foot long, 74-port diffuser situated on the river bottom.¹ The diffuser is located in the
18 northern end of the Sacramento-San Joaquin River Delta (Delta), and thus it is subject to
19 tidal influence. High tides reduce river flows past the diffuser under all but very high flow
20 conditions, and tidal forcing sometimes causes the river to flow in an upstream direction
21 (“reverse flow” events).

22 Regional San is allowed to discharge treated effluent only when the ratio of river
23 flow to effluent flow is 14:1 or greater. When river flow rates fall in response to the tides
24 such that a ratio of 14:1 or greater cannot be maintained, Regional San temporarily
25 ceases discharging treated effluent to the river and diverts the treated effluent to

26 _____
27 ¹ The diffuser was constructed with 99 ports. However, in 2005 it was discovered that effluent mixing near
28 the eastern bank of the river was not occurring according to diffuser design criteria during low river flows.
Therefore, 25 ports were blocked in order to restore intended mixing conditions under low flow conditions.
As a result, only 74 ports have been active on the diffuser since 2007.

1 emergency storage basins (ESBs) located adjacent to the treatment plant. Once the river
2 flow returns above the 14:1 ratio, treated effluent discharges to the river resume,
3 augmented by additional flows from the ESBs until the ESBs are empty again. In
4 addition to the 14:1 flow discharge requirement, Regional San must meet several
5 thermal discharge and receiving water requirements that sometimes necessitate
6 diversion of treated effluent to ESBs.

7
8 **TESTIMONY**

9 Regional San retained Exponent to evaluate and prepare technical comments on
10 the California WaterFix project (WaterFix), including the WaterFix Part 2 proceedings.
11 Specifically, Regional San asked Exponent to evaluate whether the proposed WaterFix
12 operations will have an impact on SRWTP operations and permitting conditions.
13 Exponent completed the report “Impacts of the California WaterFix Project Affecting
14 Sacramento Regional County Sanitation District,” which is identified as Exhibit SRCSD-
15 31. This report was prepared by me and persons working under my direction who are
16 also experts in its subject matter.

17 The results of Exponent’s work are the basis for the following four opinions:

18 **1. WaterFix will increase the residence time of water in the Delta.**

19 Exponent used DSM2 model input files obtained from the California Department of
20 Water Resources (DWR) to evaluate residence time in the Delta. Results show that, in
21 general, residence times are expected to increase markedly as a result of WaterFix in all
22 water year (WY) types (i.e., critical, dry, below normal, above normal, and wet). The
23 greatest increase in residence times relative to existing (EBC2) and no action alternative
24 (NAA) scenarios is simulated to occur from July to December—a period that includes the
25 summer months when water temperatures are highest. Increased residence times in the
26 Delta are expected to result in the degradation of water quality in the Delta.
27
28

1 **2. Increased *Microcystis* growth may result from WaterFix.** *Microcystis* is
2 a genus of cyanobacteria containing species known to produce toxic chemicals called
3 microcystins, which are a risk to humans, livestock, and wildlife. Increased residence
4 time in the Delta is expected to increase the likelihood of *Microcystis* blooms by
5 decreasing the loss rate of *Microcystis* from the area by flushing, which in turn will lead
6 to more opportunity for *Microcystis* growth and toxin production. Additionally, water
7 temperatures within the Delta are expected to increase as a result of WaterFix (partly
8 due to increased residence times), particularly during the already-warm summer months,
9 likely leading to higher growth rates of *Microcystis* and longer periods of time when water
10 temperatures exceed the threshold for *Microcystis* bloom formation.

11
12 **3. WaterFix will cause an increase in salinity in the Delta.** The WaterFix
13 operations scenarios involve the export of water from new diversion structures on the
14 Sacramento River, and some operational scenarios will lead to an increase in the total
15 amount of water exported from the Delta. WaterFix will lead to the export of more
16 Sacramento River water than under existing conditions (i.e., the EBC2 scenario). Thus,
17 WaterFix diversions from the north Delta will change the composition and quality of
18 water within the Delta. The interior Delta will generally contain less high-quality
19 Sacramento River water and more water from other, lower-quality sources, including San
20 Joaquin River water, agricultural return flows, and saline inflow from Martinez. DSM2
21 modeling results for the Boundary 1 (B1) scenario show that chloride concentrations at
22 Antioch and Brentwood are expected to increase markedly relative to both the no action
23 alternative (NAA) and existing condition (EBC2) scenarios. The increased salinity in the
24 western Delta under Boundary 1 operations is expected to result in more frequent
25 exceedances of the D-1641 chloride objectives for municipal and industrial (M&I)
26 beneficial uses and lead to higher salinity in the western Delta even when D-1641
27 objectives are satisfied. Impacts to water quality, including increased salinity, are
28 expected to occur in the interior Delta as well. Declining water quality in the Delta—

1 including increased temperatures, increased *Microcystis* growth, and increased salinity—
2 has the potential to result in more stringent future permit conditions on existing
3 discharges to the Delta, including discharges from the SRWTP.
4

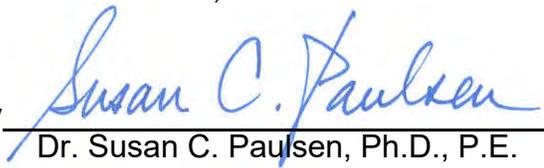
5 **4. WaterFix will affect SRWTP operations by increasing the frequency**
6 **and duration of diversion events relative to baseline conditions (i.e., EBC2 and**
7 **NAA scenarios).** To evaluate the extent to which WaterFix operations would change
8 flow rates in the Sacramento River at Freeport and thereby affect SRWTP operations,
9 Flow Science, working based on instructions from Exponent, used output from DWR's
10 DSM2 model to simulate Regional San's discharge and diversion operations. Flow
11 Science's analysis shows that increases relative to baseline conditions (i.e., EBC2 and
12 NAA scenarios) are expected in a number of relevant parameters, including (1) the
13 number of diversion events, (2) the percentage of time that diversion would be required,
14 (3) the percentage of time that effluent would be stored in ESBs, and (4) the cumulative
15 volume of water that would be pumped from ESBs over the 16-year modeling period
16 (1976–1991). A summary of model results demonstrating these increases is presented in
17 Table 6 of Exhibit SRCSD-31. Increasing the frequency and magnitude of diversion
18 events will result in higher operation and maintenance costs and the potential for
19 additional odor impacts. Additionally, the expected increase in the number of diversion
20 events effectively amounts to an encroachment on Regional San's available ESB
21 capacity.
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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on this 29th day of November 2017 in Pasadena, California.

EXPONENT, INC.

By 
Dr. Susan C. Paulsen, Ph.D., P.E.



**Impacts of the California
WaterFix Project Affecting
Sacramento Regional County
Sanitation District**

SRCSD-31





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WaterFix Project Affecting
Sacramento Regional County
Sanitation District**

SRCSD-31

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Acronyms and Abbreviations

4A	the “preferred alternative,” scenarios H3 and H4 together
ADWF	average dry weather flow
B1	Boundary 1 scenario
B2	Boundary 2 scenario
CDEC	California Data Exchange Center
Delta	Sacramento-San Joaquin River Delta
DSM2	Delta Simulation Model 2
DWR	California Department of Water Resources
EC	electrical conductivity
ESB	emergency storage basin
FDM	Fischer Delta Model
Flow Science	Flow Science Incorporated
ICP-MS	inductively coupled plasma mass spectrometry
M&I	municipal and industrial
mgd	million gallons per day
mg/L	milligrams per liter
µS/cm	micro-Siemens per centimeter
NAA	no action alternative
NDD	north Delta diversion
NPDES	National Pollutant Discharge Elimination System
POTWs	publicly owned treatment works
Regional San	Sacramento Regional County Sanitation District
SRWTP	Sacramento Regional Wastewater Treatment Plant
TDS	total dissolved solids
WaterFix	California WaterFix Project
WY	water year

Limitations

This report summarizes work performed to date and presents the findings resulting from that work. The findings presented herein are made to a reasonable degree of engineering certainty. Exponent reserves the right to supplement this report and to expand or modify opinions based on review of additional material as it becomes available through any additional work or review of additional work performed by others.

1. Summary of findings

Sacramento Regional County Sanitation District (Regional San) is the primary wastewater treatment agency in the Sacramento area. Regional San operates the Sacramento Regional Wastewater Treatment Plant (SRWTP) near Elk Grove, California. SRWTP is one of the largest publicly owned treatment works (POTWs) in California.

SRWTP discharges treated effluent to the Sacramento River near Freeport through a 300-foot long, 74-port diffuser situated on the river bottom.¹ The diffuser is located in the northern end of the Delta, and thus it is subject to tidal influence. High tides reduce river flows past the diffuser under all but very high flow conditions, and tidal forcing sometimes causes the river to flow in an upstream direction (“reverse flow” events).

Regional San is allowed to discharge treated effluent only when the ratio of river flow to effluent flow is 14:1 or greater. When river flow rates fall in response to the tides such that a ratio of 14:1 or greater cannot be maintained, Regional San temporarily ceases discharging treated effluent to the river and diverts the treated effluent to emergency storage basins (ESBs) located adjacent to the treatment plant. Once the river flow returns above the 14:1 ratio, treated effluent discharges to the river resume, augmented by additional flows from the ESBs until the ESBs are empty again. In addition to the 14:1 discharge requirement, Regional San must meet several thermal discharge and receiving water requirements that sometimes necessitate diversion of treated effluent to ESBs. Thermal diversions are a regular occurrence at SRWTP, particularly during cold winter months.

Exponent evaluated whether the proposed WaterFix operations will have an impact on SRWTP operations and permitting conditions. The conclusions of this work are summarized below:

¹ The diffuser was constructed with 99 ports. However, in 2005 it was discovered that effluent mixing near the eastern bank of the river was not occurring according to diffuser design criteria during low river flows. Therefore, 25 ports were blocked to restore intended mixing conditions under low-flow conditions. As a result, only 74 ports have been active on the diffuser since 2007.

1. **WaterFix will increase residence time in the Delta.** Exponent used DSM2 model input files obtained from the California Department of Water Resources (DWR) to evaluate residence time in the Delta. Results show that, in general, residence times are expected to increase markedly as a result of WaterFix in all water year (WY) types (i.e., critical, dry, below normal, above normal, and wet). The greatest increase in residence times relative to existing (EBC2) and no action alternative (NAA) scenarios is simulated to occur from July to December—a period that includes the summer months when water temperatures are highest. Increased residence times in the Delta are expected to result in the degradation of water quality in the Delta.
2. **Increased *Microcystis* growth may result from WaterFix.** *Microcystis* is a genus of cyanobacteria containing species known to produce toxic chemicals called microcystins, which are a risk to humans, livestock, and wildlife. Increased residence time in the Delta is expected to increase the likelihood of *Microcystis* blooms by decreasing the loss rate of *Microcystis* from the area by flushing, which in turn will lead to more opportunity for *Microcystis* growth and toxin production. Additionally, water temperatures within the Delta are expected to increase as a result of WaterFix (partly due to increased residence times), particularly during the already-warm summer months, likely leading to higher growth rates of *Microcystis* and longer periods of time when water temperatures exceed the threshold for *Microcystis* bloom formation.
3. **WaterFix will cause an increase in salinity in the Delta.** The WaterFix operations scenarios involve the export of water from new diversion structures on the Sacramento River, and some operational scenarios will lead to an increase in the amount of water exported from the Delta. WaterFix will lead to the export of more Sacramento River water than under existing conditions (i.e., the EBC2 scenario). Thus, WaterFix diversions from the north Delta will change the composition and quality of water within the Delta. The interior Delta will generally contain less high-quality Sacramento River water and more water from other, lower-quality sources, including San Joaquin River water, agricultural return flows, and saline inflow from Martinez. DSM2 modeling results for the Boundary 1 (B1) scenario show that chloride concentrations at Antioch

and Brentwood are expected to increase markedly relative to both the NAA and EBC2 (existing condition) scenarios. The increased salinity in the western Delta under B1 operations is expected to result in more frequent exceedances of the D-1641 chloride objectives for municipal and industrial (M&I) beneficial uses and lead to higher salinity in the western Delta even when D-1641 objectives are satisfied. Impacts to water quality are expected to occur in the interior Delta as well. Declining water quality in the Delta—including increasing temperatures, increased *Microcystis* growth, and increased salinity—has the potential to result in more stringent future permit conditions on existing discharges to the Delta, including discharges from the SRWTP.

4. **WaterFix will affect SRWTP operations by increasing the frequency and duration of diversion events relative to baseline conditions (i.e., EBC2 and NAA).** To evaluate the extent to which WaterFix operations would change flow rates in the Sacramento River at Freeport and thereby affect SRWTP operations, Flow Science, working based on instructions from Exponent, used output from DWR's DSM2 model to simulate Regional San's discharge and diversion operations. Flow Science's analysis shows that increases relative to baseline conditions (i.e., EBC2 and NAA scenarios) are expected in a number of relevant parameters, including (1) the number of diversion events, (2) the percentage of time that diversion would be required, (3) the percentage of time that effluent would be stored in ESBs, and (4) the cumulative volume of water that would be pumped from ESBs over the 16-year modeling period (1976–1991). Increasing the frequency and magnitude of diversion events will result in higher operational and maintenance costs and the potential for additional odor impacts. Additionally, the expected increase in the number of diversion events effectively amounts to an encroachment on Regional San's available ESB capacity.²

² Exponent did not evaluate temperature-driven impacts to SRWTP diversion operations since DWR did not provide sufficient information to describe Sacramento River temperatures at Freeport under WaterFix operations scenarios.

2. Background

Regional San is the primary wastewater treatment agency in the Sacramento area. Regional San operates the SRWTP near Elk Grove, California. SRWTP is one of the largest POTWs in California. The permitted average dry weather flow (ADWF)³ of the plant is 181 million gallons per day (mgd). Instantaneous flow rates at the plant may exceed 181 mgd (e.g., during wet weather). SRWTP serves more than 1.4 million residential, industrial, and commercial customers throughout the Sacramento area.

After treatment at the SRWTP, effluent is conveyed through a two-mile-long, 120-inch-diameter outfall pipe to the Sacramento River near Freeport. Treated effluent is discharged to the river just downstream of the Freeport Bridge through a 300-foot long, 74-port diffuser situated on the river bottom.⁴ The diffuser has a discharge capacity of 410 mgd. The ten-inch diffuser ports discharge in the downstream direction, parallel with the direction of flow. The diffuser is located in the northern end of the Delta and is subject to tidal influence. High tides frequently reduce river flows past the diffuser significantly, and tidal forcing sometimes causes the river to flow in an upstream direction (“reverse flow” events). Reverse flow events are common, especially during the dry fall season when flows from upstream are relatively low.

The National Pollutant Discharge Elimination System (NPDES) permit for the SRWTP prohibits discharge of wastewater when the river-to-effluent flow ratio is less than 14:1. When river flow rates fall in response to the tides such that a 14:1 ratio cannot be maintained, Regional San temporarily ceases discharging treated effluent to the river and diverts the treated effluent to ESBs located adjacent to the treatment plant. Once the river flow returns above the 14:1 ratio, treated effluent discharges to the river resume, including flows from the ESBs until the ESBs are empty again.

³ ADWF is the average flow in the three consecutive months with the lowest average monthly flow rates.

⁴ See footnote 1 for details regarding the configuration of the diffuser.

In addition to the 14:1 flow discharge requirement, Regional San must meet several thermal discharge and receiving water requirements that sometimes necessitate diversion of treated effluent to ESBs. For example, the maximum temperature of SRWTP discharge may not exceed the temperature of the Sacramento River by more than 20°F from May 1st through September 30th or by more than 25°F from October 1st through April 30th. Additional restrictions apply to the increase in temperature that is allowed to occur over 25% or more of the river's cross-section. If the SRWTP discharge is unable to meet these thermal requirements, Regional San must temporarily divert treated effluent to ESBs. Thermal diversions are a regular occurrence at SRWTP, particularly during cold winter months.⁵

Regional San retained Exponent to evaluate and prepare technical comments on the WaterFix project, including the WaterFix Part 2 proceedings. Specifically, Regional San asked Exponent to evaluate whether the proposed WaterFix diversions will have an impact on SRWTP operations and conditions in the Delta that might affect SRWTP operations in the future. In conducting this work, Exponent evaluated model runs performed by DWR, oversaw modeling of SRWTP ESB and diversion operations conducted by Flow Science, and reviewed DWR's assessment of WaterFix. Exponent previously submitted technical comments for Regional San on the WaterFix Final EIR/EIS, which are included in this report as Appendix B.

The primary author of this report was Susan Paulsen, Ph.D., P.E. Dr. Paulsen was assisted in this work by Aaron Mead, Ph.D., P.E., Ryan Thacher, Ph.D., P.E., and Chiyu Lin, all of Exponent. In preparing this report, Exponent relied on modeling performed by Flow Science Incorporated (Flow Science) that simulates Regional San's discharge and diversion operations.⁶ Flow Science's analysis is included as Appendix A to this report.

⁵ As noted in footnote 2, Exponent did not evaluate temperature-driven impacts to SRWTP diversion operations due to a lack of available information.

⁶ Flow Science. 2017. Sacramento Regional Wastewater Treatment Plant Emergency Storage Basin Analysis for California BDCP/WaterFix. Prepared for Sacramento County Regional Sanitation District, November 29. (Appendix A)

3. Methods

3.1. Delta Simulation Model (DSM2)

DWR used the Delta Simulation Model II (DSM2) to simulate hydrodynamics and water quality throughout the Delta for a range of model conditions and operational scenarios. The DSM2 model has three separate components: HYDRO, QUAL, and PTM. HYDRO simulates flows in the channels defined in the DSM2 grid, stage (water surface elevation), and tidal forcing at the downstream model boundary (Martinez). Given the flows in the Delta channels simulated by HYDRO, QUAL simulates the concentrations of conservative constituents in the water (i.e., constituents that neither decay nor grow), such as electrical conductivity (EC), a measure of salinity. The model results (model output) provided by DWR as part of the WaterFix proceedings include hydrodynamic and water quality information. Output from DWR's temperature modeling (which employed the CALSIM II model) was also obtained for analysis.

Previously, Exponent obtained from DWR the modeling input and output files from the DSM2 model, which was used to simulate hydrodynamics and water quality throughout the Delta for a range of model conditions and operational scenarios. Exponent's analyses were performed for select WaterFix Project scenarios (scenarios B1, B2, H3, H4) and for the no action alternative (NAA) and the EBC2 scenario, which includes current sea levels and the Fall X2 requirement. Importantly, scenarios H3 and H4 together represent the "preferred alternative," scenario 4A. Thus, in this report "4A" will be used interchangeably with "H3 and H4" to identify the preferred alternative.

3.2. SRWTP Operations Model

A customized Matlab® model was used to simulate SRWTP discharge and ESB operations under baseline (i.e., EBC2 and NAA) and Waterfix conditions. This work was performed by Flow Science and coordinated by Exponent. The model, formulated previously, was updated to simulate as closely as possible inflow, diversion, emergency storage, and discharge operations at the SRWTP after completion of the plant upgrade currently under construction (the EchoWater

project). Details of Flow Science’s modeling methodology are contained in a technical report describing their work (see Appendix A).

3.3. Water year type classifications

Hydrology in the Delta varies from year to year. WYs in the Delta, defined as October through September of the following year, are classified as wet, above normal, below normal, dry, or critical. DWR determines the WY type by calculating a WY index number, which accounts for both the hydrology of the current year and the previous year’s index.⁷ By this classification system, the WYs modeled in DSM2 by DWR fall into the following categories:

- Critical: 1976, 1977, 1988, 1990, 1991
- Dry: 1981, 1985, 1987, 1989
- Below Normal: 1979
- Above Normal: 1978, 1980
- Wet: 1982, 1983, 1984, 1986

Because there is only one Below Normal WY in the modeled record, Exponent combined results for the Below Normal year with model results for Above Normal WYs for the purposes of analyzing the WaterFix model runs; the WY type for WYs 1978–1980 is referred to from here forward as “Normal.”

3.4. Salinity calculations

The EC of freshwater inflows to the Delta is lower than that of water that enters the estuary from San Francisco Bay, which typically includes seawater. The Sacramento River and east side streams are typically the freshest (i.e., have the lowest salinity), while the San Joaquin River and agricultural return flows have higher salinity. Tidal inflows to the Delta at Martinez have the highest salinity levels, as they include seawater in all but the largest flood flow conditions. For

⁷ WY classifications were obtained from the California Data Exchange Center (CDEC), accessed at <http://cdec.water.ca.gov/cgi-progs/ioidir/WSIHIST>.

example, in 2015, average measured EC in the Sacramento River at Freeport was 168 micro-Siemens per centimeter ($\mu\text{S}/\text{cm}$) (equivalent to a total dissolved solids [TDS] of 103 milligrams per liter [mg/L]⁸), while the average EC in the San Joaquin River at Vernalis was 595 $\mu\text{S}/\text{cm}$ (343 mg/L TDS). In contrast, the 2015 average EC at Martinez (downstream boundary of Delta) was 26,384 $\mu\text{S}/\text{cm}$ (17,882 mg/L TDS). For comparison, the salinity of seawater is approximately 50,000 $\mu\text{S}/\text{cm}$ (35,000 mg/L TDS).^{9,10}

3.4.1. EC to chloride conversions

The salinity of water in the Delta has historically been expressed as EC, TDS, or chloride. Many salinity measurements in the Delta are made using EC, and EC is widely used as a surrogate for salinity. Guivetchi (1986)¹¹ derived linear mathematical relationships between EC, TDS, and chloride for various locations in the Delta that can be used to convert one type of salinity measurement to another. The DSM2 model provides salinity as EC, which was converted to chloride using Guivetchi's relationships. Exponent calculated chloride concentrations at three locations in the Delta (Antioch, Brentwood, and Stockton) using conversion equations developed using data from (or near) each of these locations.¹²

3.4.2. Data averaging

The DSM2 model produces data on 15-minute intervals. The period modeled in DSM2 for most WaterFix analyses spans WY 1975 through 1991. However, WY 1975 is required for model "spin-up," and so results for that year are excluded from analyses. Thus, Exponent's analyses

⁸ EC to TDS conversions were calculated using the method of Guivetchi 1986, which presented salinity conversion factors for various locations in the Delta.

⁹ Salinity (EC) data were obtained from CDEC, <http://cdec.water.ca.gov/>.

¹⁰ Exponent (2016). Report on the Effects of the Proposed California WaterFix Project on Water Quality at the City of Brentwood. Exhibit Brentwood-102 of the WaterFix Change Petition Proceedings. August 30, 2016.

¹¹ Guivetchi, K. 1986. Salinity Unit Conversion Equations. Memorandum. California Department of Water Resources. June 24, 1986. Accessed at: <http://www.water.ca.gov/suisun/facts/salin/index.cfm>.

¹² Salinity impacts at these three locations are used in the discussion of salinity impacts in the Delta generally in Opinion 7 below. For the conversion equation used for Antioch, see Antioch-202 Errata at p. 7. For Brentwood, see Brentwood-102 at p. 13. The relationship used for the Delta near Stockton's intake is described in STKN-26 at p. 10.

are based on the 16-year record from WY 1976 through 1991. For this analysis, the 15-minute DSM2 data were averaged on an hourly basis.

3.5. Calculation of residence times for Delta inflow using DSM2 results

The residence time of water in the Delta was calculated for each WY between 1976 and 1991 under scenarios EBC2, NAA, B1, B2, and 4A (represented by H3 and H4) using a mass balance procedure that relied upon the total volume of water in the Delta and total Delta inflows for the given WY type and operational scenario. The monthly average residence time was estimated by dividing the total volume of water in the Delta by the total inflows for each month. Jassby and Cloern (2000)¹³ estimated that the waterways within the Delta have a surface area of approximately 230 million m² (57,000 acres, or 2.5 billion ft²) and a water depth ranging from less than 1 m (3.3 ft) to greater than 15 m (49 ft). Assuming an average depth of 6 m (20 ft), the volume of water in the Delta at any point in time would be about 1.4 billion m³ (1.2 million acre-feet). Total monthly Delta inflows were calculated as the sum of flows from the Sacramento River, San Joaquin River, east side streams, inflow from Martinez, and Yolo bypass flow minus any North Delta diversions. The monthly average inflow was determined by calculating the monthly running average inflow (i.e., sum of 30 previous daily average inflow values) using data from DWR's DSM2 model files for the 16-year model period.

¹³ Jassby, A.D., and J.E. Cloern. 2000. Organic matter sources and rehabilitation of the Sacramento-San Joaquin Delta (California, USA). *Aquatic Conservation: Marine and Freshwater Ecosystems*. 10(5):323–352. October.

4. WaterFix will increase residence time in the Delta

Exponent used DSM2 model input files obtained from DWR to evaluate residence time in the Delta for two baseline conditions—EBC2 and the NAA—and four WaterFix scenarios—H3 and H4 (together representing the preferred alternative, 4A), B1, and B2. Modeling results showed that the residence time of water entering the Delta during a dry WY will increase for scenarios B1, B2, and 4A relative to the two baseline conditions.¹⁴ Table 1 shows calculated average monthly residence times for dry years for 4A, B1, B2, the NAA, and EBC2. Results in Table 1 show that the greatest change in residence times relative to existing conditions (EBC2) would occur from July to December—a period that includes the summer months when water temperatures are highest—and that residence times for 4A, B1, and B2 would increase markedly relative to EBC2.

Table 1. Residence times of inflows to the Delta under a dry WY

Month	Monthly average residence time (days)					Percent increase from EBC2 to B1	Percent increase from EBC2 to B2	Percent increase from EBC2 to Alt4A
	EBC2	NAA	B1	B2	Alt 4A			
October	28	26.6	35.8	34.4	31.6	28%	23%	13%
November	32.3	32.3	36.5	40.2	38.6	13%	24%	20%
December	27.6	28.3	30.8	32.3	31.3	12%	17%	13%
January	31	31.7	32.9	35.9	34.2	6%	16%	10%
February	27.3	26.9	28.9	29.3	30.7	6%	7%	12%
March	24.2	24	26.4	26.1	27	9%	8%	12%
April	22.3	22.8	24.9	24.9	24.9	12%	12%	12%
May	38.2	39.3	37.1	40	39.2	-3%	5%	3%
June	36.4	36.9	37.9	40.1	37.8	4%	10%	4%
July	27.7	28.7	34.4	35.6	34.2	24%	29%	23%
August	23.2	26.7	31.1	31.8	30.9	34%	37%	33%
September	27.8	31.2	36.3	35.1	34.3	31%	26%	23%

Source: Table 5, STKN-026, p. 40.

¹⁴ Exponent. 2017. Report on the Effects of the California WaterFix Project on the City of Stockton. Prepared for the City of Stockton. March 22. P. 39. (STKN-026)

For example, residence times would be 37% longer, on average, during the month of August in dry years for the B2 scenario relative to existing conditions (EBC2). Table 1 also shows that residence times would be similar for the NAA and EBC2 scenarios, demonstrating that the increase in residence times would be caused primarily by the proposed WaterFix project and not by sea level rise or climate change, which are included in the NAA. In STKN-026, Exponent's analysis further indicates that the proposed WaterFix project would result in longer Delta residence times in *all* WY types, not only in dry years.

As detailed in Sections 5 and 6, increased residence times in the Delta would likely cause the degradation of water quality in the Delta.

5. Increased *Microcystis* growth may result from WaterFix

Increased *Microcystis* accumulation may result from the WaterFix project due to increased residence times and increased water temperatures in the Delta. *Microcystis* is a genus of cyanobacteria containing species known to produce toxic chemicals called microcystins, which are a risk to humans, livestock and wildlife. Microcystins can be present outside the cells of the cyanobacteria and may not be completely removed via standard water treatment or boiling.¹⁵

Increased residence time in the Delta may increase the likelihood of a *Microcystis* bloom by several mechanisms.¹⁶ The most direct effect is to decrease the loss rate of *Microcystis* from the area by flushing. As more biomass remains, there is more opportunity for *Microcystis* growth and toxin production. Indirect effects of an increase in residence time include lower mixing, which allows *Microcystis* cells to remain in the upper meter of the water column where irradiance is higher, leading to higher growth.

Additionally, water temperatures in the Delta may increase as a result of increased residence times, which may in turn increase *Microcystis* growth rates. As Exponent has previously documented,¹⁷ DWR's analysis of temperature impacts within the Delta from WaterFix is incomplete and flawed. Flaws include the presentation of long-term monthly average simulated temperatures for DWR's 16-year DSM2 simulation period as a whole and not shorter-term (e.g., daily, monthly) simulated temperatures, which would be more relevant to *Microcystis* growth; a lack of temperature simulation results for scenarios other than the NAA and 4A (DWR did not

¹⁵ U.S. EPA. 2015. Health Effects Support Document for the Cyanobacterial Toxin Microcystins. EPA 820R15102. U.S. Environmental Protection Agency. Washington, DC; June 2015. Available from: <http://water.epa.gov/drink/standards/hascience.cfm>.

¹⁶ Berg, M., and M. Sutula. 2015. Factors affecting the growth of cyanobacteria with special emphasis on the Sacramento-San Joaquin Delta. Southern California Coastal Water Research Project Technical Report 869 August 2015.

¹⁷ See Exponent. 2017. Technical Comments on Petitioner's Rebuttal Testimony in the WaterFix Proceedings. Pp. 37-38. (STKN-048)

present Delta temperature analyses for scenarios EBC2, B1, B2, H3, or H4, or other modeled scenarios); and a lack of location-specific temperature modeling results for key Delta locations.

DWR's analysis of water temperature in the Delta indicates that monthly average water temperatures will increase under scenario 4A relative to the NAA, particularly in warm weather months. For example, DWR-653 states,

Modeling shows that for the full simulation period (1922-2003), the period mean temperatures in the San Joaquin River at Prisoners Point for the CWF [California WaterFix] would be up to 0.1°C (0.18°F) higher than that modeled for the NAA for each month of the May through October period of the year ... In September, the modeled maximum mean monthly temperature for the CWF would be about 0.3°C (0.6°F) higher than that modeled for the NAA.¹⁸

Increases in water temperature on shorter timescales and in different year types are expected to be higher than these reported monthly average increases. These projected temperature increases in the Delta are likely due, at least in part, to the projected increases in residence time because of WaterFix.

By increasing the growth rate of *Microcystis*, the higher water temperatures could not only increase the frequency and magnitude of *Microcystis* blooms during the summer months, but it could extend the season during which blooms are possible. *Microcystis* blooms in the Delta have been shown to occur when the temperature exceeds 19°C, and an increase in temperature that exceeds that threshold could result in a longer blooming season.¹⁹ Thus, despite its inadequacies, DWR's Delta temperature modeling also suggests the likelihood of increased *Microcystis* growth under WaterFix conditions.

¹⁸ DWR-653, p. 35.

¹⁹ Lehman, P.W., K. Marr, G.L. Boyer, S. Acuna, and S.J. Teh. 2013. Long-Term Trends and Causal Factors Associated with *Microcystis* Abundance and Toxicity in San Francisco Estuary and Implications for Climate Change Impacts. *Hydrobiologia* 718:141–158.

6. WaterFix will cause an increase in salinity in the Delta

Salinity intrusion in the western Delta has been a concern for over a century. Historical evidence indicates that water in the Delta was predominantly fresh before the early 1900s, and water in the western Delta would have been fresh for most of the year.²⁰ Salinity patterns within the Delta have changed markedly over time in response to changes in the configuration of the Delta and flows to and out of the Delta, and the Delta is generally a more saline environment today than in its natural state. Because the proposed WaterFix north Delta diversion (NDD) structure is located on the Sacramento River in the northern part of the Delta, water exported from these locations will consist almost entirely of Sacramento River water, which has implications for the composition and salinity of water in the Delta.

The greatest salinity impacts in the western Delta are associated with the B1 scenario. As discussed in detail in Antioch-202 Errata (Section 7.2) and Brentwood-102 Errata (Section 6b), the B1 scenario will result in changes in water composition and salinity at Antioch's intake on the San Joaquin River and at Brentwood's intake in Rock Slough. The changes in composition are broadly characterized by a lower percentage of Sacramento River water and a higher percentage of lower quality water sources, including San Joaquin River water, agricultural return flows, and saline inflow from Martinez.

DSM2 results reflect the expected changes in water quality in the western Delta under B1 operations. In previous work, Exponent calculated daily average chloride concentrations at Antioch from the DSM2 results for the modeled period (WY 1976–1991) and averaged them by month for the EBC2, NAA, and B1 scenarios, as presented in Table 2.²¹ The results show that daily average chloride concentrations will increase each month under B1 compared to EBC2 and NAA scenarios.

²⁰ See Antioch-202 Section 5.

²¹ For more detail on DSM2 and the modeled scenarios, see Antioch-202 Errata Section 3.1.

Table 2. Daily average salinity at Antioch for EBC2, NAA, and B1 scenarios, averaged by month for the 16-year simulation period

Month	Daily average chloride concentration at Antioch (mg/L Cl-)			Diff. of B1 and EBC2	Diff. of B1 and NAA
	EBC2	NAA	B1		
January	494	573	677	183	105
February	268	269	323	55	54
March	128	117	144	16	27
April	109	126	154	45	29
May	266	266	335	69	69
June	527	540	557	30	17
July	940	987	1005	64	18
August	1160	1237	1354	194	116
September	1335	1439	1889	554	451
October	1303	1426	1973	671	548
November	1260	1433	1941	680	508
December	933	977	1304	370	326

Because the B1 and NAA scenarios include 15-cm of sea-level rise and EBC2 (the existing condition) does not, the difference between B1 and NAA isolates WaterFix-related impacts. DSM2 results show that the WaterFix project is expected to cause increases in daily average chloride concentrations at Antioch (averaged by month over the 16-year period) of more than 100 mg/L (ranging from 105 mg/L to 548 mg/L) during January and August through December.

Increased salinity in the western Delta under B1 operations will result in more frequent exceedances of the D-1641 250 mg/L chloride water quality objective for M&I beneficial uses at Contra Costa Canal, Pumping Plant #1 (PP#1).²² Over the 16-year modeled period, EBC2, NAA, and B1 result in 210, 343, and 397 days of exceedances of the 250 mg/L chloride threshold, respectively (see Table 3). The B1 scenario would result in an average of 25 exceedances of the D-1641 250 mg/L water quality objective per year (all WY types). The simulated average annual number of days of exceedance summarized by WY type are shown in

²² See Antioch-202 Errata Section 3.3 Table 1 for additional detail.

Table 4. Impacts are greatest during dry and normal (above and below normal) WY types, which occur 54% of the time (based on the historical record from 1906–2016).

Table 3. Number of days of exceedance of the D-1641 250 mg/L water quality objective for M&I beneficial uses at PP#1 by WY

Water Year	Year Type	Total Days	EBC2	NAA	B1	H3	H4	B2
1976	Critical	366	26	0	0	0	0	0
1977	Critical	365	0	23	0	0	0	0
1978	Normal	365	6	78	85	55	73	0
1979	Normal	365	0	7	57	0	0	0
1980	Normal	366	45	23	18	0	0	0
1981	Dry	365	0	0	0	0	0	0
1982	Wet	365	2	2	8	0	0	0
1983	Wet	365	21	0	0	0	0	0
1984	Wet	366	0	0	0	0	0	0
1985	Dry	365	0	0	8	0	0	0
1986	Wet	365	15	21	0	0	0	0
1987	Dry	365	0	0	38	0	0	0
1988	Critical	366	0	0	0	0	0	0
1989	Dry	365	55	80	88	53	51	0
1990	Critical	365	23	18	0	0	0	0
1991	Critical	365	17	91	95	52	33	0
	sum		210	343	397	160	157	0

Table 4. Average number of days of exceedance of the D-1641 250 mg/L water quality objective for M&I beneficial uses at PP#1 by WY type

Year Type	Days of Exceedance by Model Scenario		
	EBC2	NAA	B1
Critical	13	26	19
Dry	14	20	34
Normal	17	36	53
Wet	10	6	2

Some of the modeled exceedances for the B1 scenario show considerably higher chloride concentrations compared to the existing condition (EBC2) and NAA scenarios; these increased concentrations persist for long periods. Figure 1 presents daily average chloride concentrations

at PP#1 for WY 1978–WY 1979 from DWR’s model results. The red line indicates the D-1641 250 mg/L water quality objective. During WY 1978–WY 1979, the B1 scenario is simulated to exceed the chloride threshold for over five months during two lengthy exceedance periods, and the NAA scenario is projected to exceed the threshold just over three months. These results show that compliance will likely be difficult to achieve with the projected impacts of climate change (at least during dry periods), and that compliance with water quality objectives in the western Delta will be even more challenging under B1 operations.

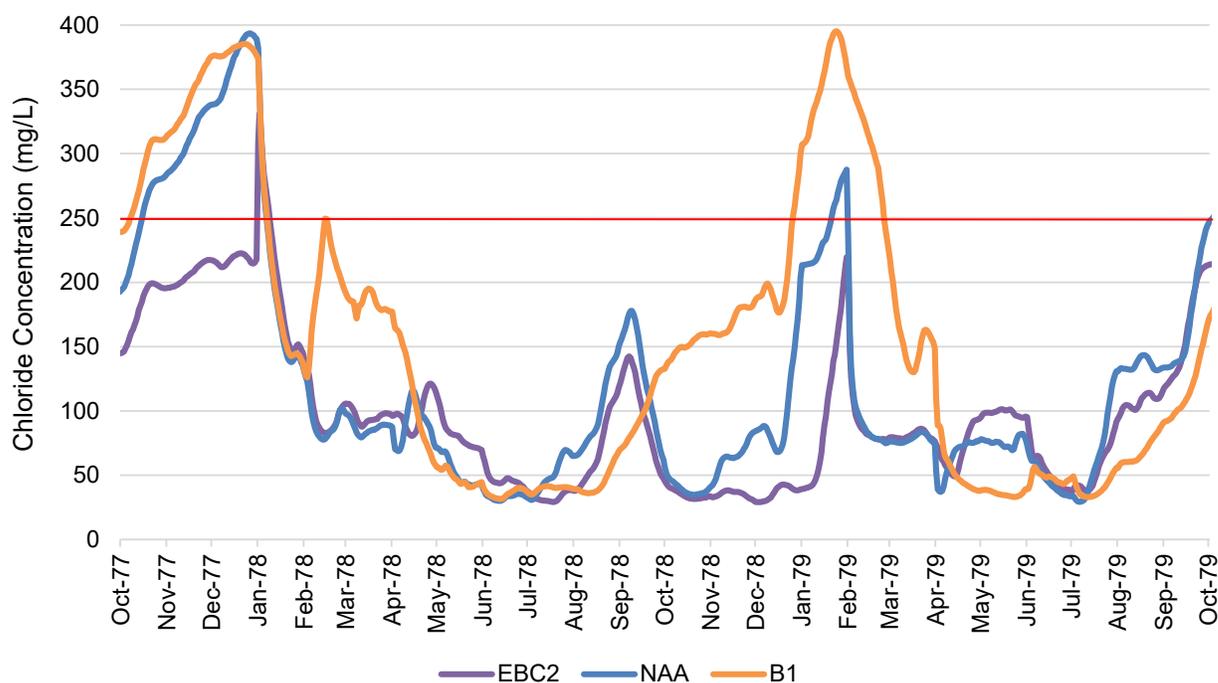


Figure 1. Simulated daily average chloride concentrations at PP#1 using DSM2 results for EBC2, NAA, and B1 scenarios. The red horizontal line represents the D-1641 250 mg/L water quality objective at PP#1.

D-1641 also requires that the daily average chloride concentration at PP#1 or Antioch be less than 150 mg/L chloride for a specified number of days per year (number of days varies by WY

type).²³ DWR operates to meet this objective at PP#1 and not at Antioch because it is less costly to do so.²⁴

Despite B1 water quality impacts and compliance issues associated with the D-1641 250 mg/L objective, modeling shows the B1 scenario remains compliant with the 150 mg/L water quality objective with the exception of only one year in the modeled 16-year period. Figure 2 shows salinity will increase (as indicated by fewer days of chloride concentrations less than 150 mg/L at PP#1) during WY 1976, 1978, 1980, 1984, 1986, 1987, and 1988 for the B1 scenario compared to the NAA scenario. For example, during WY 1976 there will be about 75 additional days where chloride exceeds 150 mg/L at PP#1 under B1 conditions, yet this does not trigger an exceedance of the water quality objective. Thus, even when operations comply with the 150 mg/L chloride water quality objective, salinity is shown to increase substantially under the B1 scenario.

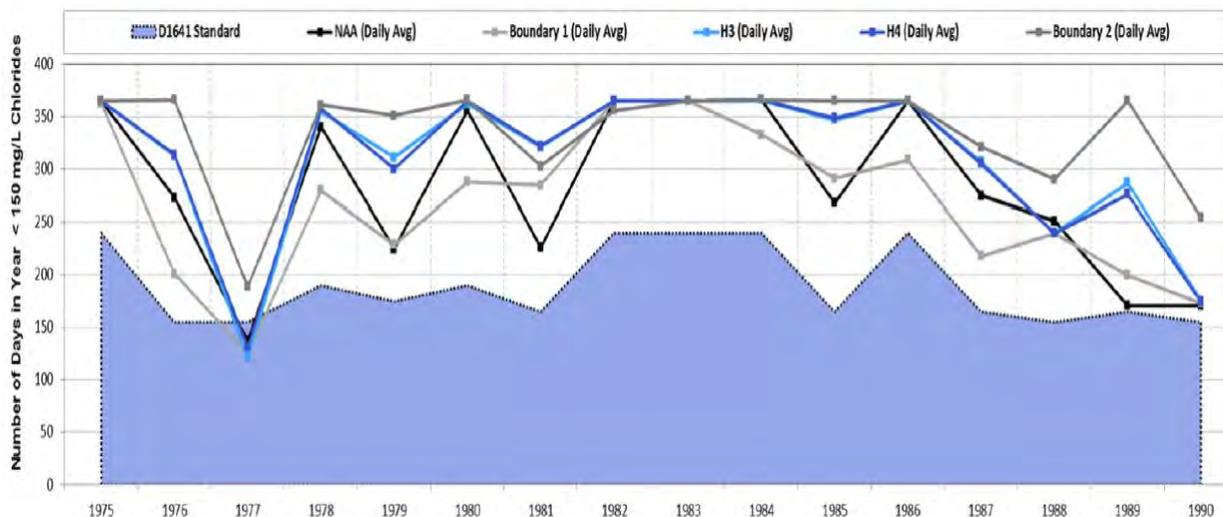


Figure 2. DWR-5 slide 72 showing the modeled compliance (and non-compliance) with the D-1641 M&I beneficial uses water quality objective at PP#1.

²³ See Antioch-202 Errata Section 3.3 Table 1.

²⁴ DWR has stated that they “don’t attempt to meet it because it’s – for one, it’s not required to meet it per D-1641. The requirement is at either location [CCPP#1 or Antioch]. And typically, it would be much less costly in terms of water – water supply for the entire system if we meet it at Rock Slough” (Part 1A, Testimony Volume 11, p. 94, lines 19–24).

Exponent has also evaluated the salinity in the interior Delta, e.g., at Stockton's intake location. The City of Stockton uses an operational threshold of 110 mg/L chloride.²⁵ Exponent evaluated the number of days in the simulation period that this threshold would be exceeded for each of the WaterFix scenarios, as shown in Table 5. DWR's model results indicate that salinity at Stockton's intake will increase under both B1 and B2 scenarios most noticeably during dry and critical WY types. The B2 operations scenario results in the largest number of days chloride concentrations exceed 110 mg/L. DSM2 model results demonstrate that increases in salinity are also expected to occur at other locations in the interior Delta as a result of the WaterFix project.

Table 5. Number of equivalent days per year that water at Stockton's intake exceeds 110 mg/L chloride under various modeled scenarios for each WY between 1976 and 1991

WY	WY Type	Total Days	No. of days per year water at Stockton's intake exceeds chloride threshold of 110 mg/L			
			EBC2	NAA	B1	B2
1976	Critical	366	25	0	11	87
1977	Critical	365	9	76	56	71
1978	Normal	365	45	82	105	24
1979	Normal	365	12	29	33	31
1980	Normal	366	50	23	34	1
1981	Dry	365	12	14	5	82
1982	Wet	365	20	23	30	4
1983	Wet	365	0	0	0	0
1984	Wet	366	0	0	0	0
1985	Dry	365	7	1	7	76
1986	Wet	365	26	20	4	15
1987	Dry	365	11	6	63	81
1988	Critical	366	15	10	18	88
1989	Dry	365	93	125	109	71
1990	Critical	365	54	24	11	57
1991	Critical	365	75	139	143	72
Summary	(all)		455	572	627	759

²⁵ Due to operational constraints, the City of Stockton is restricted to pumping water from the Delta when chloride is below 110 mg/L. See STKN-26 Section 4.3 for additional detail.

In sum, DWR's DSM2 results show that WaterFix scenario B1 will result in a substantial increase in salinity in the western Delta. Multiple WaterFix scenarios, including both B1 and B2 will result in significant salinity increases in the interior Delta as well, with the greatest increase expected to occur as a result of the B2 operations scenario. DWR's model results show that compliance with the D-1641 chloride objectives is expected to occur less frequently because of WaterFix and that, even when D-1641 compliance is simulated to occur, significant increases in salinity are predicted during some periods.

As detailed in the testimony of Thomas Grovhoug, P.E. (Exhibit SRCSD-16), worsening water quality in the Delta—including increased *Microcystis* growth and salinity—has the potential to result in more stringent future permit limitations on discharges to the Delta, including discharges from the SRWTP.

7. WaterFix will impact SRWTP operations by increasing the frequency and duration of diversion events relative to baseline conditions (i.e., EBC2 and NAA scenarios)

As noted in Section 3, the conditions of Regional San's NPDES permit prohibit discharge from the SRWTP to the Sacramento River when the ratio of river flow to effluent flow is below 14:1. Under these low-flow conditions, Regional San must close the valves that allow treated effluent to be discharged to the Sacramento River and divert flow to ESBs instead.

To evaluate the extent to which WaterFix would change the flow regime in the Sacramento River at Freeport and thereby affect SRWTP operations, Flow Science used DWR's DSM2 output from simulations of the EBC2 and NAA scenarios and four WaterFix scenarios (H3, H4, B1, and B2) as input to a model simulating Regional San's discharge and diversion operations.²⁶ Results of Flow Science's analysis are summarized in Table 6, and the detailed analysis is presented in Appendix A. These model results are a reliable basis upon which to compare the alternatives.

Results show an increase in four key parameters as a result of WaterFix: (1) the number of diversion events, (2) the percentage of time that diversion would be required, (3) the percentage of time that effluent would be stored in ESBs, and (4) the cumulative volume of water that would be pumped from ESBs over the 16-year modeling period (WY 1976–1991). Under WaterFix, these parameters would increase between 44% and 59% (depending on the parameter) relative to EBC2 and between 4% and 17% (depending on the parameter) relative to the NAA. Although climate change and sea level rise are expected to increase the number and frequency of diversion events (as indicated by the comparison of the NAA to EBC2), the WaterFix project itself is expected to increase the number and frequency of diversion events to a

²⁶ Flow Science. 2017. Op. cit.

greater extent than climate change and sea level rise alone (as indicated by the comparison of the project scenarios to the NAA).

Table 6. Summary of Flow Science SRWTP operations modeling results over the 16-year simulation period (1976–1991)

Parameter	DSM2 Model Scenarios					
	EBC2	NAA	B1	B2	H3	H4
(1) Number of diversion events	2,704	3,571	3,930	3,901	3,982	4,189
Change in number of diversion events compared with EBC2 (%)	NA	+32%	+45%	+44%	+47%	+55%
Change in number of diversion events compared with NAA (%)	NA	NA	+10%	+9%	+12%	+17%
(2) Percent of time diversion required (%)	5.6	8.0	8.3	8.3	8.6	9.0
Change in total diversion time compared with EBC2 (%)	NA	41%	47%	47%	51%	59%
Change in total diversion time compared with NAA (%)	NA	NA	+4%	+4%	+8%	+13%
(3) Percent of time effluent stored in ESBs (%)	11.8%	16.4%	17.1%	17.0%	17.6%	18.4%
Change in percent time effluent stored in ESBs compared with EBC2 (%)	NA	+39%	+45%	+44%	+49%	+56%
Change in percent time effluent stored in ESBs compared with NAA (%)	NA	NA	+4%	+4%	+7%	+12%
(4) Cumulative volume pumped out of ESBs (million gallons [MG])	63,928	89,034	93,087	92,643	95,590	100,046
Change in cumulative volume pumped out of ESBs compared with EBC2 (%)	NA	+39%	+46%	+45%	+50%	+56%
Change in cumulative volume pumped out of ESBs compared with NAA (%)	NA	NA	+5%	+4%	+7%	+12%

Increases in (1) the number of diversion events, (2) the percentage of time that diversion would be required, and (4) the cumulative volume of water that would be pumped from ESBs over the 16-year modeling period (1976–1991) will correlate with higher operational and maintenance costs for Regional San, including added power costs for additional pumping and added costs associated with opening and closing valves more frequently and cleaning ESBs. (The testimony of Ruben Robles, P.E. [Exhibit SRCSD-28] details these costs.) Increases in (3) the percentage of time that effluent would be stored in ESBs have the potential to result in additional odor impacts due to the longer periods during which effluent would be stored in open-air ESBs. The expected increase in (1) the number of diversion events under WaterFix effectively amounts to an encroachment on Regional San’s ESB capacity.

Thus, Flow Science’s model results indicate that WaterFix will result in significant impacts to Regional San’s operation of the SRWTP, including higher operations and maintenance costs, loss of available storage, and increased environmental impacts for Regional San relative to both EBC2 and the NAA.

Appendix A

Flow Science Incorporated Technical Report

Flow Science Incorporated

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SACRAMENTO REGIONAL WASTEWATER TREATMENT PLANT EMERGENCY STORAGE BASIN ANALYSIS FOR CALIFORNIA WATERFIX

Prepared for
Sacramento County Regional Sanitation District

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1. INTRODUCTION

The Sacramento Regional County Sanitation District (Regional San) operates the Sacramento Regional Wastewater Treatment Plant (SRWTP), which discharges treated wastewater to the Sacramento River at Freeport. One of SRWTP's NPDES permit requirements is that SRWTP only discharge effluent to the Sacramento River when the ratio of river flow to effluent flow is higher than 14:1. When the river-to-effluent flow ratio is less than 14:1, SRWTP effluent is diverted to emergency storage basins (ESBs).

The California Department of Water Resources (DWR) released DSM2 modeling results for more alternatives of the California WaterFix project. The modeling results showed that there will be changes in Sacramento River flow at Freeport for the modeled alternatives. These changes will likely have impacts on SRWTP's discharge operations and the required volume of the ESBs. In addition, the ongoing EchoWater Project at SRWTP will alter the treatment process, which may change the plant's discharge flow regime.

Flow Science Incorporated (Flow Science) was retained by Regional San to work in coordination with Exponent to analyze the effect on SRWTP operations and the required ESB volumes from selected WaterFix alternatives under both current SRWTP and future EchoWater operating conditions. The six selected WaterFix alternatives are the baseline scenarios EBC2 and NAA and the project scenarios H3, H4, Boundary 1, and Boundary 2. The following bullets describe the distinctions between these alternatives:

- EBC2: current operations based on the USFWS (2008)¹ and NMFS (2009)² Biological Opinions, including management of outflows to achieve the Fall X2 salinity standards;

¹ United States Fish and Wildlife Service (USFW), 2008. Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP). California and Nevada Region. December 2008.

² National Marine Fisheries Service (NMFS), 2009. Final Biological Opinion and Conference Opinion of the Proposed Long-term Operations of the Central Valley Project and State Water Project. U.S. Department of Commerce National Marine Fisheries Service. June 2009.

- NAA: includes the requirements of the USFWS (2008) and NMFS (2009) Biological Opinions, Fall X2 salinity standard, and the effects of climate change and sea level rise as of 2025;
- H3: includes the Fall X2 salinity standards but does not include enhanced spring outflow;
- H4: includes both the Fall X2 salinity standards and enhanced spring outflow;
- Boundary 1: does not include either the Fall X2 salinity standards or the enhanced spring outflow;
- Boundary 2: includes the Fall X2 salinity standards, enhanced outflow for all months, and more restrictive requirements on Old and Middle River flows.

Detailed descriptions of these alternatives can be found in Chapter 5 and Appendix 5E of the WaterFix EIR. Of the alternatives, EBC2 is the scenario with operations closest to the current conditions, whereas the NAA scenario is a hypothetical future condition. Therefore, EBC2 was selected as the baseline condition for the comparison of results of the alternatives.

Flow Science had developed a model code for analyzing SRWTP diversion operations and ESB volumes in previous ESB analysis projects. For this project, Flow Science discussed and confirmed relevant SRWTP operating parameters with Regional San, updated the model code, developed SRWTP flow data, and analyzed SRWTP operations and required ESB volumes for the selected alternatives. This memorandum presents a summary of the work completed by Flow Science.

2. BACKGROUND & QUALIFICATIONS

The primary author of this report was Kristen Bowman Kavanagh, P.E. Ms. Kavanagh is a Registered Professional Engineer in the State of California (License #C58407). Her educational background includes a Bachelor of Science in Civil Engineering from Stanford University (January 1995) and a Master of Science in Civil Engineering from Stanford University (June 1995). Her education included coursework at both undergraduate and graduate levels in fluid mechanics, hydrology, surface and groundwater flows, and aquatic chemistry.

Ms. Kavanagh is currently President and a Principal Engineer at Flow Science Incorporated (Flow Science), where she has been employed for almost 20 years (since 1998). While at Flow Science, she has been responsible for performing computational fluid dynamics (CFD) modeling, analysis and modeling of lake and reservoir water quality and hydrodynamics, and hydraulic and transient analysis. She has 22 years of

experience with projects involving hydrodynamics and water quality in lakes and rivers, hydraulics, and point and non-point source discharges.

3. MODEL INPUTS AND PARAMETERS

Inputs to Flow Science’s model for analyzing SRWTP diversion operations and ESB volumes include Sacramento River flow at Freeport and SRWTP flow data. DWR has conducted DSM2 modeling studies for WaterFix alternatives, and the model results include Sacramento River flow at Freeport that was used in Flow Science’s ESB model. The 2016 updated DSM2 output for WaterFix alternatives H3, H4, Boundary 1, Boundary 2, and NAA were obtained from the SWRCB’s ftp site³. The DSM2 model run for the EBC2 alternative was completed by DWR in 2013, and no changes have been made to this alternative since then. Thus, the EBC2 model results were taken from 2013 model runs previously received from DWR via hard drive. The DSM2 modeled flow data cover the period of water years 1976-1991.

Although the SRWTP’s NPDES permit allows the plant to discharge a maximum average dry weather flow (ADWF) of 181 mgd, SRWTP flows in recent years have been below this permit limit of 181 mgd ADWF. However, the plant’s inflow conditions could change, and flow could increase in the future. Therefore, an ADWF of 181 mgd was used in this analysis to ensure that the model results consider the maximum ESB volume required.

In previous ESB modeling over time periods longer than ten years, monthly SRWTP inflow data and hourly diurnal flow factors were used to generate hourly plant flow series. To be consistent with previous modeling, the same method was used in this analysis. For current plant operating conditions, average monthly SRWTP flows were calculated from the plant’s average daily inflow data for the year 2015, and these average monthly flows were then scaled up to 181 mgd ADWF. Thus, the resulting flow patterns used in the ESB model reflect 2015 measured plant inflows, but the magnitude of the flows was increased to reflect the permit limit of 181 mgd ADWF. Flow Science and

³ <https://ftp.waterboards.ca.gov/#/+CalSim%20and%20DSM2%20Modeling/>

Regional San staff also discussed the possible future SRWTP effluent flow regimes after the EchoWater project is completed. The conclusions were that the plant inflow rates and patterns after the EchoWater project is completed will not be significantly different, and a new plant inflow data series was not needed for this analysis. The resulting scaled monthly flow data used in the analysis for both the existing and post-EchoWater project scenarios are summarized in **Table 1** in comparison to the 2015 measured monthly inflows. The hourly diurnal flow factors, as previously provided by Regional San and applied in the ESB model to the scaled monthly flow data in **Table 1**, are presented in **Table 2**.

Table 1 – Monthly SRWTP Influent Flows versus Modeled Monthly Flows Scaled to 181 mgd ADF

Month	Influent Flow	Scaled to 181 mgd ADF
	mgd	mgd
1	134	202
2	146	220
3	133	200
4	132	199
5	124	186
6	123	185
7	121	182
8	120	181
9	120	180
10	122	183
11	123	184
12	128	192

Table 2 – Hourly Diurnal Flow Factors Provided by Regional San

Hour of Day	$Q_{\text{hourly}}/Q_{\text{monthly avg}}$
0:00	1.13
1:00	1.1
2:00	1.05
3:00	1

Hour of Day	$Q_{\text{hourly}}/Q_{\text{monthly avg}}$
4:00	0.94
5:00	0.87
6:00	0.8
7:00	0.75
8:00	0.72
9:00	0.75
10:00	0.79
11:00	0.85
12:00	0.91
13:00	0.98
14:00	1.05
15:00	1.12
16:00	1.15
17:00	1.16
18:00	1.15
19:00	1.15
20:00	1.14
21:00	1.13
22:00	1.14
23:00	1.14

The temperature of the river water and SRWTP effluent can also be included as inputs to Flow Science’s ESB model to simulate flow diversion for thermal compliance. However, DWR’s modeling studies do not provide temperature results. Therefore it was not possible to consider flow diversion for thermal compliance in the current ESB model analysis.

ESB model parameters include the discharge capacity through the diffuser to the river, the pumping capacity from the ESB to the diffuser, the 14:1 trigger ratio of river flow to effluent flow, and a minimum river flow for diversion from the diffuser to the ESB. The minimum river flow trigger was set to 2,500 cfs as indicated by Regional San staff; however, based on the hourly flows computed from the 2015 data, the minimum river flow trigger did not come into effect. Thus, the 14:1 river-to-effluent flow ratio was the driving factor in initiating diversions in this analysis. Also note that other factors not included in this analysis, such as thermal effluent and receiving water requirements, as

well as planned and unplanned maintenance, could require Regional San to initiate additional diversions and further impact ESB storage volumes. The parameter values used in the ESB model are summarized in **Table 3**.

Table 3 — Model Parameters for Existing and Post EchoWater Conditions

Parameter	Existing Value	Post EchoWater Value
Diffuser discharge capacity to river	410 mgd	410 mgd
Influent diversion capacity to ESB	400 mgd	400 mgd
Effluent diversion capacity to ESB	270 mgd ¹	330 mgd ²
Pumping capacity from ESB	175 mgd	175 mgd
River-to-effluent flow ratio for diversion	14:1	14:1
Minimum river flow for diversion	≤ 2,500 cfs	≤ 2,500 cfs

¹ The effluent diversion capacity to the ESBs is currently limited to 270 mgd by the hydraulic capacity of the Carbonaceous Oxygenation (CO) tanks.

² The effluent diversion capacity to the ESBs post EchoWater project will be limited to 330 mgd by the BNR treatment process.

Note in **Table 3** that both influent to the plant and effluent from the treatment process can be diverted to ESBs in order to cease diffuser discharges to the river, when required. Thus, the total diversion capacity to ESBs is the sum of the influent and effluent diversion capacity, and this total diversion capacity not only exceeds the maximum modeled plant influent rate but also the diffuser discharge capacity.

After completion of the EchoWater project, the new biological nutrient removal (BNR) treatment process will have a maximum capacity of 330 mgd which could limit SRWTP flows. However, based upon the modeled monthly flow rates in **Table 1** and the diurnal flow factors in **Table 2**, the modeled plant flow rates never exceeded the post EchoWater project BNR capacity of 330 mgd. Similarly, the modeled plant flow rates never exceeded the existing effluent diversion capacity to the ESB of 270 mgd (due to the hydraulic capacity of the CO tanks). Thus, neither the existing hydraulic capacity of the CO tanks nor the post EchoWater BNR capacity triggered the need for diversions to the ESB in this analysis.

4. RESULTS OF ANALYSIS

Using the input flow data and model parameters described in the prior section, Flow Science ran the ESB model for the six selected WaterFix alternatives. Model outputs

included hourly series of effluent flow and ESB volume data. The model results were processed to obtain the maximum required ESB volume, the probability distribution of ESB volume, a summary of diversion events, and relevant parameters of ESB storage and discharge. The modeled maximum ESB volume, the number and percent time of diversion events, the percent of time effluent is stored in the ESB, the cumulative volume of effluent pumped out of the ESB, and summary statistics of length of periods with effluent continuously stored in the ESB are presented in **Table 4**. The EBC2 alternative was found to have the smallest values for all parameters summarized in **Table 4**, except for the median length of effluent continuously stored in the ESB, for which all modeled alternatives have the same value. The EBC2 alternative is also the scenario with operating conditions most similar to current conditions. Thus, the EBC2 alternative was used as the baseline scenario with which to compare the percent differences to the other alternatives.

Table 4 — Summary of ESB Modeling Results

Parameter	WaterFix Alternatives (WYs 1976-1991)					
	EBC2	NAA	Boundary 1	Boundary 2	H3	H4
Maximum ESB volume required (Million Gallons)	58	61	61	61	61	61
Total number of diversion events	2704	3571	3930	3901	3982	4189
Percent of time diversion required (%)	5.6	8.0	8.3	8.3	8.6	9.0
Percent of time effluent stored in ESB (%)	11.8	16.4	17.1	17.0	17.6	18.4
Cumulative volume pumped out of ESB (million gallons)	63,928	89,034	93,087	92,643	95,590	100,046
Median length of time effluent continuously stored in ESB (hours)	6	6	6	6	6	6
Maximum length of time effluent continuously stored in ESB (hours)	23	48	48	48	48	48
Change in total number of diversion events compared with EBC2	NA	32%	45%	44%	47%	55%
Change in total diversion time compared with EBC2	NA	41%	47%	47%	51%	59%

Parameter	WaterFix Alternatives (WYs 1976-1991)					
	EBC2	NAA	Boundary 1	Boundary 2	H3	H4
Change in percent of time effluent stored in ESB	NA	39%	45%	44%	49%	56%
Change in cumulative volume pumped out of ESB	NA	39%	46%	45%	50%	56%
Change in maximum length of time effluent continuously stored in ESB	NA	109%	109%	109%	109%	109%

These results show that compared with EBC2, the other alternatives require a small (~5%) increase in the maximum ESB volume. However, the other alternatives lead to significant increases in the following parameters:

- total number of diversion events (32% to 55% more than the EBC2 alternative),
- total diversion time (41% to 59% more than the EBC2 alternative),
- percent of time effluent stored in ESB (39% to 56% more than the EBC2 alternative),
- cumulative volume of effluent pumped out of ESB (39% to 56% more than the EBC2 alternative),
- maximum length of time effluent continuously stored in ESB (109% more the the EBC2 alternative).

Plots of the probability distribution of required ESB volume for each alternative are included in **Appendix A**. Plots of the probability distribution of the length of time effluent is continuously stored in the ESB for each alternative are included in **Appendix B**.

The results presented in **Table 4** are for the entire modeled period (*i.e.*, water years 1976-1991). To better understand the impacts of different hydrologic conditions on flow diversions, the summary of diversion events was further grouped and averaged by water year types according to DWR classification (*i.e.*, wet, above normal, below normal, dry, and critically dry years). Water year types within the modeled period are presented in **Table 5**. There was only one below normal (BN) year and two above normal (AN) years within the modeled period, and therefore, model results may not be representative for these two water year types if each of these two water year types is examined individually. Therefore, results for the below normal and above normal water years were combined into one category (AN/BN) to produce more representative results for approximately normal conditions. For critical (C), dry (D) and wet (W) water year types, there are four

to five years for each water year type within the modeled period. Thus, averaging model results for these water year types was helpful in gaining some insight into the effect of hydrologic conditions on diversion events. The average number of diversion events and average percent of time of diversion are presented in **Table 6** for C, D, AN/BN, and W water year types. **Table 6** also includes (in parentheses) the percent increases in these values for each alternative in comparison to the EBC2 alternative. A summary of diversion events for each water year is presented in **Appendix C**.

Table 5 — Water Year Types for the Modeled Period

Water Year	Type
1976	Critical
1977	Critical
1978	Above Normal
1979	Below Normal
1980	Above Normal
1981	Dry
1982	Wet
1983	Wet
1984	Wet
1985	Dry
1986	Wet
1987	Dry
1988	Critical
1989	Dry
1990	Critical
1991	Critical

Table 6 — Average Diversion Summary by Water Year Types

Parameter	Water Year Type	WaterFix Alternatives					
		EBC2	NAA	Boundary 1	Boundary 2	H3	H4
Average number of diversion events per year ¹	C	365	441 (21%)	453 (24%)	455 (24%)	459 (26%)	460 (26%)
	D	127	196 (55%)	203 (60%)	211 (66%)	238 (88%)	265 (109%)
	AN/BN	75	99 (32%)	163 (118%)	150 (101%)	143 (92%)	162 (117%)
	W	37	71 (95%)	91 (150%)	84 (129%)	77 (112%)	87 (137%)
Average percent of time diversion required (%) ¹	C	13%	17% (32%)	17% (30%)	17% (31%)	17% (34%)	17% (33%)
	D	3.9%	6.1% (56%)	6.2% (58%)	6.2% (58%)	7.2% (83%)	8.3% (111%)
	AN/BN	2.4%	3.5% (47%)	5.0% (111%)	5.0% (112%)	4.8% (101%)	5.2% (119%)
	W	1.0%	2.1% (109%)	2.6% (164%)	2.4% (140%)	2.2% (120%)	2.5% (156%)

¹ The values in parentheses are the computed percent increases in comparison to the EBC2 alternative.

As expected, average results for the three water year types show that the critical water years required the most diversion events and longest diversion time periods, while wet water years led to the lowest number of diversion events and the shortest duration of diversion. Using EBC2 as the base scenario, the increase in the average number of diversion events for the other alternatives ranged from 21%-26% for critical (C) water years, 55%-109% for dry (D) water years, 32%-118% for the combined above normal and below normal (AN/BN) water years, and 95%-150% for wet (W) water years. The average percent of time for diversion increased by 30%-34% for critical (C) water years, 56%-111% for dry (D) water years, 47%-119% for the combined above normal and below normal (AN/BN) water years, and 109%-164% for wet (W) water years. Therefore, the percentage changes in number of diversion events and diversion time of other alternatives, as compared to the EBC2 alternative, are most significant for the wet

water year type and least significant for the critical water year type. However, it should be noted that all scenarios have the lowest absolute number of diversion events and diversion time for wet water years. The larger percentage changes between alternatives for the wet water years are due to the low base case values and should not be overemphasized.

To further examine the distribution of relevant diversion parameters within a year, parameters listed in **Table 4** are grouped by month for the 16-year modeled period. These parameters are further grouped by month and water year type to understand the effects of hydrologic and seasonal conditions on diversion operations. The detailed results are presented in **Appendix D**.

5. SUMMARY

DWR released updated DSM2 model results for several more WaterFix alternatives in 2016. Flow Science modeled the effects of these updated alternatives, as well as DWR's EBC2 alternative from 2013, which is up-to-date for EBC2, on SRWTP's diversion operations and required ESB volume. The six selected WaterFix alternatives are H3, H4, Boundary 1, and Boundary 2, and baseline condition scenarios EBC2 and NAA. Flow Science confirmed relevant model parameters with Regional San. Flow Science and Regional San staff also discussed the potential change in SRWTP flows due to the EchoWater project, and concluded that the future treatment processes would not affect the flow rates used in the ESB model analysis. Thus, the SRWTP flow rates used in the model for existing and post EchoWater operations were identical and were developed using flow data for 2015. This plant flow data set was then scaled up to 181 mgd ADWF, the maximum flow rate limitation in SRWTP's NPDES permit.

The modeled maximum ESB volume was 58 million gallons (MG) for EBC2 and 61 MG for all other alternatives. Although the increase in the maximum ESB volume was only about 5% for the other alternatives in comparison to the EBC2 alternative, other alternatives led to significant increases over EBC2 for the following ESB operation parameters:

- total number of diversion events (32% to 55% more than the EBC2 scenario),
- total diversion time (41% to 59% more than the EBC2 scenario),
- percent of time effluent stored in ESB (39% to 56% more than the EBC2 alternative),
- cumulative volume of effluent pumped out of ESB (39% to 56% more than the EBC2 alternative),
- maximum length of time effluent continuously stored in ESB (109% more than the EBC2 alternative).

Model results for diversion events were further grouped and averaged by water year types for critical, dry, combined above normal and below normal, and wet water year types. As expected, the averaged results showed that critical water years require the most diversion events and longest diversion time periods, while wet water years lead to the lowest number of diversion events and shortest duration of diversion. Using EBC2 as the baseline, the proposed alternatives resulted in the largest percentage increase in diversion events and time for wet water years, and the smallest percentage increases for critical years. However, the large percentage increases for wet water years are due to the low base case values and should not be overemphasized.



APPENDIX A

Probability Distribution of Required ESB Volume for the Selected Alternatives

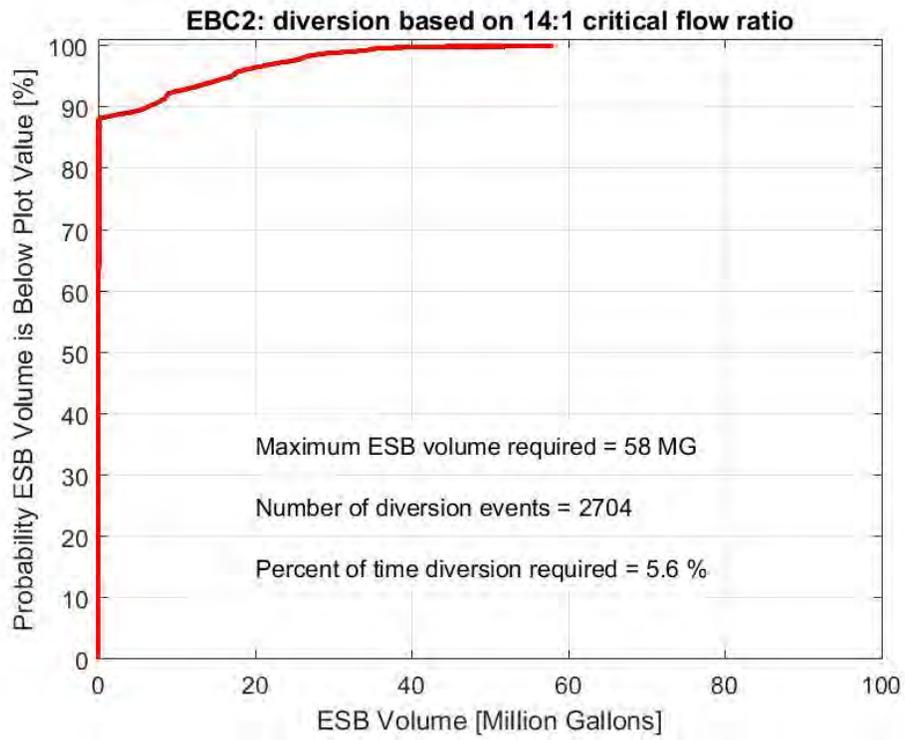


Figure A1. Probability distribution of ESB volume for the EBC2 alternative

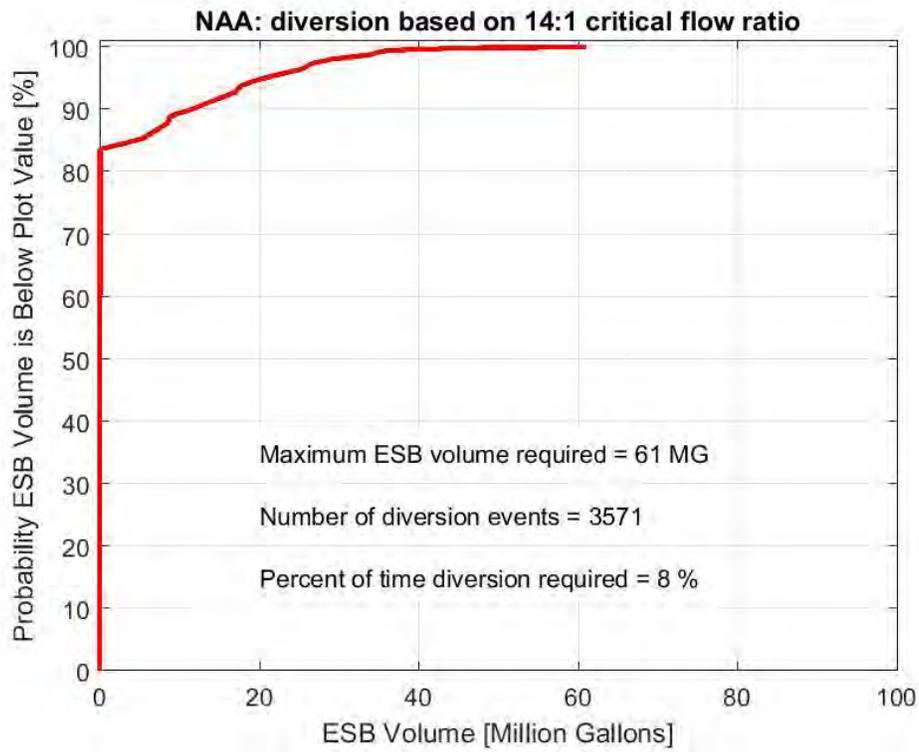


Figure A2. Probability distribution of ESB volume for the NAA alternative

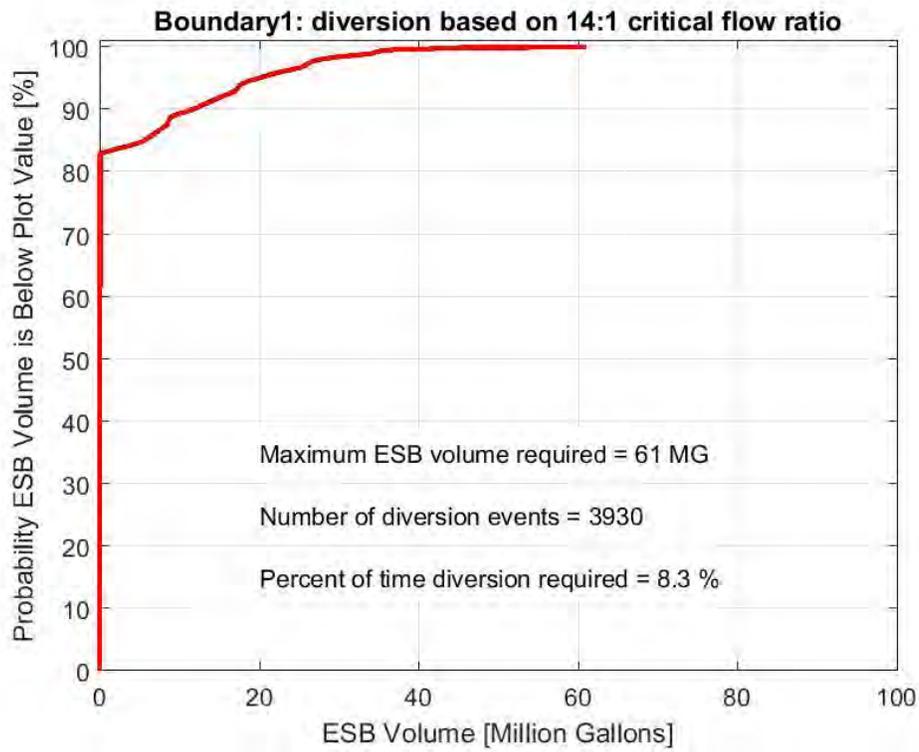


Figure A3. Probability distribution of ESB volume for the Boundary1 alternative

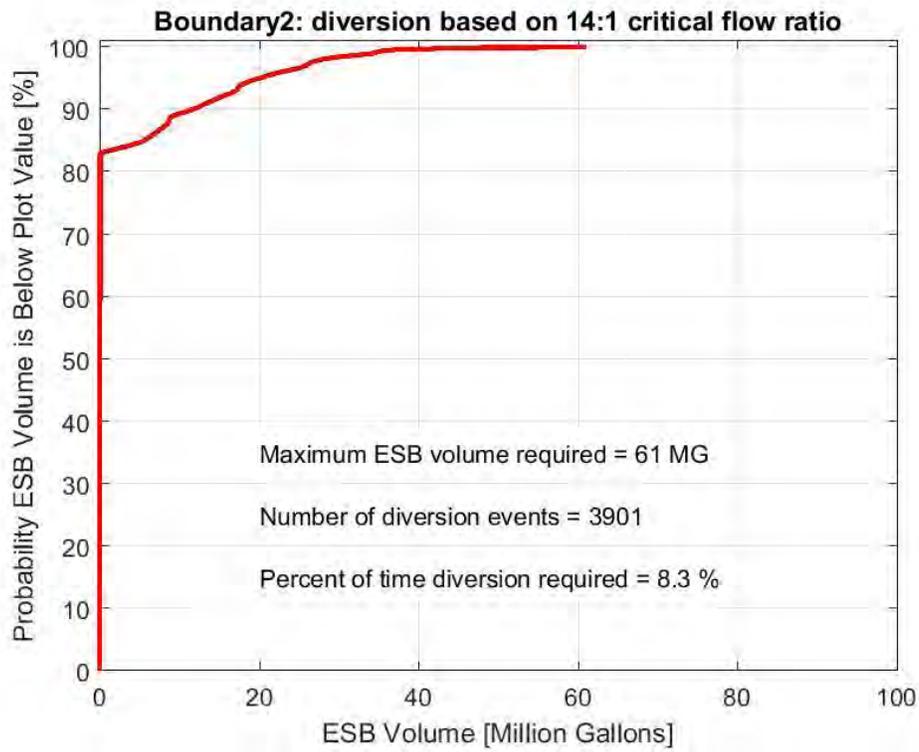


Figure A4. Probability distribution of ESB volume for the Boundary2 alternative

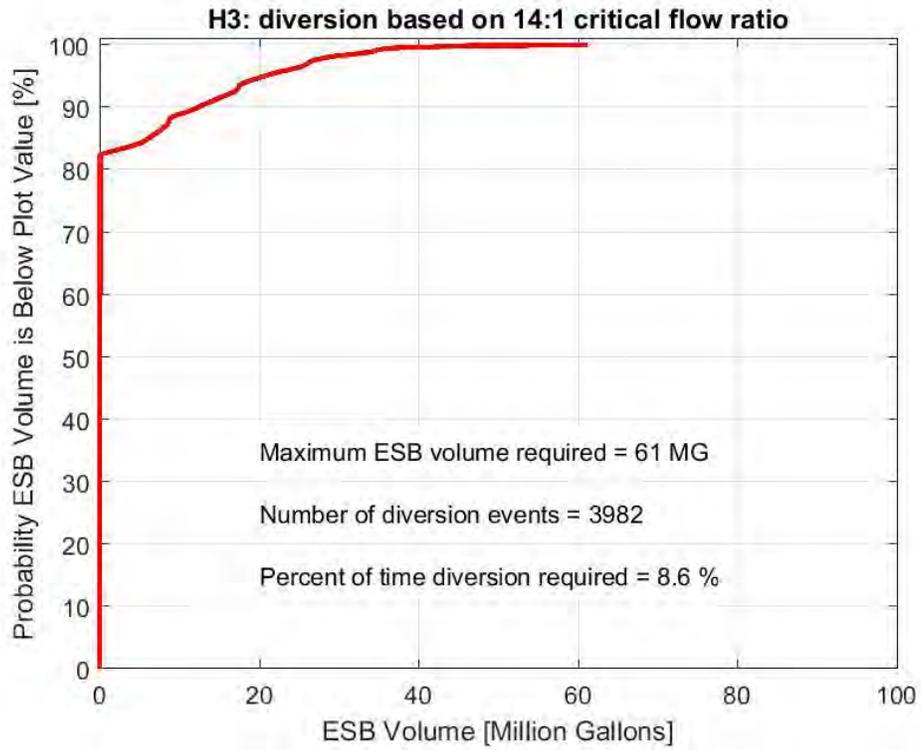


Figure A5. Probability distribution of ESB volume for the H3 alternative

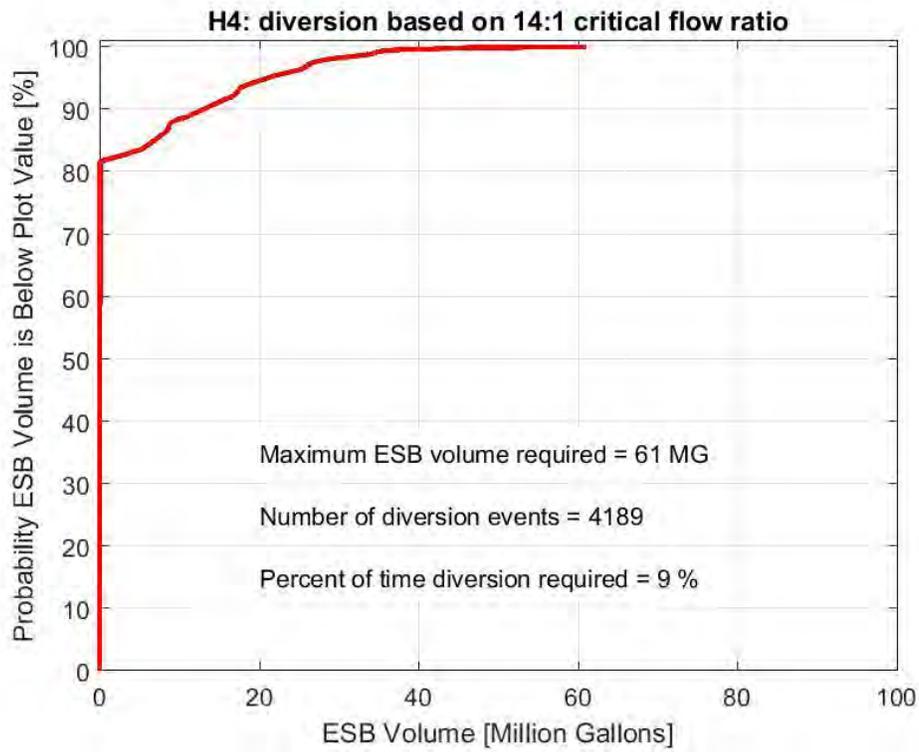


Figure A6. Probability distribution of ESB volume for the H4 alternative

APPENDIX B

Probability Distribution of Length of Time Effluent Continuously Stored in the ESB for the Selected Alternatives

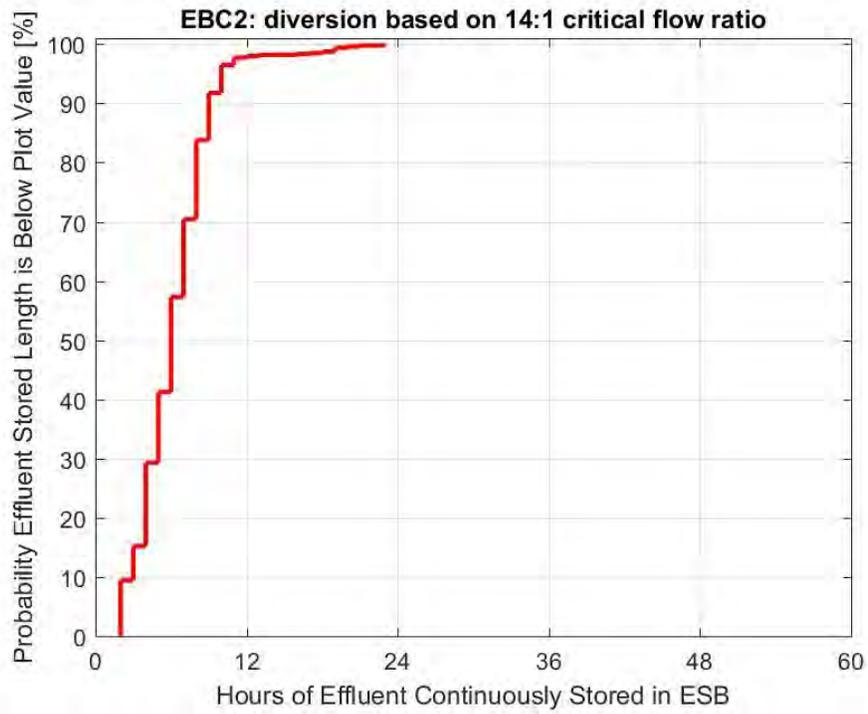


Figure B1. Probability distribution of length of time effluent continuously stored in ESB for the EBC2 alternative

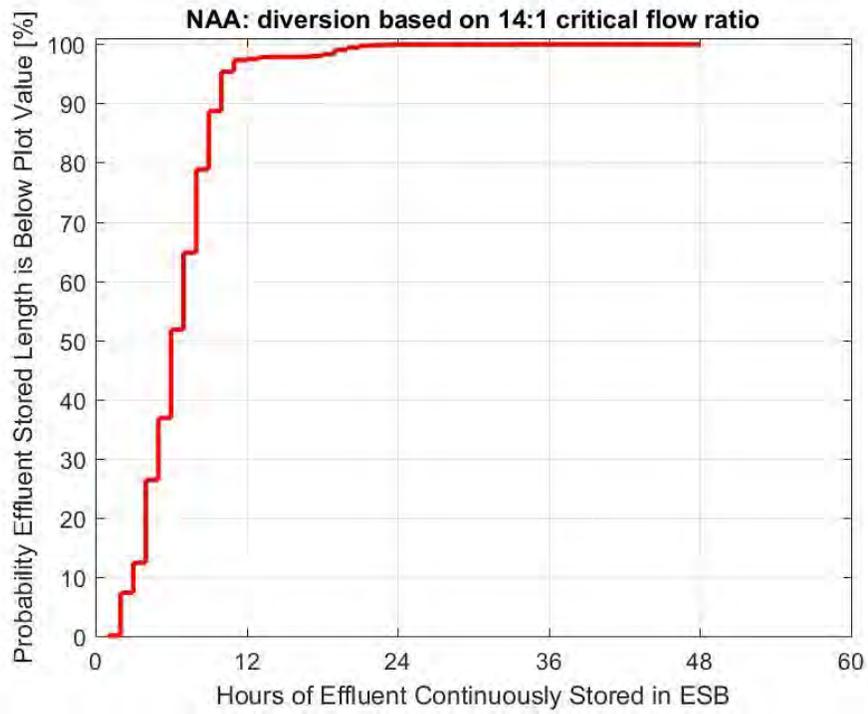


Figure B2. Probability distribution of length of time effluent continuously stored in ESB for the NAA alternative

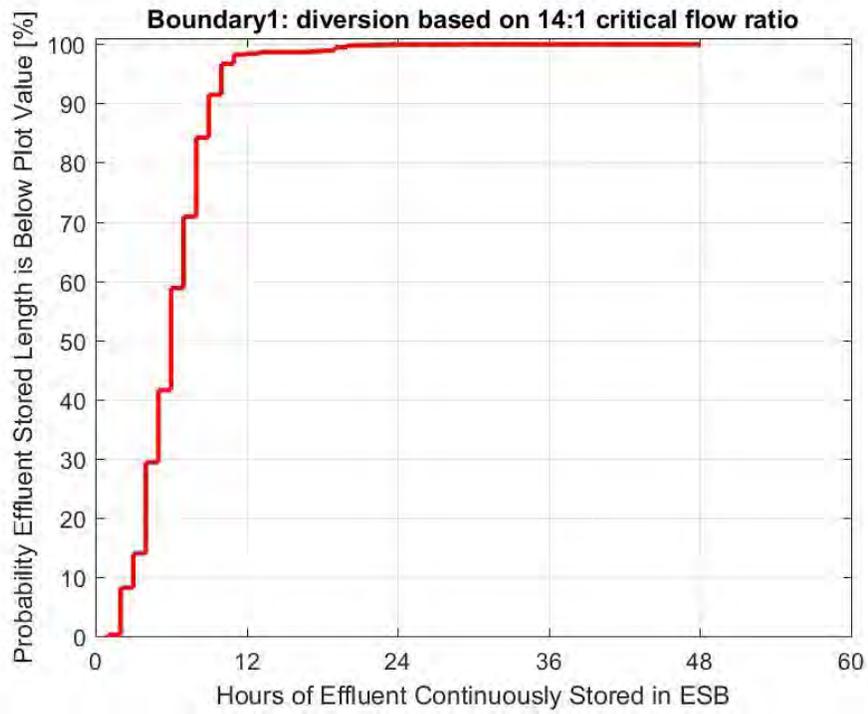


Figure B3. Probability distribution of length of time effluent continuously stored in ESB for the Boundary1 alternative

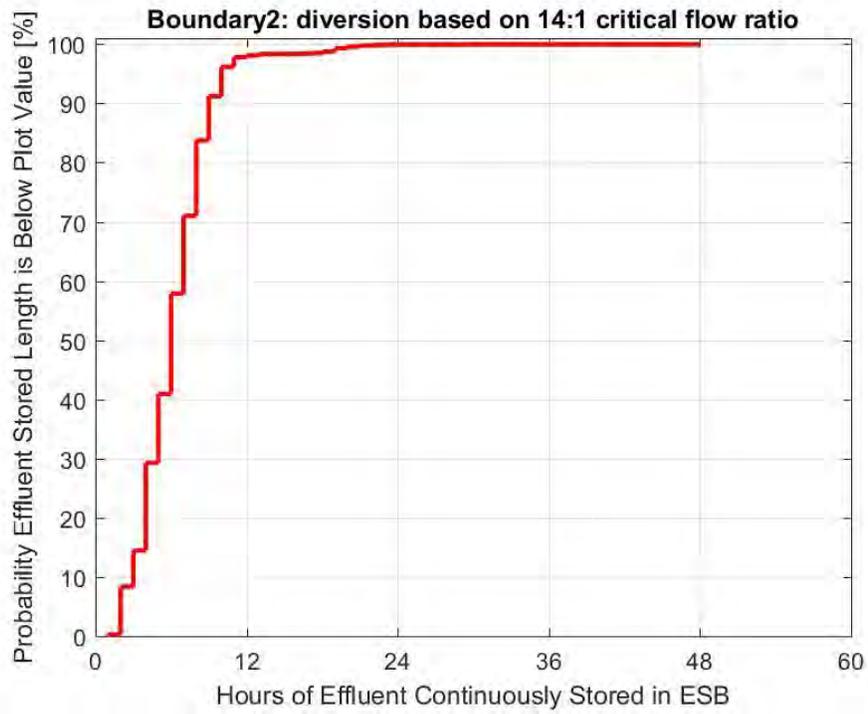


Figure B4. Probability distribution of length of time effluent continuously stored in ESB for the Boundary2 alternative

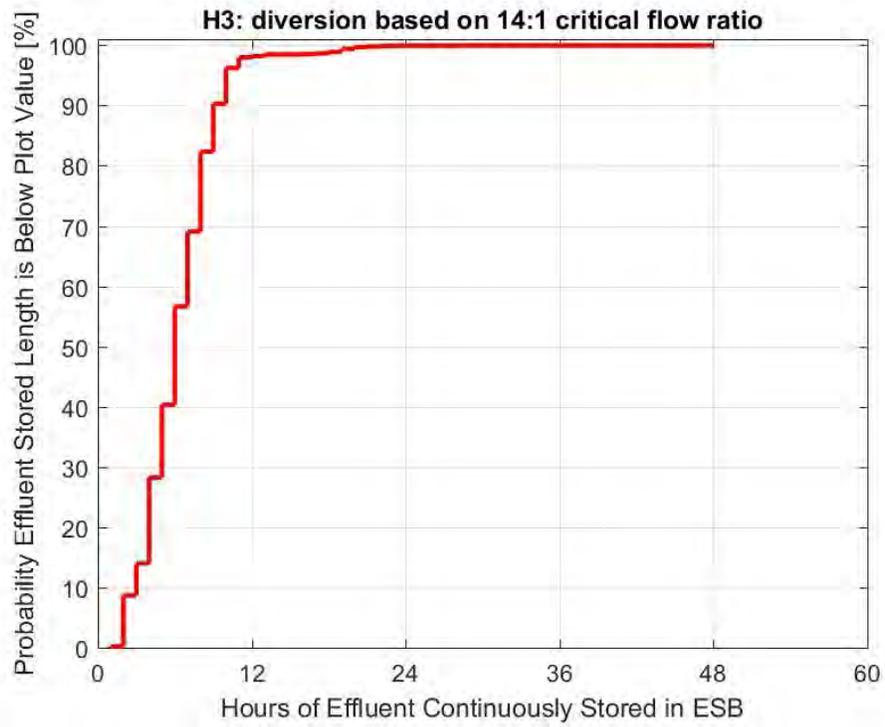


Figure B5. Probability distribution of length of time effluent continuously stored in ESB for the H3 alternative

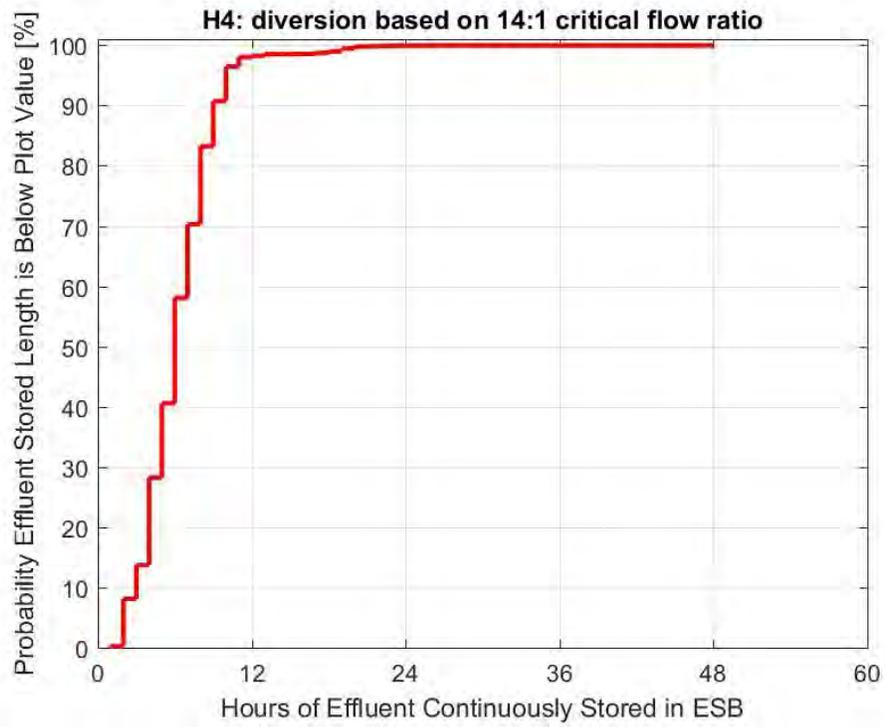


Figure B6. Probability distribution of length of time effluent continuously stored in ESB for the Boundary6 alternative



APPENDIX C

Annual Summary of Diversion Events



Table C1 – Annual Summary of Diversion Events

WY	Type ¹	EBC2		NAA		Boundary 1		Boundary 2		H3		H4	
		No. diversion events	Diversion time										
1976	C	237	7.7%	246	9.1%	229	7.2%	219	6.1%	235	7.4%	247	8.0%
1977	C	514	18.1%	641	24.1%	627	23.0%	646	24.2%	637	23.9%	636	23.6%
1978	AN	137	5.3%	166	6.9%	157	6.4%	168	7.0%	168	7.0%	169	7.0%
1979	BN	47	0.9%	42	1.1%	163	4.2%	188	5.2%	180	5.2%	179	4.8%
1980	AN	40	1.0%	88	2.5%	169	4.4%	94	2.8%	81	2.1%	137	3.8%
1981	D	76	2.2%	164	4.7%	170	4.7%	197	5.8%	231	6.6%	265	8.4%
1982	W	53	1.6%	61	1.7%	58	1.6%	65	1.9%	72	1.9%	77	2.3%
1983	W	0	0.0%	0	0.0%	1	0.0%	0	0.0%	9	0.2%	9	0.2%
1984	W	30	0.8%	50	1.2%	117	3.5%	86	2.3%	48	1.2%	49	1.5%
1985	D	63	1.4%	103	2.7%	131	3.5%	159	3.9%	169	4.4%	244	7.0%
1986	W	63	1.6%	174	5.3%	189	5.4%	183	5.3%	180	5.3%	211	6.1%
1987	D	155	4.6%	285	8.9%	231	6.9%	202	5.3%	270	7.8%	261	7.5%
1988	C	345	11.5%	399	15.0%	416	14.9%	398	14.1%	434	15.7%	443	16.0%
1989	D	213	7.5%	233	8.2%	281	9.7%	285	9.8%	281	9.8%	290	10.2%
1990	C	264	9.2%	406	15.1%	432	15.9%	448	16.6%	427	15.7%	414	14.8%
1991	C	467	17.3%	513	20.9%	559	22.0%	563	22.7%	560	22.5%	558	22.2%

¹ Per DWR classifications, “W” is a Wet Year, “AN” is an Above Normal Year, “BN” is a Below Normal year, “D” is a Dry Year, and “C” is a Critically Dry Year.



APPENDIX D

Summary of Diversion Parameters by Month



Table D1 – Summary of Diversion Parameters by Month for Alternative EBC2

Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
	Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
10	30.2	52.4	436	27	59	1281	80	212	10.8%	28.5%	10456	653	1676	22.2%	57.5%	6	13
11	24.0	44.1	319	20	57	988	62	193	8.6%	26.8%	7880	492	1493	17.6%	53.9%	6	11
12	21.2	54.3	192	12	58	554	35	204	4.7%	27.4%	4509	282	1604	9.7%	55.9%	6	13
1	13.9	38.8	140	9	45	358	22	134	3.0%	18.0%	2989	187	1104	6.4%	38.4%	5	10
2	17.7	51.6	166	10	42	471	29	140	4.3%	20.8%	4245	265	1234	10.0%	47.0%	6	20
3	11.8	38.4	123	8	54	313	20	155	2.6%	20.8%	2501	156	1268	5.4%	44.0%	5	9
4	21.8	38.7	234	15	54	593	37	155	5.2%	21.5%	4753	297	1281	10.8%	46.1%	5	20
5	28.5	58.1	377	24	60	1305	82	267	11.0%	35.9%	10274	642	2089	22.8%	75.1%	7	23
6	24.6	52.7	232	15	44	664	42	155	5.8%	21.5%	5267	329	1206	11.9%	44.0%	6	19
7	5.6	34.5	9	1	4	16	1	8	0.1%	1.1%	146	9	54	0.3%	1.7%	3	6
8	9.1	43.0	135	8	51	322	20	153	2.7%	20.6%	2554	160	1208	5.6%	41.9%	5	10
9	20.4	43.1	341	21	56	1055	66	187	9.2%	26.0%	8355	522	1466	18.6%	52.6%	6	19



Table D2 – Summary of Diversion Parameters by Month for Alternative NAA

Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
	Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
10	31.4	52.4	528	33	60	1747	109	257	14.7%	34.5%	13942	871	2015	30.2%	70.3%	7	20
11	25.1	48.9	375	23	58	1235	77	240	10.7%	33.3%	9738	609	1835	21.9%	66.7%	7	12
12	24.2	56.6	291	18	60	896	56	213	7.5%	28.6%	7162	448	1666	15.5%	58.3%	6	22
1	16.8	57.1	184	12	60	541	34	242	4.5%	32.5%	4460	279	1942	9.5%	66.9%	6	22
2	12.6	42.3	127	8	44	336	21	125	3.1%	18.6%	2985	187	1088	7.1%	41.7%	6	19
3	12.0	48.6	157	10	59	453	28	208	3.8%	28.0%	3661	229	1692	7.9%	59.0%	6	21
4	22.5	38.2	284	18	53	711	44	147	6.2%	20.4%	5714	357	1217	12.8%	42.8%	5	19
5	31.1	61.1	400	25	60	1303	81	277	11.0%	37.2%	10305	644	2173	22.6%	77.6%	6	48
6	29.3	55.1	343	21	54	1029	64	194	8.9%	26.9%	8129	508	1539	18.3%	55.8%	6	21
7	13.3	43.2	106	7	48	276	17	152	2.3%	20.4%	2247	140	1205	4.8%	41.4%	5	10
8	21.0	43.4	363	23	59	1146	72	216	9.6%	29.0%	8995	562	1674	19.5%	57.8%	7	20
9	23.7	51.4	413	26	58	1484	93	232	12.9%	32.2%	11696	731	1819	26.1%	65.3%	7	19



Table D3 – Summary of Diversion Parameters by Month for Alternative Boundary 1

Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
	Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
10	32.8	52.4	563	35	60	1678	105	234	14.1%	31.5%	13547	847	1844	28.9%	63.2%	6	19
11	32.8	44.1	491	31	58	1557	97	222	13.5%	30.8%	12300	769	1710	27.5%	62.4%	6.5	11
12	26.6	45.9	293	18	60	852	53	211	7.2%	28.4%	6849	428	1655	14.8%	58.3%	6	11
1	16.7	57.1	168	11	60	474	30	239	4.0%	32.1%	3916	245	1919	8.3%	66.4%	6	22
2	14.6	42.3	162	10	43	460	29	120	4.2%	17.9%	4041	253	1055	9.5%	40.0%	6	10
3	11.8	38.4	139	9	54	371	23	150	3.1%	20.2%	2943	184	1197	6.3%	40.7%	5	9
4	21.3	38.2	225	14	51	544	34	108	4.7%	15.0%	4279	267	867	9.6%	31.4%	5	19
5	28.4	61.0	338	21	60	1072	67	268	9.0%	36.0%	8407	525	2104	18.3%	74.3%	6	48
6	26.0	51.3	307	19	55	932	58	185	8.1%	25.7%	7357	460	1497	16.5%	53.2%	6	20
7	13.1	43.2	180	11	51	515	32	148	4.3%	19.9%	4106	257	1172	8.9%	40.3%	6	11
8	21.0	43.2	390	24	60	1003	63	205	8.4%	27.6%	7978	499	1629	17.2%	55.1%	5	11
9	36.1	51.6	674	42	58	2211	138	255	19.2%	35.4%	17362	1085	1950	38.9%	70.8%	7	20



Table D4 – Summary of Diversion Parameters by Month for Alternative Boundary 2

Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
	Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
10	36.1	52.4	647	40	60	2015	126	255	16.9%	34.3%	16024	1002	1988	34.4%	68.5%	6	20
11	30.8	44.1	501	31	58	1586	99	234	13.8%	32.5%	12486	780	1810	28.0%	65.6%	6	19
12	27.1	57.6	345	22	60	1116	70	242	9.4%	32.5%	8929	558	1883	19.4%	66.3%	7	23
1	17.3	57.1	183	11	60	542	34	244	4.6%	32.8%	4449	278	1954	9.5%	67.9%	6	22
2	14.0	52.7	151	9	43	405	25	137	3.8%	20.4%	3565	223	1215	8.4%	45.8%	6	12
3	12.5	49.7	159	10	59	465	29	221	3.9%	29.7%	3725	233	1788	8.1%	61.7%	6	21
4	22.1	38.2	265	17	52	669	42	138	5.8%	19.2%	5313	332	1133	11.9%	39.4%	5	9
5	30.5	61.0	413	26	60	1315	82	271	11.1%	36.4%	10335	646	2122	22.7%	75.3%	6	48
6	32.9	52.3	445	28	55	1298	81	190	11.3%	26.4%	10177	636	1489	23.0%	54.2%	6	20
7	16.9	43.2	143	9	49	367	23	160	3.1%	21.5%	2935	183	1265	6.2%	43.3%	5	10
8	17.7	43.0	276	17	55	715	45	166	6.0%	22.3%	5662	354	1311	12.4%	45.7%	6	10
9	21.6	43.1	373	23	58	1150	72	233	10.0%	32.4%	9042	565	1785	20.1%	64.3%	6	19



Table D5 – Summary of Diversion Parameters by Month for Alternative H3

Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
	Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
10	36.2	52.4	555	35	60	1742	109	262	14.6%	35.2%	13976	873	2053	30.1%	71.4%	6	20
11	31.9	44.1	492	31	58	1552	97	222	13.5%	30.8%	12299	769	1708	27.4%	62.2%	6	11
12	26.4	56.8	328	21	60	1018	64	223	8.6%	30.0%	8140	509	1734	17.7%	60.3%	6	22
1	16.3	38.8	145	9	39	347	22	105	2.9%	14.1%	2915	182	861	6.1%	29.3%	5	9
2	15.2	51.6	177	11	44	522	33	157	4.8%	23.4%	4582	286	1377	10.7%	51.8%	6	20
3	12.2	38.4	149	9	58	405	25	163	3.4%	21.9%	3226	202	1328	7.0%	46.1%	5	10
4	22.1	38.2	273	17	51	673	42	130	5.8%	18.1%	5338	334	1066	12.0%	37.6%	5	9
5	28.5	61.2	379	24	60	1184	74	268	10.0%	36.0%	9308	582	2104	20.4%	74.3%	6	48
6	29.1	52.3	381	24	54	1126	70	187	9.8%	26.0%	8850	553	1453	19.9%	53.3%	6	20
7	16.5	43.2	203	13	49	572	36	147	4.8%	19.8%	4565	285	1163	9.9%	40.1%	6	11
8	19.9	43.2	344	22	60	917	57	205	7.7%	27.6%	7266	454	1629	15.6%	55.1%	5	11
9	26.5	52.8	556	35	58	1938	121	255	16.8%	35.4%	15126	945	1951	34.0%	70.8%	7	21



Table D6 – Summary of Diversion Parameters by Month for Alternative H4

Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
	Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
10	37.8	52.4	649	41	60	2030	127	262	17.1%	35.2%	16279	1017	2053	34.9%	71.4%	6	20
11	31.2	44.1	483	30	58	1525	95	223	13.2%	31.0%	12054	753	1722	26.9%	62.2%	6	11
12	25.5	56.2	296	19	60	901	56	218	7.6%	29.3%	7208	450	1698	15.5%	59.1%	6	22
1	15.7	38.8	142	9	39	339	21	105	2.9%	14.1%	2843	178	861	5.9%	29.3%	5	9
2	16.6	51.6	182	11	44	524	33	153	4.8%	22.8%	4611	288	1343	10.8%	50.3%	6	20
3	12.4	41.3	152	10	55	406	25	177	3.4%	23.8%	3230	202	1424	7.0%	49.6%	5	20
4	20.1	38.2	255	16	51	610	38	117	5.3%	16.3%	4813	301	946	10.9%	33.9%	5	9
5	26.6	61.1	357	22	60	1173	73	267	9.9%	35.9%	9260	579	2097	20.3%	74.1%	6	48
6	30.5	52.3	408	26	54	1211	76	187	10.5%	26.0%	9544	596	1453	21.4%	53.3%	6	20
7	19.5	43.2	220	14	51	626	39	168	5.3%	22.6%	4983	311	1332	10.7%	45.7%	6	11
8	25.8	43.2	469	29	60	1171	73	202	9.8%	27.2%	9312	582	1603	20.1%	54.3%	5	11
9	28.2	52.8	576	36	59	2042	128	255	17.7%	35.4%	15909	994	1950	35.7%	70.7%	7	21



Table D7 – Summary of Diversion Parameters by Month and WY Types for Alternative EBC2

WY Type	Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
		Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
C	10	31.6	43.9	186	37	59	564	113	201	15.2%	27.0%	4603	921	1594	31.3%	54.6%	6	11
	11	34.5	44.1	198	40	57	615	123	193	17.1%	26.8%	4853	971	1493	34.8%	53.9%	6	11
	12	34.1	54.3	117	23	58	350	70	204	9.4%	27.4%	2830	566	1604	19.5%	55.9%	6	13
	1	27.1	38.8	113	23	45	305	61	134	8.2%	18.0%	2536	507	1104	17.4%	38.4%	6	10
	2	37.7	51.6	111	22	42	323	65	140	9.5%	20.8%	2912	582	1234	21.6%	47.0%	7	19
	3	28.9	38.4	115	23	54	300	60	155	8.1%	20.8%	2407	481	1268	16.7%	44.0%	5	9
	4	35.2	38.7	144	29	54	387	77	155	10.8%	21.5%	3105	621	1281	22.5%	46.1%	6	20
	5	51.7	58.1	275	55	60	1041	208	267	28.0%	35.9%	8246	1649	2089	58.6%	75.1%	8	23
	6	42.1	52.7	177	35	44	548	110	155	15.2%	21.5%	4375	875	1206	31.5%	44.0%	6	19
	7	14.8	34.5	6	1	4	12	2	8	0.3%	1.1%	116	23	54	0.7%	1.7%	3	6
	8	24.1	43.0	128	26	51	314	63	153	8.4%	20.6%	2489	498	1208	17.4%	41.9%	5	10
9	43.1	43.1	257	51	56	820	164	187	22.8%	26.0%	6479	1296	1466	46.2%	52.6%	6	19	
D	10	39.5	52.4	103	26	51	300	75	182	10.1%	24.5%	2454	613	1450	21.0%	50.1%	6	13
	11	17.6	44.1	44	11	42	143	36	139	5.0%	19.3%	1159	290	1124	10.3%	40.1%	6	11
	12	24.5	45.1	39	10	29	108	27	90	3.6%	12.1%	905	226	747	7.6%	25.3%	6	11
	1	17.0	29.1	22	6	10	46	12	25	1.5%	3.4%	394	99	214	3.4%	7.5%	4	7
	2	15.9	42.3	48	12	42	133	33	122	5.0%	18.2%	1176	294	1062	11.4%	41.2%	6	20
	3	11.1	19.3	8	2	5	13	3	8	0.4%	1.1%	94	24	63	0.9%	2.2%	4	4
	4	22.4	35.5	60	15	37	138	35	82	4.8%	11.4%	1118	280	646	10.2%	23.9%	5	8
	5	31.9	36.1	87	22	32	232	58	95	7.8%	12.8%	1775	444	744	15.8%	26.5%	6	9
	6	22.7	26.0	15	4	6	29	7	12	1.0%	1.7%	233	58	96	2.1%	3.5%	4	6
	7	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	8	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
9	25.6	43.1	81	20	53	232	58	174	8.1%	24.2%	1850	463	1362	16.5%	49.3%	6	10	



AN /BN	10	32.2	43.9	92	31	59	278	93	212	12.5%	28.5%	2240	747	1676	25.4%	57.5%	6	11
	11	23.5	43.9	54	18	52	170	57	167	7.9%	23.2%	1348	449	1322	16.3%	47.8%	7	11
	12	17.7	43.7	29	10	26	84	28	81	3.8%	10.9%	664	221	636	7.6%	22.0%	5	10
	1	6.1	18.3	5	2	5	7	2	7	0.3%	0.9%	58	19	58	0.6%	1.9%	2	4
	2	10.6	31.7	7	2	7	15	5	15	0.7%	2.2%	157	52	157	1.9%	5.8%	6	8
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	10.7	32.0	10	3	10	23	8	23	1.1%	3.2%	185	62	185	2.1%	6.2%	5	8
	5	5.3	15.9	2	1	2	3	1	3	0.1%	0.4%	24	8	24	0.3%	0.8%	3	4
	6	13.4	26.3	19	6	12	35	12	26	1.6%	3.6%	268	89	204	3.2%	7.2%	4	6
	7	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	8	5.7	17.1	3	1	3	4	1	4	0.2%	0.5%	34	11	34	0.4%	1.2%	3	4
	9	2.9	8.6	3	1	3	3	1	3	0.1%	0.4%	26	9	26	0.3%	0.8%	2	2
W	10	17.6	35.2	55	14	44	139	35	114	4.7%	15.3%	1159	290	939	9.7%	31.9%	5	9
	11	17.6	35.4	23	6	17	60	15	42	2.1%	5.8%	520	130	364	4.4%	12.6%	6	8
	12	4.6	18.5	7	2	7	12	3	12	0.4%	1.6%	109	27	109	1.0%	3.8%	4	5
	1	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	2	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	13.0	32.0	20	5	11	45	11	31	1.6%	4.3%	345	86	261	3.2%	9.4%	4.5	8
	5	13.7	28.0	13	3	10	29	7	24	1.0%	3.2%	229	57	174	2.0%	6.2%	4	7
	6	12.9	31.5	21	5	12	52	13	37	1.8%	5.1%	391	98	286	3.7%	10.6%	5	8
	7	3.9	15.6	3	1	3	4	1	4	0.1%	0.5%	31	8	31	0.3%	1.1%	2	4
	8	2.1	8.3	4	1	4	4	1	4	0.1%	0.5%	31	8	31	0.3%	1.1%	2	2
	9	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA



Table D8 – Summary of Diversion Parameters by Month and WY Types for Alternative NAA

WY Type	Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
		Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
C	10	35.6	52.4	209	42	60	727	145	257	19.5%	34.5%	5811	1162	2015	40.3%	70.3%	7	20
	11	34.5	48.9	213	43	58	728	146	240	20.2%	33.3%	5674	1135	1835	41.1%	66.7%	7	12
	12	39.6	56.6	184	37	60	604	121	213	16.2%	28.6%	4742	948	1666	33.0%	58.3%	7	22
	1	30.8	57.1	141	28	60	456	91	242	12.3%	32.5%	3730	746	1942	25.5%	66.9%	7	22
	2	25.9	42.3	77	15	41	200	40	113	6.0%	16.8%	1781	356	1000	13.4%	37.9%	6	10
	3	29.4	48.6	142	28	59	429	86	208	11.5%	28.0%	3485	697	1692	24.1%	59.0%	6	21
	4	35.3	38.2	171	34	53	447	89	147	12.4%	20.4%	3585	717	1217	25.7%	42.8%	5	19
	5	46.6	61.1	217	43	60	831	166	277	22.3%	37.2%	6631	1326	2173	46.8%	77.6%	8	48
	6	45.6	55.1	220	44	54	734	147	194	20.4%	26.9%	5834	1167	1539	42.1%	55.8%	7	21
	7	30.8	43.2	84	17	48	224	45	152	6.0%	20.4%	1818	364	1205	12.4%	41.4%	5	10
	8	41.4	43.4	259	52	59	868	174	216	23.3%	29.0%	6826	1365	1674	47.2%	57.8%	7	20
9	44.9	51.4	288	58	58	1129	226	232	31.4%	32.2%	8798	1760	1819	63.3%	65.3%	8	19	
D	10	37.3	52.4	113	28	60	372	93	241	12.5%	32.4%	2952	738	1882	25.8%	66.7%	7	20
	11	21.9	43.9	51	13	42	151	38	139	5.2%	19.3%	1241	310	1130	11.0%	40.3%	6	11
	12	27.1	36.9	68	17	33	185	46	93	6.2%	12.5%	1553	388	761	13.2%	26.5%	6	9
	1	24.0	29.1	37	9	16	76	19	34	2.6%	4.6%	654	164	289	5.5%	9.8%	4	8
	2	10.3	41.1	44	11	44	125	31	125	4.7%	18.6%	1088	272	1088	10.4%	41.7%	6	19
	3	11.1	19.3	15	4	8	24	6	14	0.8%	1.9%	176	44	107	1.6%	3.6%	3	4
	4	24.4	38.2	75	19	41	176	44	89	6.1%	12.4%	1443	361	707	12.8%	25.7%	5	9
	5	31.1	38.5	114	29	40	313	78	125	10.5%	16.8%	2428	607	988	21.2%	33.9%	5.5	10
	6	29.0	33.0	25	6	10	54	14	21	1.9%	2.9%	427	107	161	3.8%	5.8%	4	8
	7	6.5	25.9	20	5	20	49	12	49	1.7%	6.6%	396	99	396	3.4%	13.4%	5.5	7
	8	25.7	43.1	98	25	56	263	66	192	8.8%	25.8%	2066	516	1492	18.1%	51.9%	5	11
9	32.3	43.1	125	31	58	355	89	191	12.3%	26.5%	2872	718	1519	25.3%	53.7%	6	10	



AN /BN	10	32.2	43.9	108	36	60	377	126	254	16.9%	34.1%	2972	991	1979	34.2%	68.7%	7	11
	11	23.5	44.1	71	24	58	261	87	231	12.1%	32.1%	2040	680	1781	24.4%	64.6%	8	11
	12	17.7	43.7	29	10	26	85	28	82	3.8%	11.0%	671	224	643	7.7%	22.3%	5.5	10
	1	6.1	18.3	6	2	6	9	3	9	0.4%	1.2%	76	25	76	0.8%	2.4%	3	4
	2	10.6	31.7	6	2	6	11	4	11	0.6%	1.6%	116	39	116	1.4%	4.2%	5	7
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	10.7	32.0	12	4	12	26	9	26	1.2%	3.6%	208	69	208	2.4%	7.1%	4	8
	5	28.2	33.2	22	7	9	51	17	27	2.3%	3.6%	405	135	215	4.6%	7.4%	4	9
	6	17.4	34.8	35	12	22	80	27	57	3.7%	7.9%	612	204	433	7.4%	16.0%	4	9
	7	2.7	8.0	1	0	1	1	0	1	0.0%	0.1%	8	3	8	0.1%	0.3%	2	2
	8	8.6	25.7	6	2	6	15	5	15	0.7%	2.0%	103	34	103	1.3%	3.9%	5	7
	9	8.6	25.7	0	0	0	0	0	0	0.0%	0.0%	26	9	26	0.1%	0.4%	4	4
W	10	19.7	43.9	98	25	55	271	68	163	9.1%	21.9%	2207	552	1314	18.9%	45.2%	6	11
	11	17.6	35.4	40	10	26	95	24	62	3.3%	8.6%	783	196	516	6.9%	18.2%	4	8
	12	6.9	27.7	10	3	10	22	6	22	0.7%	3.0%	196	49	196	1.6%	6.3%	5	6
	1	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	2	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	13.4	32.0	26	7	15	62	16	38	2.2%	5.3%	479	120	319	4.4%	11.4%	4.5	8
	5	13.7	28.0	47	12	24	108	27	58	3.6%	7.8%	841	210	463	7.4%	16.0%	4.5	7
	6	18.0	43.2	63	16	48	161	40	138	5.6%	19.2%	1256	314	1087	11.5%	39.6%	5	19
	7	6.3	16.9	1	0	1	2	1	1	0.1%	0.1%	25	6	17	0.2%	0.4%	3.5	4
	8	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	9	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA



Table D9 – Summary of Diversion Parameters by Month and WY Types for Alternative Boundary 1

WY Type	Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
		Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
C	10	33.2	43.9	208	42	59	679	136	230	18.3%	30.9%	5451	1090	1806	37.5%	62.5%	7	19
	11	40.5	44.1	232	46	58	778	156	222	21.6%	30.8%	6037	1207	1708	43.6%	62.1%	7	11
	12	40.9	45.9	173	35	60	554	111	211	14.9%	28.4%	4387	877	1655	30.6%	58.3%	6	11
	1	30.4	57.1	126	25	60	390	78	239	10.5%	32.1%	3199	640	1919	21.9%	66.4%	6	22
	2	32.3	42.3	115	23	43	334	67	120	9.8%	17.9%	2937	587	1055	21.9%	40.0%	6	10
	3	28.9	38.4	124	25	54	345	69	150	9.3%	20.2%	2754	551	1197	18.8%	40.7%	5	9
	4	35.3	38.2	150	30	51	367	73	108	10.2%	15.0%	2896	579	867	20.9%	31.4%	5	19
	5	44.8	61.0	208	42	60	782	156	268	21.0%	36.0%	6213	1243	2104	43.4%	74.3%	8	48
	6	43.4	51.3	220	44	55	734	147	185	20.4%	25.7%	5816	1163	1497	41.7%	53.2%	7	20
	7	37.2	43.2	178	36	51	512	102	148	13.8%	19.9%	4082	816	1172	28.3%	40.3%	6	11
	8	34.6	43.2	240	48	60	678	136	205	18.2%	27.6%	5398	1080	1629	37.0%	55.1%	6	11
9	46.5	51.6	289	58	58	1124	225	255	31.2%	35.4%	8707	1741	1950	62.7%	70.8%	8	20	
D	10	39.5	52.4	156	39	59	455	114	222	15.3%	29.8%	3664	916	1753	31.6%	61.3%	6	14
	11	32.5	43.9	115	29	43	334	84	150	11.6%	20.8%	2720	680	1196	23.9%	42.8%	6	11
	12	25.9	41.7	63	16	37	157	39	105	5.3%	14.1%	1297	324	844	11.1%	29.2%	5	10
	1	24.0	29.1	36	9	16	74	19	34	2.5%	4.6%	632	158	287	5.3%	9.9%	4	8
	2	10.3	41.1	43	11	43	118	30	118	4.4%	17.6%	1020	255	1020	9.7%	38.7%	6	10
	3	11.1	19.3	15	4	9	26	7	17	0.9%	2.3%	190	47	130	1.7%	4.3%	4	5
	4	19.8	29.9	36	9	16	79	20	37	2.7%	5.1%	628	157	305	5.6%	11.1%	4	8
	5	22.7	31.7	53	13	21	119	30	55	4.0%	7.4%	884	221	428	7.8%	15.2%	4	8
	6	27.0	33.0	53	13	23	116	29	49	4.0%	6.8%	896	224	373	8.1%	13.3%	4	8
	7	3.9	15.6	1	0	1	2	1	2	0.1%	0.3%	16	4	16	0.1%	0.5%	4	4
	8	17.2	34.4	57	14	34	141	35	79	4.7%	10.6%	1111	278	607	9.5%	21.1%	5	8
9	38.8	43.1	185	46	57	546	137	210	19.0%	29.2%	4348	1087	1644	38.6%	58.8%	6	10	



AN /BN	10	38.0	43.9	127	42	60	382	127	234	17.1%	31.5%	3078	1026	1844	34.8%	63.2%	6	11	
	11	38.1	43.9	97	32	58	320	107	222	14.8%	30.8%	2534	845	1710	30.1%	62.4%	7	11	
	12	29.8	43.7	47	16	26	119	40	84	5.3%	11.3%	970	323	655	11.2%	23.0%	5	10	
	1	6.5	19.4	6	2	6	10	3	10	0.5%	1.3%	85	28	85	0.9%	2.7%	4	4	
	2	10.6	31.7	4	1	4	8	3	8	0.4%	1.2%	85	28	85	1.0%	3.0%	5	7	
	3	0.0	0.0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	10.7	32.0	13	4	13	34	11	34	1.6%	4.7%	264	88	264	3.0%	9.0%	5	8	
	5	28.2	33.2	27	9	9	54	18	23	2.4%	3.1%	413	138	179	4.6%	5.9%	4	8	
	6	14.3	26.3	14	5	13	29	10	27	1.3%	3.8%	222	74	206	2.7%	7.4%	4	6	
	7	0.0	0.0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	8	17.3	26.0	54	18	40	113	38	85	5.1%	11.4%	885	295	673	10.6%	23.8%	4	7	
	9	28.7	34.6	100	33	49	243	81	124	11.3%	17.2%	1977	659	996	23.4%	35.7%	5	8	
W	10	21.9	35.2	72	18	35	162	41	80	5.4%	10.8%	1354	339	663	11.3%	21.9%	4	9	
	11	19.6	43.2	47	12	28	125	31	72	4.3%	10.0%	1009	252	591	9.1%	21.2%	6	10	
	12	6.9	27.7	10	3	10	22	6	22	0.7%	3.0%	196	49	196	1.6%	6.5%	5	6	
	1	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	2	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	4	13.4	32.0	26	7	15	64	16	40	2.2%	5.6%	491	123	331	4.6%	11.7%	5	8	
	5	13.7	28.0	50	13	26	117	29	62	3.9%	8.3%	898	224	488	7.9%	16.8%	5	7	
	6	12.0	34.1	20	5	19	53	13	51	1.8%	7.1%	422	106	408	3.8%	14.4%	5.5	8	
	7	2.2	8.6	1	0	1	1	0	1	0.0%	0.1%	9	2	9	0.1%	0.3%	2	2	
	8	10.8	25.8	39	10	25	71	18	51	2.4%	6.9%	584	146	418	5.1%	14.2%	4	6	
	9	25.8	43.1	100	25	56	298	75	177	10.4%	24.6%	2330	583	1372	20.9%	49.9%	6	10	



Table D10 – Summary of Diversion Parameters by Month and WY Types for Alternative Boundary 2

WY Type	Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
		Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
C	10	40	52	214	43	59	699	140	250	18.8%	33.6%	5557	1111	1958	38.1%	67.9%	7	13
	11	39	44	231	46	58	802	160	224	22.3%	31.1%	6209	1242	1718	44.9%	62.4%	7	11
	12	43	58	198	40	60	711	142	242	19.1%	32.5%	5576	1115	1883	39.2%	66.3%	7	23
	1	31	57	141	28	60	456	91	244	12.3%	32.8%	3716	743	1954	25.5%	67.9%	7	22
	2	30	53	104	21	43	286	57	137	8.5%	20.4%	2520	504	1215	19.0%	45.8%	6	12
	3	31	50	144	29	59	438	88	221	11.8%	29.7%	3529	706	1788	24.4%	61.7%	6	21
	4	35	38	167	33	52	435	87	138	12.1%	19.2%	3461	692	1133	24.7%	39.4%	5	9
	5	45	61	221	44	60	839	168	271	22.6%	36.4%	6679	1336	2122	46.9%	75.3%	8	48
	6	45	52	227	45	55	766	153	190	21.3%	26.4%	6073	1215	1489	43.8%	54.2%	7	20
	7	34	43	133	27	49	352	70	160	9.5%	21.5%	2810	562	1265	19.0%	43.3%	5	10
	8	35	43	231	46	55	627	125	166	16.9%	22.3%	4974	995	1311	34.7%	45.7%	6	10
	9	41	43	263	53	58	915	183	233	25.4%	32.4%	7115	1423	1785	50.9%	64.3%	7	19
D	10	42	52	173	43	60	525	131	235	17.6%	31.6%	4160	1040	1831	36.1%	64.8%	6	20
	11	31	44	120	30	50	322	81	152	11.2%	21.1%	2599	650	1213	23.0%	43.5%	5	11
	12	27	37	80	20	37	214	54	105	7.2%	14.1%	1777	444	841	15.2%	29.3%	6	9
	1	26	36	36	9	16	76	19	35	2.6%	4.7%	647	162	295	5.5%	10.2%	4.5	8
	2	10	41	43	11	43	111	28	111	4.1%	16.5%	960	240	960	9.2%	36.8%	6	10
	3	11	19	15	4	9	27	7	17	0.9%	2.3%	196	49	130	1.8%	4.3%	4	5
	4	23	38	59	15	29	139	35	75	4.8%	10.4%	1118	280	629	10.1%	22.1%	5	9
	5	31	38	113	28	43	297	74	116	10.0%	15.6%	2284	571	912	20.2%	31.9%	5	10
	6	33	43	75	19	29	185	46	84	6.4%	11.7%	1421	355	661	12.8%	23.5%	5	10
	7	15	24	7	2	2	11	3	4	0.4%	0.5%	84	21	33	0.7%	1.1%	3	6
	8	17	26	35	9	20	70	18	46	2.4%	6.2%	565	141	376	5.0%	12.8%	4	7
	9	28	35	87	22	40	193	48	95	6.7%	13.2%	1572	393	762	13.7%	27.1%	4.5	8



AN /BN	10	38	44	154	51	60	517	172	255	23.2%	34.3%	4076	1359	1988	46.5%	68.5%	7	11	
	11	35	44	110	37	58	360	120	234	16.7%	32.5%	2842	947	1810	33.9%	65.6%	7	19	
	12	27	44	57	19	31	171	57	87	7.7%	11.7%	1396	465	741	15.8%	24.7%	6	10	
	1	6	19	6	2	6	10	3	10	0.5%	1.3%	86	29	86	0.9%	2.8%	4	5	
	2	11	32	4	1	4	8	3	8	0.4%	1.2%	85	28	85	1.0%	3.0%	5	7	
	3	0	0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	11	32	12	4	12	30	10	30	1.4%	4.2%	236	79	236	2.7%	8.2%	5	8	
	5	28	33	27	9	10	58	19	29	2.6%	3.9%	449	150	227	5.1%	7.8%	4	9	
	6	25	35	51	17	23	108	36	60	5.0%	8.3%	812	271	451	10.0%	16.7%	4	8	
	7	3	8	1	0	1	1	0	1	0.0%	0.1%	8	3	8	0.1%	0.3%	2	2	
	8	9	26	5	2	5	12	4	12	0.5%	1.6%	77	26	77	1.0%	3.0%	4	6	
	9	9	26	23	8	23	42	14	42	1.9%	5.8%	355	118	355	4.2%	12.5%	4	6	
W	10	24	44	106	27	50	274	69	134	9.2%	18.0%	2230	558	1090	18.8%	36.7%	5	11	
	11	18	35	40	10	31	102	26	79	3.5%	11.0%	835	209	641	7.4%	22.9%	6	8	
	12	7	28	10	3	10	20	5	20	0.7%	2.7%	179	45	179	1.4%	5.6%	4	6	
	1	0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	2	0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	3	0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	4	13	32	27	7	16	65	16	41	2.3%	5.7%	498	124	338	4.5%	11.8%	5	8	
	5	14	28	52	13	28	121	30	66	4.1%	8.9%	924	231	514	8.1%	17.7%	4	7	
	6	24	43	92	23	49	239	60	140	8.3%	19.4%	1871	468	1100	17.0%	39.6%	5	19	
	7	8	17	2	1	1	3	1	1	0.1%	0.1%	32	8	17	0.3%	0.4%	3	4	
	8	4	16	5	1	5	6	2	6	0.2%	0.8%	46	11	46	0.4%	1.6%	2	4	
	9	0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	



Table D11 – Summary of Diversion Parameters by Month and WY Types for Alternative H3

WY Type	Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
		Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
C	10	38.9	52.4	203	41	59	693	139	257	18.6%	34.5%	5554	1111	2015	38.3%	70.4%	7	20
	11	38.8	44.1	233	47	58	793	159	222	22.0%	30.8%	6166	1233	1708	44.6%	62.2%	7	11
	12	41.3	56.8	190	38	60	662	132	223	17.8%	30.0%	5180	1036	1734	36.3%	60.3%	7	22
	1	27.1	38.8	98	20	39	250	50	105	6.7%	14.1%	2081	416	861	14.0%	29.3%	5	9
	2	34.2	51.6	130	26	44	396	79	157	11.7%	23.4%	3477	695	1377	25.9%	51.8%	7	20
	3	28.9	38.4	134	27	58	377	75	163	10.1%	21.9%	3024	605	1328	20.8%	46.1%	6	10
	4	35.3	38.2	162	32	51	415	83	130	11.5%	18.1%	3294	659	1066	23.7%	37.6%	5	9
	5	44.9	61.2	214	43	60	818	164	268	22.0%	36.0%	6525	1305	2104	45.7%	74.3%	8	48
	6	45.0	52.3	221	44	54	741	148	187	20.6%	26.0%	5874	1175	1453	42.2%	53.3%	7	20
	7	36.1	43.2	175	35	49	509	102	147	13.7%	19.8%	4051	810	1163	28.0%	40.1%	6	11
	8	36.3	43.2	244	49	60	697	139	205	18.7%	27.6%	5541	1108	1629	38.1%	55.1%	6	11
	9	46.8	52.8	289	58	58	1126	225	255	31.3%	35.4%	8723	1745	1951	63.1%	70.8%	8	21
D	10	39.5	52.4	141	35	60	438	110	243	14.7%	32.7%	3474	869	1899	30.3%	67.2%	6	20
	11	32.8	43.9	99	25	43	277	69	150	9.6%	20.8%	2294	574	1204	19.9%	42.9%	6	11
	12	24.7	36.9	69	17	37	165	41	100	5.5%	13.4%	1375	344	808	11.9%	28.2%	5	9
	1	26.6	29.1	40	10	16	85	21	35	2.9%	4.7%	731	183	297	6.2%	10.1%	4.5	8
	2	10.3	41.1	43	11	43	118	30	118	4.4%	17.6%	1021	255	1021	9.7%	38.8%	6	10
	3	12.7	19.3	15	4	9	28	7	17	0.9%	2.3%	202	50	130	1.8%	4.3%	4	5
	4	22.9	38.2	71	18	32	159	40	75	5.5%	10.4%	1282	320	629	11.5%	22.1%	5	9
	5	22.9	31.7	85	21	36	185	46	77	6.2%	10.4%	1398	349	598	12.4%	21.1%	4	8
	6	27.0	33.0	67	17	26	150	38	63	5.2%	8.8%	1155	289	489	10.4%	17.4%	4	8
	7	10.4	25.9	25	6	24	59	15	57	2.0%	7.7%	472	118	456	4.1%	15.9%	5	7
	8	27.9	34.4	87	22	32	193	48	73	6.5%	9.8%	1521	380	559	13.1%	19.8%	4	8
	9	38.8	43.1	209	52	58	652	163	217	22.6%	30.1%	5132	1283	1696	45.9%	61.0%	6	10



AN /BN	10	37.7	51.7	102	34	60	350	117	262	15.7%	35.2%	2812	937	2053	32.1%	71.4%	7	13	
	11	38.1	43.9	106	35	57	342	114	219	15.8%	30.4%	2721	907	1699	32.2%	61.5%	7	11	
	12	30.0	43.7	59	20	30	171	57	85	7.7%	11.4%	1406	469	715	15.9%	23.7%	6	10	
	1	6.5	19.4	7	2	7	12	4	12	0.5%	1.6%	103	34	103	1.1%	3.4%	4	5	
	2	10.6	31.7	4	1	4	8	3	8	0.4%	1.2%	85	28	85	1.0%	3.0%	5	7	
	3	0.0	0.0	0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	10.7	32.0	13	4	13	34	11	34	1.6%	4.7%	264	88	264	3.0%	9.0%	5	8	
	5	28.2	33.2	28	9	10	60	20	29	2.7%	3.9%	461	154	227	5.3%	7.8%	4	9	
	6	17.4	34.8	38	13	23	85	28	60	3.9%	8.3%	645	215	451	8.0%	16.7%	4	8	
	7	2.7	8.0	1	0	1	1	0	1	0.0%	0.1%	8	3	8	0.1%	0.3%	2	2	
	8	8.6	25.8	13	4	13	27	9	27	1.2%	3.6%	204	68	204	2.5%	7.5%	4	7	
	9	11.5	34.6	58	19	58	160	53	160	7.4%	22.2%	1270	423	1270	15.0%	45.0%	6	9	
W	10	28.6	35.2	109	27	48	261	65	118	8.8%	15.9%	2136	534	961	18.2%	33.1%	4	9	
	11	17.6	35.4	54	14	36	140	35	95	4.9%	13.2%	1118	279	758	9.9%	26.9%	6	8	
	12	6.9	27.7	10	3	10	20	5	20	0.7%	2.7%	179	45	179	1.5%	5.8%	4.5	6	
	1	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	2	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
	4	13.4	32.0	27	7	16	65	16	40	2.3%	5.6%	499	125	332	4.6%	11.7%	5	8	
	5	13.7	28.0	52	13	28	121	30	66	4.1%	8.9%	924	231	514	8.2%	17.9%	5	7	
	6	20.1	43.2	55	14	49	150	38	141	5.2%	19.6%	1175	294	1107	10.6%	40.0%	5	19	
	7	8.5	16.9	2	1	1	3	1	1	0.1%	0.1%	34	8	17	0.3%	0.4%	3	4	
	8	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	
9	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA		



Table D12 – Summary of Diversion Parameters by Month and WY Types for Alternative H4

WY Type	Month	Max. ESB Vol. Million Gallons		Number of diversion event			Diversion hours			Percent time diversion		Vol. pumped from ESB (MGs)			Percent time ESB Vol. > 0		Hours Eff. continuously stored	
		Mean	Max	Sum	Mean	Max	Sum	Mean	Max	Mean	Max	Sum	Mean	Max	Mean	Max	Median	Max
C	10	40.6	52.4	229	46	59	744	149	249	20.0%	33.5%	5979	1196	1953	41.0%	67.6%	7	20
	11	38.8	44.1	232	46	58	786	157	223	21.8%	31.0%	6092	1218	1711	44.0%	62.2%	7	11
	12	41.9	56.2	183	37	60	616	123	218	16.6%	29.3%	4852	970	1698	33.7%	59.1%	7	22
	1	27.1	38.8	97	19	39	248	50	105	6.7%	14.1%	2066	413	861	13.8%	29.3%	5	9
	2	34.2	51.6	130	26	44	391	78	153	11.5%	22.8%	3434	687	1343	25.6%	50.3%	7	20
	3	29.4	41.3	137	27	55	378	76	177	10.2%	23.8%	3029	606	1424	20.9%	49.6%	5	20
	4	35.3	38.2	161	32	51	397	79	117	11.0%	16.3%	3135	627	946	22.7%	33.9%	5	9
	5	45.1	61.1	216	43	60	824	165	267	22.2%	35.9%	6576	1315	2097	46.2%	74.1%	8	48
	6	45.0	52.3	220	44	54	733	147	187	20.4%	26.0%	5810	1162	1453	41.7%	53.3%	7	20
	7	36.5	43.2	176	35	51	528	106	168	14.2%	22.6%	4200	840	1332	29.0%	45.7%	6	11
	8	36.3	43.2	227	45	60	621	124	202	16.7%	27.2%	4949	990	1603	33.9%	54.3%	6	11
9	46.8	52.8	290	58	59	1149	230	255	31.9%	35.4%	8880	1776	1950	64.0%	70.7%	8	21	
D	10	41.6	52.4	178	45	60	560	140	235	18.8%	31.6%	4458	1115	1840	38.7%	65.1%	6	20
	11	32.3	43.9	103	26	43	284	71	150	9.9%	20.8%	2343	586	1197	20.5%	42.8%	6	11
	12	24.7	36.9	58	15	37	142	36	100	4.8%	13.4%	1174	294	808	10.0%	28.2%	5	9
	1	24.2	29.1	39	10	16	81	20	34	2.7%	4.6%	692	173	287	5.8%	9.9%	4	8
	2	15.6	41.1	48	12	43	125	31	118	4.7%	17.6%	1093	273	1020	10.4%	38.7%	6	10
	3	12.7	19.3	15	4	9	28	7	17	0.9%	2.3%	202	50	130	1.8%	4.3%	4	5
	4	22.9	38.2	71	18	32	159	40	75	5.5%	10.4%	1282	320	629	11.5%	22.1%	5	9
	5	28.4	38.5	94	24	42	237	59	101	8.0%	13.6%	1813	453	779	16.1%	28.1%	5	10
	6	28.8	33.0	59	15	26	138	35	62	4.8%	8.6%	1083	271	480	9.7%	17.2%	5	8
	7	18.7	33.5	40	10	23	92	23	53	3.1%	7.1%	728	182	428	6.2%	14.5%	5	8
	8	34.3	34.4	140	35	47	339	85	121	11.4%	16.3%	2691	673	970	23.4%	34.1%	5	9
9	38.8	43.1	215	54	58	709	177	214	24.6%	29.7%	5557	1389	1671	49.9%	60.3%	7	10	



AN /BN	10	37.8	51.7	123	41	60	416	139	262	18.6%	35.2%	3323	1108	2053	37.9%	71.4%	7	13
	11	35.2	43.9	95	32	58	314	105	223	14.5%	31.0%	2492	831	1722	29.6%	62.2%	7	11
	12	23.8	43.7	45	15	26	121	40	84	5.4%	11.3%	987	329	654	11.3%	23.0%	5	10
	1	6.5	19.4	6	2	6	10	3	10	0.5%	1.3%	85	28	85	0.9%	2.7%	4	4
	2	10.6	31.7	4	1	4	8	3	8	0.4%	1.2%	85	28	85	1.0%	3.0%	5	7
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	10.7	32.0	12	4	12	30	10	30	1.4%	4.2%	236	79	236	2.7%	8.2%	5	8
	5	19.8	33.2	19	6	10	46	15	29	2.1%	3.9%	356	119	227	4.1%	7.8%	4	9
	6	17.4	34.8	36	12	21	81	27	56	3.8%	7.8%	615	205	421	7.6%	15.7%	4	9
	7	2.7	8.0	1	0	1	1	0	1	0.0%	0.1%	8	3	8	0.1%	0.3%	2	2
	8	20.1	34.5	73	24	45	154	51	104	6.9%	14.0%	1205	402	815	14.0%	28.4%	4	8
9	20.5	34.6	71	24	58	184	61	162	8.5%	22.5%	1472	491	1282	17.3%	45.7%	6	9	
W	10	30.5	42.9	119	30	55	310	78	158	10.4%	21.2%	2519	630	1271	21.3%	43.0%	5	10
	11	17.6	35.4	53	13	37	141	35	101	4.9%	14.0%	1127	282	806	10.1%	28.9%	6	9
	12	6.9	27.7	10	3	10	22	6	22	0.7%	3.0%	196	49	196	1.6%	6.5%	5	6
	1	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	2	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	3	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA
	4	5.4	21.6	11	3	11	24	6	24	0.8%	3.3%	160	40	160	1.6%	6.5%	5	6
	5	6.7	26.7	28	7	28	66	17	66	2.2%	8.9%	514	129	514	4.5%	17.9%	5	7
	6	23.8	43.2	93	23	49	259	65	141	9.0%	19.6%	2035	509	1107	18.2%	40.0%	6	19
	7	11.6	16.9	3	1	1	5	1	2	0.2%	0.3%	47	12	17	0.4%	0.4%	3	4
	8	8.6	25.8	29	7	27	57	14	55	1.9%	7.4%	467	117	450	4.0%	15.3%	4	6
9	0.0	0.0	0	0	0	0	0	0	0.0%	0.0%	0	0	0	0.0%	0.0%	NA	NA	

Appendix B

**Exponent Comments on the
Bay Delta Conservation
Plan/California WaterFix Final
EIR/EIS, on Behalf of
Regional San**



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January 27, 2017

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Sacramento Regional County Sanitation District
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Sacramento, CA 95827

Attention: Terrie Mitchell, Manager, Legislative & Regulatory Affairs

Subject: Comments on the Bay Delta Conservation Plan/California WaterFix Final Environmental Impact Report/Environmental Impact Statement

Dear Terrie,

We have reviewed the recently issued “Bay Delta Conservation Plan/California WaterFix Final Environmental Impact Report/Environmental Impact Statement” (FEIR/EIS)¹ and have prepared the following technical comments on the document pertaining to Sacramento Regional County Sanitation District’s (Regional San) interests.² Our evaluation and comments are as follows:

1. The FEIR/EIS modeling of Sacramento River flow impacts at Freeport is inadequate.

Original Regional San Comment: Regional San previously submitted comments on the Draft EIR/EIS (DEIR/EIS) and Recirculated Draft EIR/EIS (RDEIR/SDEIS).³ Regional San’s comments included a discussion of the Department of Water Resources’ (DWR) modeling of Sacramento River flow at Freeport. Regional San believes DWR’s modeling was insufficient to characterize potential impacts to operation of the Sacramento Regional Wastewater Treatment Plant, which discharges treated effluent to the Sacramento River from an outfall at Freeport, upstream of the proposed WaterFix diversion points.

Regional San commented that the proposed WaterFix project involves the operation of the State Water Project/Central Valley Project (SWP/CVP) system such that Sacramento River flow rates

¹ California Department of Water Resources and U.S. Bureau of Reclamation. 2016. Final Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan/California WaterFix. December. (DOE/EIS-0515.) (ICF 00139.14.) Prepared by ICF International, Sacramento, CA.

Exponent has undertaken a diligent effort to identify the components of the FEIR/EIS that are relevant to Regional San’s comments, and we have thoroughly reviewed the FEIR/EIS response to comments and sections/references cited in the response to Regional San’s comments. However, given the size of the FEIR/EIS and the very limited time available for review, we have not reviewed the entire FEIR/EIS.

² Each author’s curriculum vitae is attached to this letter as Exhibit A.

³ Regional San. 2014. Regional San Comments on Draft BDCP and Associated Draft EIR/EIS. July 29. Comments submitted to Ryan Wulff, National Marine Fisheries Service, via email: BDCP.comments@noaa.gov; Regional San. 2015. Regional San Comments on BDCP/CA WaterFix’s Recirculated Draft EIR/Supplemental Draft EIS. October 30. Comments submitted to the California Department of Water Resources and U.S. Bureau of Reclamation, via email: BDCPComments@icfi.com.

near Regional San's outfall at Freeport could change under project conditions. Regional San is concerned the project could increase the number and duration of low-flow and reverse-flow periods in the river. During low-flow and reverse-flow conditions and as specified in Regional San's NPDES permit, Regional San would not be permitted to discharge.

Regional San also commented that the analysis presented in the RDEIR/SDEIS included only monthly average river flow rates at Freeport; these documents did not include or describe the tidally-influenced hourly or sub-hourly flow rates. Regional San's operations depend upon river flow rates that are measured on an hourly or sub-hourly basis, and these flow rates determine whether or not Regional San is permitted to discharge. If the proposed project increases the frequency or duration of low flow rates in the river at Freeport, Regional San could be required to divert greater volumes of treated effluent to emergency storage basins (ESBs), which could in turn necessitate the construction of additional ESB volume at significant cost and with associated environmental impacts. But, because the environmental documents did not present relevant modeling results, a proper determination of impacts to Regional San's operations, and potential related impacts associated with construction of additional storage facilities, could not be made (Letter 321, Comment 1; Letter 2579, Comments 1, 12, 13, 14, 15, 16, 20, 21, 57, 63).

FEIR/EIS Response 1: The FEIR/EIS responses to this comment make several points. First, the response to Letter 321, Comment 1, states that Figure 4.3.2-4 of the RDEIR (presented below as Figure 1) shows that flows at Freeport will not change significantly under project conditions, and thus that Regional San's operations would not be significantly impacted by the project. Responses to Letter 2579, Comments 13, 14, 15, 16, 20, 21, 57, and 63 also make this point.

Exponent Reply 1: Figure 4.3.2-4 does not present results that can be used to evaluate impacts to Regional San's operations. Figure 4.3.2-4 presents a plot of monthly average Sacramento River flow rates at Freeport over the 16-year modeling period (1976–1991), which seems to have been generated by first calculating an average flow rate for each month from 15-minute DSM2 output, then by averaging those average flow rates over the 16-year period.⁴ The information shown in Figure 4.3.2-4 contains the type of data that Regional San's comments noted would be inadequate to understand impacts on its operations. Tidal impacts on river flows at Freeport are well understood and can be readily modeled; thus, there appears to be no reason to present monthly average flow rates instead of hourly data that would show tidal influences.

⁴ The exact calculation methodology could not be identified in the RDEIR/SDEIS documents.

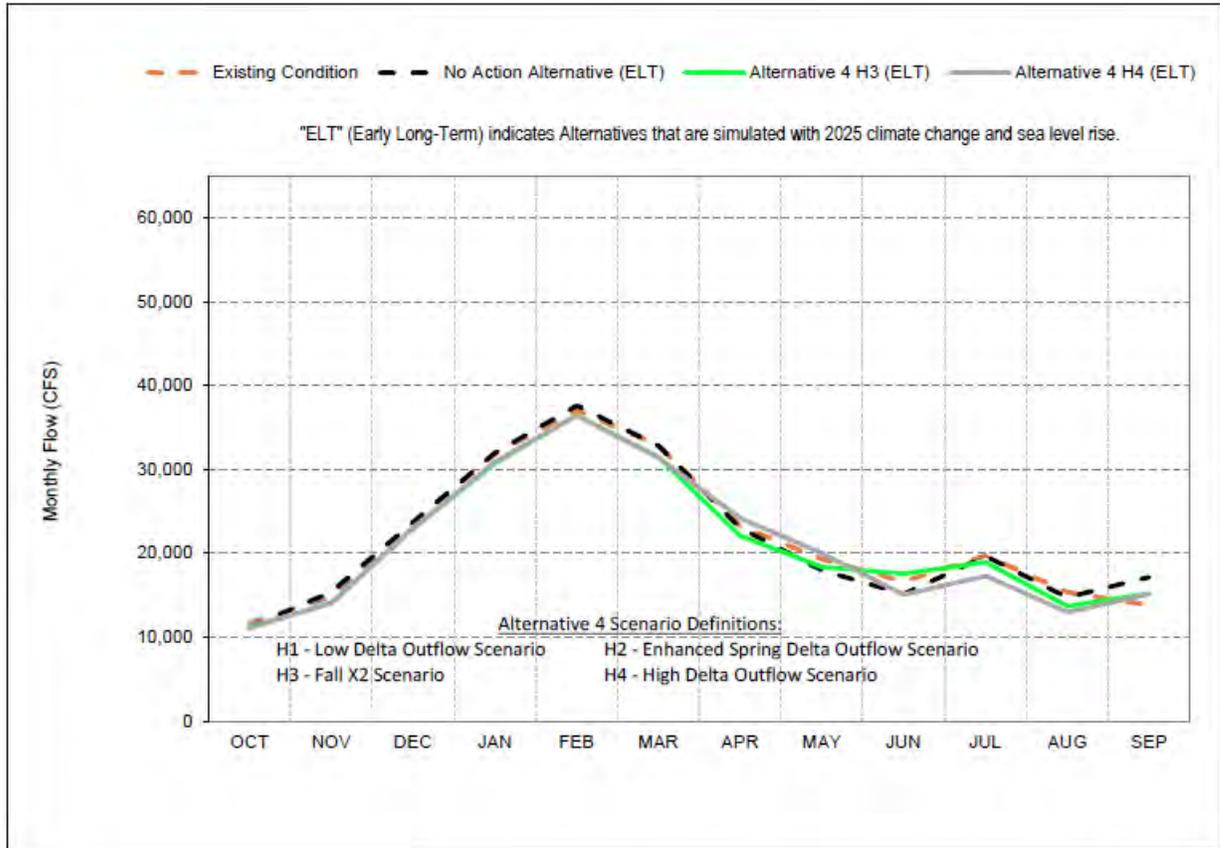


Figure 4.3.2-4
 Sacramento River Flow at Freeport for Alternative 4A, Long-Term Average

Figure 1. Figure 4.3.2-4 from the Recirculated Draft Environmental Impact Report.

Source: California Department of Water Resources (2015). U.S. Bureau of Reclamation, Bay Delta Conservation Plan/California WaterFix Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement (RDEIR/SDEIS). July 10. Accessed 1/24/2017 at http://baydeltaconservationplan.com/RDEIRS/Recirc_Figures/Fig_4.3.2.4_Sac%20Freeport%20LT_Alt4A.pdf

Prior work performed by Flow Science Incorporated⁵ evaluated the ability of DSM2 to simulate hourly and sub-hourly flow rates at Freeport accurately. At lower river flow rates (i.e., the flow rates at which reverse flow events will occur over the course of a tidal cycle), the DSM2 accurately simulated reverse flow events. Thus, DSM2 is a suitable tool for exactly this purpose. Aggregating flows to monthly averages, as the Lead Agencies have done in the FEIR/EIS, obscures the impact of short-term flow variations that result in low and reverse flows. Figure A-6 of the FEIR/EIS (p. 5A-A18,

⁵ Sacramento Regional County Sanitation District. 2014. Draft Environmental Impact Report for the Sacramento Regional County Sanitation District EchoWater Project (Control Number 2012-70044, State Clearinghouse #2012052017). March 4. Appendix D1, Water Quality Modeling Approach, pp. 6-17.

presented below as Figure 2) illustrates this phenomenon for the Sacramento River at Freeport.

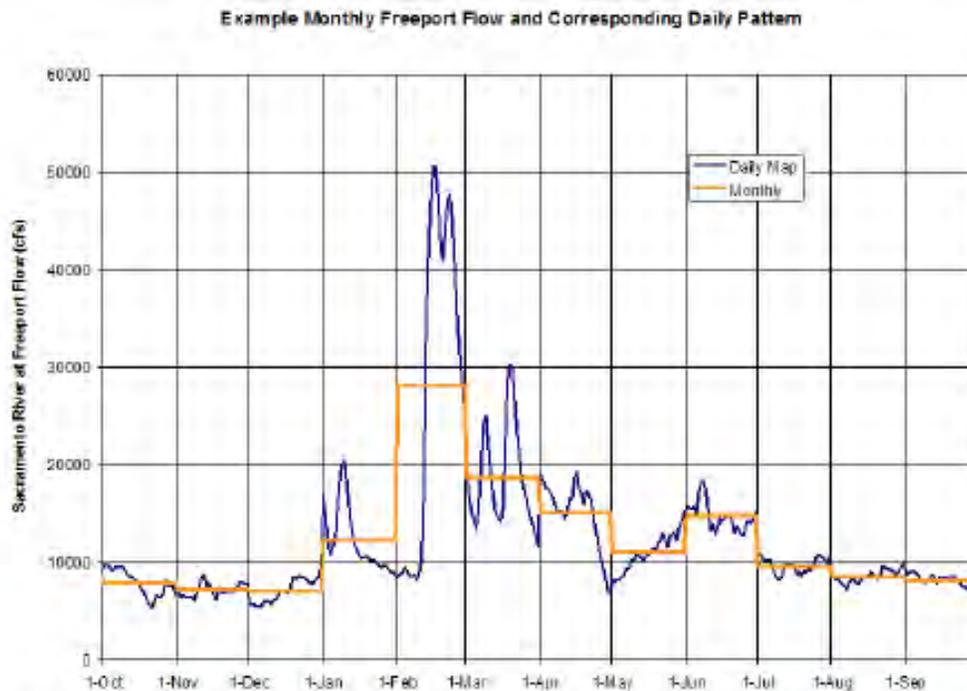


Figure A-6: Example monthly-averaged and daily-averaged flow for Sacramento River at Freeport

Figure 2. Figure A-6 from the Final Environmental Impact Report/Environmental Impact Statement

Source: California Department of Water Resources and U.S. Bureau of Reclamation. 2016. Final Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan/California WaterFix. December. (DOE/EIS-0515.) (ICF 00139.14.) Prepared by ICF International, Sacramento, CA. Appendix 5A, "Modeling Technical Appendix – Section A," p. 5A-A18. Accessed 1/24/2017 at http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Final_EIR-EIS_Appendix_5A_-_BDGP-California_WaterFix_FEIR-FEIS_Modeling_Technical_Appendix_-_Section_A.sflb.ashx

In Figure A-6, the daily average flow rate on May 1 is approximately 7,500 cubic feet per second (cfs) while the monthly average flow rate—calculated from the plotted daily average flow rates—is significantly higher at approximately 11,000 cfs. The monthly average value thus obscures how low the daily-simulated average flow rate actually becomes. Thus, FEIR/EIS statements that *monthly average* flow rates at Freeport do not change significantly under project conditions are not responsive to the question of variability between years within the 16-year model period, or whether there will be additional low-flow events at Freeport, and thus whether Regional San's operations will be impacted. DWR's response to these comments is thereby inadequate.

FEIR/EIS Response 2: The FEIR/EIS further responds to Regional San’s original comment by asserting (a) that the Lead Agencies did, in fact, use DSM2 to assess changes in sub-daily Freeport flow rates under project conditions (“Disaggregated data was [sic] calculated during preparation of the EIR/EIS using the DSM2 model to indicate changes during tidal cycles” [responses to Letter 2579, Comment 13 and other comments]) and (b) that the FEIR/EIS includes a commitment to operate the proposed project in a way that does not require additional ESB storage at Regional San. Specifically, the FEIR/EIS states, “As part of preparing the Final EIR/EIS, the DSM2 model was used by the project proponent to model the change in frequency of reverse flow events at Freeport and potential effects on operations of the Freeport Water Project and SRWTP. An additional environmental commitment will be added to the Final EIR/EIS to develop an operational rule curve for use of the North Delta diversion facilities such that these facilities can be operated in a manner that would not result in reverse flow conditions that would exceed the SRWTP’s ability to accommodate such events based on its storage basin capacity” (Response to Letter 2579, Comment 12). In Appendix 3B, Section 3.6, the FEIR/EIS’s “environmental commitment” is stated as follows: “DWR, in consultation with Regional San, will develop a rule curve and/or operating protocols for the North Delta Intake diversions...to ensure that Regional San operations will remain consistent with facility storage capabilities and thus not adversely impact Sacramento Regional Wastewater Treatment Plant operations” (p. 3B-81).

Exponent Reply 2: The FEIR/EIS response to Regional San’s original comment is problematic for several reasons. As an initial matter, although the FEIR/EIS refers to DSM2 modeling that was “used by the project proponent to model the change in frequency of reverse flow events at Freeport and potential effects on operations of the Freeport Water Project and SRWTP” (Response to Letter 2579, Comment 12), the results of this modeling, and the details of any analysis based on this modeling, are not presented in the FEIR/EIS except in a passing comment on p. 1-39 of Master Response 15 (see also below). As a result, it is not possible to determine from the FEIR/EIS whether the proposed project would have an adverse impact on flow rates at Freeport or on Regional San’s operations. Because the data were available, the Lead Agencies should have presented these modeling data and an analysis of the results in the FEIR/EIS to address Regional San’s comments.

The FEIR/EIS also makes inconsistent statements about the effect of the proposed project on Sacramento River reverse flows at Freeport. The FEIR/EIS states that the project would not have a significant impact on the Sacramento River flow regime at Freeport. For example, as noted above, in response to Letter 321, Comment 1, the FEIR/EIS states, “As shown in Figure 4.3.2-4 of the RDEIR/SDEIS, lower Sacramento River flow at Freeport would change minimally between Alternative 4A and Existing Conditions and the No-Action Alternative (NAA).” This response implies that reverse-flow and low-flow conditions would not change significantly under project conditions.

However, Master Response 15 from the FEIR/EIS states, “Modeling shows that Alternative 4A may increase reverse flows in the lower Sacramento River at Freeport, relative to the NAA...” (p. 1-39). The fact that the FEIR/EIS makes an “environmental commitment” to develop “a rule curve and/or operating protocol for the North Delta Intake diversions...to ensure that Regional San operations will remain consistent with facility storage capabilities” (Appendix 3B, Section 3.6, p. 3B-81) implies that the project-driven increase in reverse flow events revealed by the Lead Agencies’ DSM2 modeling is in fact significant. Thus, not only does the FEIR/EIS fail to present relevant DSM2 modeling results in any detail, but FEIR/EIS statements about the Sacramento River modeling results are inconsistent.

Finally, it is not clear from the FEIR/EIS whether the proposed “rule curve and/or operational protocol for the North Delta Intake (NDI) diversions” is feasible or whether changes in NDI diversions could have a sufficient impact on flow rates at Freeport to eliminate any impacts to Regional San’s operations. The SWP/CVP system is operated as an integrated system, and flow rates at Freeport are largely a result of reservoir releases and operations upstream of Freeport. Because the NDI diversions are downstream of Freeport, it is not clear that changes to NDI diversion patterns would have a material effect on flow rates at Freeport. In any case, the effect of changes to NDI diversions on flow rates at Freeport has not been demonstrated by the FEIR/EIS. To demonstrate the feasibility of this “environmental commitment,” the FEIR/EIS should have presented (at least conceptually) the proposed rule curve and/or operational protocol, along with an explanation and supporting evidence demonstrating how this protocol would affect flow rates in the Sacramento River at Freeport and Regional San operations. In fact, the FEIR/EIS presented no concrete information about the proposed rule curve/protocol or its impact on Regional San operations, apart from an unsubstantiated assurance that Regional San’s operations would not be significantly impacted.

2. FEIR/EIS fails to consider impacts resulting from Boundary 1 and Boundary 2 scenarios, which represent the operational range of the proposed project.

The FEIR/EIS presents the potential impacts of the preferred project alternative (Alternative 4A). However, the FEIR/EIS also states that two additional scenarios not presented in the DEIR/EIS or RDEIR/SDEIS—Boundary 1 (B1) and Boundary 2 (B2)—represent the full range of possible operations of the proposed project under adaptive management. For example, p. 5-167 of the FEIR/EIS states, “Future conveyance facilities operational changes may also be made as a result of adaptive management to respond to advances in science and understanding of how operations affect species. Conveyance facilities would be operated under an adaptive management range represented by Boundary 1 and Boundary 2.” Thus, the B1 and B2 scenarios represent the range of possible operations of the proposed project. Consistent with this idea, Jennifer Pierre of DWR stated in her oral testimony before the State Water Resources Control

Board in the associated WaterFix water rights change petition proceedings, on July 29, 2016, that the B1 model scenario can be used as a basis for assessment of harm since it represents possible project operations (See Exhibit B [Excerpt of July 29, 2016 transcript, State Water Resources Control Board, Hearing in the matter of California Department of Water Resources and United States Bureau of Reclamation Request for a Change in Point of Diversion for California Water Fix (WaterFix Water Rights Hearing)]).

The B1 and B2 scenarios represent a significantly different range of operations than the preferred alternative identified in the RDEIR/EIS (Alternative 4A). Despite the fact that B1 and B2 represent possible operating scenarios of the proposed project, the FEIR/EIS does not present the potential impacts of these scenarios. The Lead Agencies' rationale for not presenting the impacts of B1 and B2 seems to be that "[i]mpacts as a result of operations within this range [spanning B1 and B2] would be consistent with the impacts discussed for the alternatives considered in this EIR/EIS" (p. 5-167).

However, the only evidence presented in the FEIR/EIS that the impacts of B1 and B2 on Sacramento River flow rates at Freeport would be consistent with the impacts of the preferred alternative (Alternative 4A) appears to be Figure 5E-8 (Appendix 5E, p. 5E-18, presented below as Figure 3), which shows monthly average Sacramento River flow rates at Freeport aggregated over a 16-year period under both B1 and B2, along with several other scenarios including the future no-action alternative (NAA). While monthly average flow rates presented in Figure 5E-8 for the various scenarios are similar, as noted in comments above, river flow rates as influenced by the tides (i.e., hourly or sub-hourly flow rates) determine Regional San's ability to discharge treated effluent to the river. The FEIR/EIS has not provided information about hourly river flow rates at Freeport for Scenarios 4A, B1, or B2, but it is well known that export flow rates differ markedly for each of these scenarios. According to DWR testimony, B1 would represent an *increase* in total average annual exports of approximately 1.2 million acre-feet (MAF) relative to the NAA, and B2 would represent a *reduction* in total average annual exports of approximately 1.1 MAF relative to NAA, representing a differential spread of approximately 2.3 MAF/year on average.⁶ Alternative 4A exports would fall between the B1 and B2 numbers. The potential project impacts to Regional San's operations cannot be understood without a distinct evaluation of the impacts of B1 and B2 separately from those of Alternative 4A; because it does not include this analysis, the FEIR/EIS does not disclose the full range of impacts of the project, including both the full likely operating range and hourly flow rates, on Regional San.

⁶ Exhibit C, WaterFix Water Rights Hearing, Written Testimony of Armin Munevar. May 31, 2016. P. 18, lines 16-23.

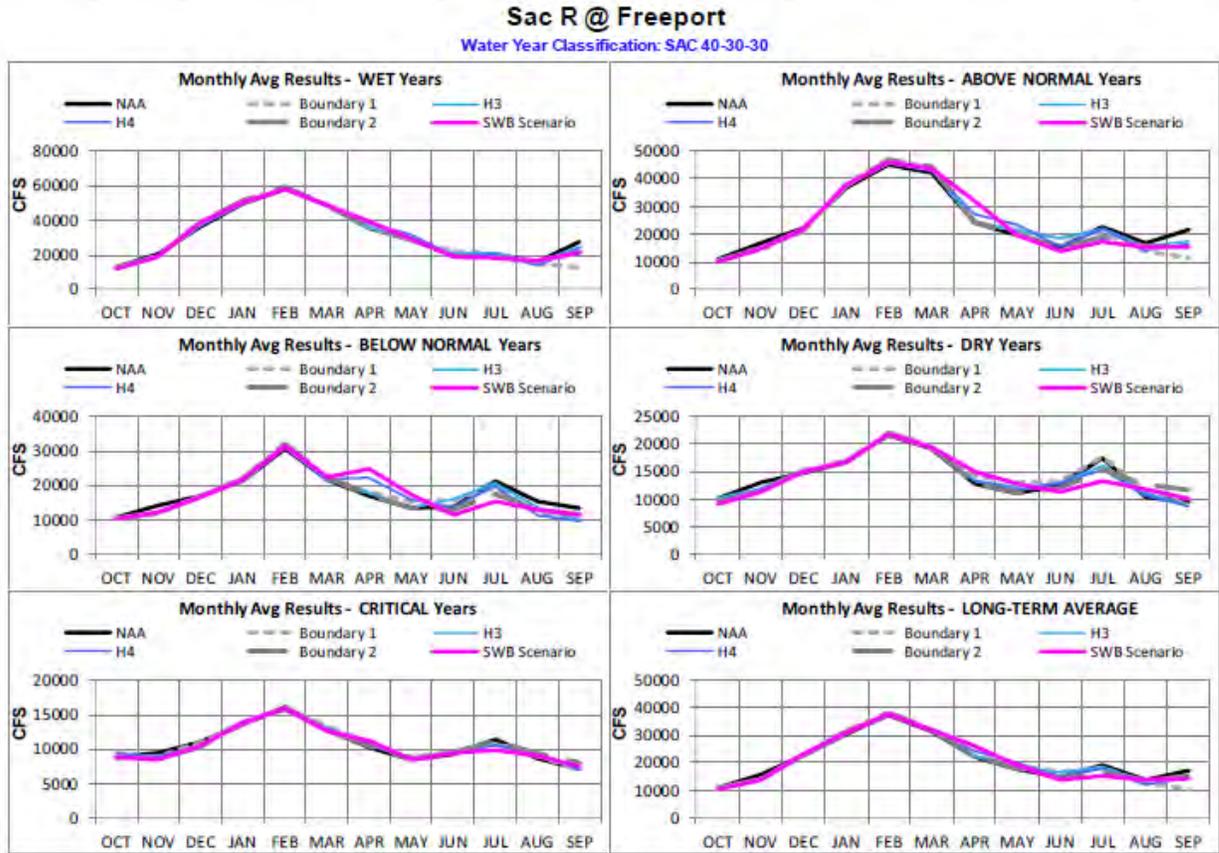


Figure 5E-8: Monthly Average Sacramento River at Freeport Flow

Figure 3. Figure 5E-8 from the Final Environmental Impact Report/Environmental Impact Statement

Source: California Department of Water Resources and U.S. Bureau of Reclamation. 2016. Final Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan/California WaterFix. December. (DOE/EIS-0515.) (ICF 00139.14.) Prepared by ICF International, Sacramento, CA. Appendix 5E, "Supplemental Modeling Related to the SWRCB," p. 5E-18. Accessed 1/24/2017 at http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Final_EIR-EIS_Appendix_5E_-_Supplemental_Modeling_Related_to_the_SWRCB.sflb.ashx

3. The FEIR/EIS evaluation of Sacramento River temperature impacts at Freeport is inadequate.

Original Regional San Comment: Regional San has certain thermal requirements in its NPDES permit that constrain the discharge of treated effluent to the Sacramento River. Regional San previously commented on the DEIR/EIS and RDEIR/EIS documents that the proposed project could alter the water temperature in the Sacramento River at Freeport and thereby reduce the times when Regional San is permitted to discharge and/or cause permit non-compliance. Because the proposed project involves new operating scenarios for upstream reservoirs, which

influence the temperature of the Sacramento River at Freeport, potential impacts to river temperature need to be evaluated in the FEIR/EIS.

FEIR/EIS Response: The Lead Agencies' response to this comment asserts that changes in river temperature at Freeport will be insignificant since river temperatures at Freeport are generally in equilibrium with air temperature and since river flow rates are not expected to change as a result of the project. The response concludes, "Although minor changes in flows and river temperature would occur under Alternative 4A, relative to the NAA, they would not be of sufficient magnitude and duration to change Regional San's overall thermal compliance record relative to compliance under the NAA. Also, minor changes in river flow and temperatures that may occur under Alternative 4A, relative to conditions under the NAA, would not cause the Regional Water Quality Control Board to modify the thermal limitations in the NPDES permit or cause Regional San to build cooling towers to cool its effluent when such modifications would not be required under the NAA" (response to Letter 321, Comment 1).

Exponent Reply: There are several problems with the FEIR/EIS response to Regional San's original comment. First, as noted in previous comments, Sacramento River flow rates may well change significantly under proposed project scenario 4A, and other operating scenarios, including B1 and B2, are simulated to have different reservoir releases, river flow rates, and export volumes. The response does not provide relevant evidence or analysis to support the conclusion that river flow rates at Freeport will not change significantly under the range of operating conditions proposed for the project.

Second, the temperature of the river will be a function of a range of factors, including the temperature of the water released from upstream reservoirs, the river flow rate and travel time to Freeport (a function of flow rate), air temperature, humidity, and wind speed. The response to comments appears to assert that river flow rate is the main factor influencing river temperature at Freeport, and that since river flow rates will not change appreciably, river temperatures will not change appreciably. However, DWR provides no data or analysis to support this assertion, and we believe it to be an oversimplification of the processes that affect river temperature.

Even if river temperature were a function primarily of river flow rate, the Lead Agencies have not demonstrated that river temperatures at Freeport will remain the same under project conditions, since project flows would be different from baseline flows, which could affect travel times between upstream reservoirs and Freeport. Thus, the air-water temperature equilibrium and river temperatures at Freeport could be different under project conditions than under baseline conditions because project flows would be different from baseline flows. As a result, the FEIR/EIS's response to Regional San's comment about river temperatures is unsubstantiated in this respect.

To adequately address the concern raised in Regional San’s comment, the FEIR/EIS should have made a thorough scientific investigation of the impacts of the proposed project on temperatures in the Sacramento River at Freeport (e.g., a modeling analysis), rather than relying on unsupported inferences from the flow regime and air-water thermal equilibrium.

4. FEIR/EIS employs the incorrect “existing condition” baseline scenario.

The FEIR/EIS employs both an existing condition (EBC1) and the NAA as baseline conditions. However, the existing condition scenario (EBC1) does not include the Fall X2 requirement,⁷ despite the fact that the 2008 USFWS biological opinion (BiOp) that governs operations of the CVP/SWP requires it. The FEIR/EIS states the reason for excluding Fall X2 from the existing condition scenario as follows: “As of spring 2011, when a lead agency technical team began a new set of complex computer model runs in support of this EIR/EIS, DWR determined that full implementation of the Fall X2 salinity standard as described in the 2008 USFWS BiOp was not certain to occur within a reasonable near-term timeframe because of a recent court decision and reasonably foreseeable near-term hydrological conditions. As of that date, the United States District Court has not yet ruled in litigation filed by various water users over the issue of whether the delta smelt BiOp had failed to sufficiently explain the basis for the specific location requirements of the Fall X2 action, and its implementation was uncertain in the foreseeable future” (p. 4-6).⁸

However, after the U.S. District Court’s ruling in March 2011 that the BiOp insufficiently explained the basis for Fall X2 location requirements, in March 2014—almost three years before the issuing of the FEIR/EIS—the Ninth Circuit U.S. Court of Appeals overturned the District Court’s ruling on this point, finding that the BiOp *did* sufficiently explain the basis of the specific Fall X2 location requirements (*San Luis vs. Jewell*, Case No. 11-15871). Thus, the pending litigation referred to in the FEIR/EIS has long since been resolved, and the Fall X2 requirement should have been included in the existing condition baseline scenario, together with the other 2008 BiOp requirements that were included in the baseline existing condition. In fact, a second existing condition baseline model run that includes the Fall X2 requirements (EBC2) was conducted in connection with the Administrative Draft BDCP EIR/EIS and released to the public in 2013. This baseline model run (EBC2) was thus available to DWR at the time the RDEIR/SDEIS and FEIR/EIS were prepared. This EBC2 baseline condition should have been

⁷ The Fall X2 requirement is a requirement that the 2 parts per thousand (ppt) salinity contour (“isohaline”) be located west of certain compliance locations in the Sacramento-San Joaquin River Delta (Delta) during the fall season to accommodate the habitat requirements of delta smelt. “X2” is the location of the 2 ppt isohaline typically given in kilometers from the Golden Gate. Fall X2 generally requires more freshwater Delta outflow than would otherwise be the case, in order to maintain the 2 ppt isohaline at the relevant locations.

⁸ The FEIR/EIS makes similar remarks in “Master Response 1: Environmental Baselines.” See FEIR/EIS Volume II, Part 1, p. 1-9.

Ms. Terrie Mitchell, Regional San
January 27, 2017
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used to evaluate the impacts of Alternative 4A. Thus, the EBC1 existing condition scenario employed as a baseline in the FEIR/EIS is insufficient since it lacks the Fall X2 requirement and does not accurately reflect existing conditions.

Excluding the Fall X2 requirement from the existing condition baseline scenario tends to bias impact assessments toward lower impacts on Regional San's operations than would be reflected if Fall X2 were included in the baseline scenario. Exclusion of the Fall X2 requirement generally yields a baseline condition with lower flow rates in the Sacramento River during the fall than would be the case with the requirement, since Fall X2 generally entails augmented Delta outflow. Thus, any reductions in Sacramento River flow rate attributable to the WaterFix project during the fall would look less significant next to a baseline condition lacking Fall X2 than next to a baseline with Fall X2, since the baseline lacking Fall X2 would already exhibit lower flow rates than the baseline with Fall X2. In effect, excluding the Fall X2 requirement from the existing condition baseline scenario is likely to understate the impacts to Regional San operations.

Thank you for the opportunity to assist you with these comments. Please let us know if you have any questions or would like to discuss the comments with us.

Sincerely,



Aaron Mead, Ph.D., P.E.
Managing Engineer



Susan C. Paulsen, Ph.D., P.E.
Principal Scientist, Director of Environmental & Earth Sciences Practice



October 19, 2020

Via Electronic Mail

U.S. Army Corps of Engineers, Sacramento Regulatory Division

Attn: Mr. Zachary Simmons

1325 J Street, Room 1350

Sacramento, CA 95814-2922

Zachary.M.Simmons@usace.army.mil.

Re: Comments on Notice of Intent for Environmental Impact Statement – Delta
Conveyance Project

Dear Mr. Simmons:

These comments in response to the U.S. Army Corps of Engineers Sacramento Division's (USACE) Notice of Intent (NOI) for the development of an Environmental Impact Statement (EIS) for the Delta Conveyance Project (Project) are submitted on behalf of the County of Sacramento (County) and the Sacramento County Water Agency.

I. BACKGROUND

The County is ground zero in terms of the numerous devastating physical, environmental, and socioeconomic impacts of the proposed water infrastructure facilities identified to be constructed in/near the communities of Freeport, Hood, and Courtland. The Project, if approved and constructed, will impact County residents, public facilities, public water systems in the Delta, and businesses in myriad and far-reaching ways. The residents and communities of the County will bear a disproportionate burden of the likely numerous significant unavoidable environmental impacts, which will benefit only agricultural and urban water users south of the Delta. The proposed water infrastructure facilities will slow or prevent the realization of the Delta National Heritage Area's economic development, tourism, and historic preservation goals that are critical to maintaining the "Delta as a Place."

The Project also has the potential to significantly impact the water supplies in the County. The Sacramento County Water Agency (SCWA), one of the most Project impacted water purveyors, currently supplies potable and recycled water to approximately 150,000 persons through more than 49,000 residential and business connections throughout its Zone 40 service area. SCWA's service area also includes the major growth areas of Sacramento County, south of Jackson highway and east of State Route 99, which are

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anticipated to accommodate roughly 100,000 new persons and more than 20,000 new connections by buildout.

In 2002, SCWA, in conjunction with East Bay Municipal Utility District (EBMUD), formed the Freeport Regional Water Authority (FRWA). The FRWA was created to guide the financing, ownership, development, construction, and operation of the Freeport Regional Water Project (FRWP). The FRWP is a cooperative effort of SCWA and EBMUD to supply surface water from the Sacramento River to customers in central Sacramento County and the East Bay area of California via a water intake facility and pumping plant on the Sacramento River at the Freeport Bend, approximately 10 miles south of downtown Sacramento. SCWA relies on the FRWP facilities to provide surface water supplies and fulfill SCWA's conjunctive use program. The FRWP consists of (1) an intake and pump station near Freeport Bend; (2) pipelines extending from the intake to SCWA's Vineyard Surface Water Treatment Plant and to the Folsom South Canal; (3) a pipeline extending from the Folsom South Canal terminus to EBMUD's Mokelumne River Aqueducts; and (4) related pumping plants, terminal facilities, and water treatment facilities. The FRWP intake can divert 185 million gallons per day (mgd), of which 85 mgd is dedicated to SCWA and 100 mgd to EBMUD. Currently, SCWA diverts water at the FRWP intake under an appropriative water right, contract rights for Central Valley Project (CVP) water, and a contract for delivery of remediated groundwater.

The FRWP intake, located at Sacramento River Mile 47.1, can be impacted by the Sacramento Regional Wastewater Treatment Plant (SRWTP) treated wastewater discharge located downstream at Sacramento River Mile 46. "Reverse flows" predictably occur on the Sacramento River during periods of high tides on the San Francisco Bay and low downstream flows in the river. To avoid water quality impacts to the FRWP, FRWA halts diversions at the FRWP intake when SRWTP wastewater effluent has traveled 0.9 miles upstream from its discharge point during reverse flow events. These intake shutdowns are required by the domestic water supply permits issued by the State Water Resource Control Board (SWRCB) Division of Drinking Water to SCWA and EBMUD. The FRWP resumes operation only after the river resumes flowing in the downstream direction and the effluent zone has moved back downstream to a location not more than 0.7 miles upstream from the SRWTP discharge point.

The location and operation of the Project intakes presents the potential for significant adverse impacts to SCWA's operation of the FRWP from reverse flow events in the Sacramento River, and to the Sacramento region's water supply, through impacts to surface and groundwater quality and availability (including groundwater levels during construction and operation in the Project area and South American Sub-Basin) and changes in upstream reservoir operations and in river flows in the Delta and upstream tributaries.

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II. COMMENTS ON THE SCOPE OF IMPACT ANALYSIS

A. The Scope of the National Environmental Policy Act (NEPA) Review Must Be Expanded to Include Potential Effects of Operation of the Intakes

The NOI describes the scope of USACE’s jurisdiction as “limited to construction activities” and the scope of USACE’ review under NEPA for operations of the new facilities as “limited to potential effects to navigation and long-term operations and maintenance of the modifications of federal levees” – explicitly excluding “[t]he future operation of the intakes after completion of construction” from USACE’s “control or responsibility.” However, this approach improperly constrains the required analysis under NEPA, as USACE has the necessary control and responsibility to expand its review to impacts of, and alternatives to, the operation of the intakes.

1. Operations of the Intakes Are Within USACE Jurisdiction

USACE’s regulations implementing its NEPA responsibilities require it to conduct an environmental analysis for portions of the project “over which [USACE] has sufficient control and responsibility to warrant Federal Review.” 33 C.F.R. pt. 325, app. B §§ 7(b)(1), 8(d) (applying the scope of analysis outlined in paragraph 7(b) to USACE’s preparation of an EIS). The scope of USACE’s analysis “should include direct, indirect and cumulative impacts on all Federal interests within the purview of the NEPA statute.” *Id.* pt. 325, app. B § 7(b)(3). For the purposes of NEPA, indirect effects include reasonably foreseeable effects on water. 40 C.F.R. § 1508.8. Accordingly, USACE’s review of potential effects to long-term operations and maintenance of the modifications of Federal levees necessarily includes consideration of the operations of the intakes. Because modifications of Federal levees is an integral component of the proposed water diversion and conveyance system, review of Federal levee construction under NEPA must include consideration of the ongoing significant environmental consequences of the intake operations.

2. The Extent of Cumulative Federal Control and Responsibility Warrant Extending USACE’s NEPA Review Beyond its Jurisdiction

Additionally, or alternatively, the cumulative Federal control and responsibility of the Project require that USACE expand its NEPA analysis beyond mere construction activities to include operation of the intakes. Sufficient “control and responsibility for portions of the project beyond the limits of Corps jurisdiction” exists “where the environmental consequences of the larger project are essentially products of the Corps permit action.” 33 C.F.R. pt. 325, app. B § 7(b)(2). Relevant to this consideration is “[t]he extent of cumulative Federal control and responsibility,” where “environmental consequences of the

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additional portions of the project are essentially products of Federal financing, assistance, direction, regulation, or approval,” and/or where “other Federal agencies are required to take Federal action under the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Endangered Species Act,” and other environmental laws and orders. *Id.* pt. 325, app B § 7(b)(2)(iv)(A)-(B) (citations omitted).

First, as relevant here, the Project is being designed to provide operational flexibility not only for the State Water Project (SWP), but also the Central Valley Project (CVP), a federally owned and operated water supply project. The Notice of Preparation (NOP) issued pursuant to the California Environmental Quality Act (CEQA) by the Project applicant, the California Department of Water Resources (DWR), identifies the potential use of the Project to “restore and protect the reliability of . . . [CVP] water deliveries south of the Delta . . .” and the Project includes facilities designed to accommodate use for CVP operations. *See* Exhibit A, NOP of Environmental Impact Report (EIR) for the Delta Conveyance Project, DWR, Jan. 15, 2020, at pp. 2, 3.¹ The NOI makes no mention of these foreseeable Federal aspects of Project operations. To limit the scope of NEPA review to construction activities ignores the Project’s stated purpose (*see La. Wildlife Fed’n., Inc. v. York*, 761 F.2d 1044, 1048 (5th Cir. 1985) [“it would be bizarre if the Corps were to ignore the purpose for which the applicant seeks a permit and to substitute a purpose it deems more suitable”]), and excludes additional portions of the Project which are products of Federal financing, assistance, direction, regulation, and approval.

Therefore, the Project will have environmental consequences resulting from coordinated operations of the SWP and CVP, warranting a broader scope of analysis under NEPA. Even if the Bureau of Reclamation (Reclamation) does not authorize direct participation in the Project by the CVP, the SWP and CVP water infrastructure are operated in a coordinated manner, pursuant to a 1986 Coordinated Operations Agreement. Joint points of diversion allow the use of one project’s diversion facility by the other under certain conditions. The operation of the CVP and SWP diversion facilities alters the flow in Delta channels, creating reverse flows and stagnant zones. This results in insufficient flushing of Delta waters and the concentration of both regulated and currently unregulated water quality constituents. Due to the inextricably interrelated operations of the SWP and CVP, a decision by the USACE to authorize construction of Project facilities will have clearly foreseeable

¹ As stated on page 3 of DWR’s NOP:

Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants).

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environmental consequences from their operation that are within the scope of Federal control and responsibility.

Second, other Federal agencies are required to take Federal action in the review and approval of the Project. As stated in the NOI, the preparation of USACE's EIS will require compliance with the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act – all of which are explicitly listed in USACE's implementing regulations as sufficient Federal involvement to expand the scope of federal action. 33 C.F.R. pt. 325, app. B § 7(b)(2)(iv)(B).

B. The EIS Must Identify and Thoroughly Evaluate Alternative Locations for the Intakes

Where, as here, sufficient Federal control and responsibility over the entire project exists, “the NEPA review [should] be extended to the entire project, including portions outside waters of the United States” 33 C.F.R. pt. 325, app. B § 7(b)(3). NEPA further requires that USACE “[r]igorously explore and objectively evaluate all reasonable alternatives” to the Project, including “reasonable alternatives not within the jurisdiction of the lead agency.” 40 C.F.R. § 1502.14. There are available alternative intake locations that USACE must consider, including for protection of listed fish species. Abundant evidence was presented in the WaterFix environmental review and water rights hearing that the proposed intake locations will not provide the near-screen sweeping velocities necessary to protect downstream-migrating salmon. To partially address these serious problems, and maintain high sweeping velocities, intakes would need to be located on the outside bends of the river channel. By contrast, the proposed intakes would be positioned only in very slight (or “gentle”) river bends or relatively straight sections of the channel.

Information in the WaterFix EIR Appendix 3F, Intake Location Analyses (pp. 3.F.6-3.F.8), relying on the Fish Facilities Technical Team Report, indicates that there are suitable intake locations farther downstream below Steamboat Slough (identified as intakes 6 and 7). Moving intakes farther south on the Sacramento River would reduce the potential for conflicts with, and significant impacts to, SRWTP operations, and thus the FRWP operations, as well as Town of Hood (Hood) wells, and have the benefit of being better for salmon. Moving the intakes to avoid impacts to the FRWP and SRWTP also would avoid significant impacts to tribal cultural resources identified by Miwok Tribal government representatives at the February 26, 2020 Delta Stakeholder Engagement Committee meeting, where representatives discussed that all three intakes locations are highly sensitive to the Miwok and include several village sites and more than 5 burial grounds. At a minimum, the draft EIS alternatives must include a robust analysis of alternative locations for the intakes that avoid these significant impacts.

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Given the potential for significant impacts to the quality and reliability of water supply for Delta water users, and Delta Reform Act mandates, the EIS also should fully evaluate both a non-structural alternative that should include water reclamation, localized desalination, and increased capture and storage of localized rainfall in lieu of continued or increased Delta exports, as well as alternative intake locations that avoid impacts to the Town of Hood and the FRWP.

Finally, in order to protect water supply reliability for water users in and north of the Delta, the EIS should evaluate operating scenarios that include limitations on the amount and timing of diversions capable of avoiding any significant impacts to Delta water quality and in-Delta or upstream water supplies.

III. COMMENTS ON THE METHODOLOGY OF IMPACT ANALYSES

A. The EIS Must Use a Baseline that Accurately Depicts Impacts Throughout the Life of the Project

Impact analyses that depend on Sacramento and San Joaquin River and Delta hydrologic conditions (including impacts to water quality, water supply, and public facilities that divert water from or discharge into the Sacramento-San Joaquin River Delta) must utilize a baseline that accurately reflects conditions at the time the Project is expected to begin operations, as well as reasonably foreseeable future conditions. Operational impacts to fish, groundwater resources, Delta water quality, and FRWP operations will occur immediately upon commencement of Project diversions, and near-term impacts may be substantially different from those occurring farther in the future, because of changes to background hydrologic conditions due to the effects of climate change. The WaterFix Biological Opinion prepared by National Marine Fisheries Service concluded that under WaterFix, conditions for listed fish species would worsen in critically dry years like 2014 and 2015, as well as in below normal water years. These dry types of water years are predicted to increase in frequency during the proposed Project life, and the EIS must evaluate the extent to which the Project will exacerbate the adverse effects of climate change.

B. The EIS Must Evaluate Impacts to FRWP and SCWA Surface Water Supply

The EIS must adequately identify, analyze, and avoid or mitigate the Project's potential impact on the FRWP intake facility and SCWA water supply due to the increased likelihood of significant reverse flow events. In evaluating impacts to the FRWP, the EIS must employ the appropriate methodology.

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The Project is likely to shift the timing of Sacramento River flows, and under certain circumstances, increase the frequency of reverse flow events that would result in a controlled shutdown of the FRWP on the Sacramento River. Shutdowns of the FRWP intakes critically impact SCWA's ability to serve water to its customers during drought periods.

The Project's potential to affect the occurrence of reverse flows at the FRWP stems from its potential to change the manner in which the CVP and SWP are operated. The Project's north Delta intakes may be operated in a way that shifts the timing and magnitude of the CVP's and SWP's north-to-south water exports. DWR or Reclamation may choose to release water from upstream reservoirs that otherwise would have remained in storage until a later time and to redivert the released water through the north-Delta intakes for export. If the new north-Delta intakes are operated in this manner, the resulting shift in reservoir releases and export patterns may result in periodic reductions in the volume and velocity of water flowing down the Sacramento River past the FRWP intake, compared with the status quo. The reduced downstream flows would strengthen the tidal influence at Freeport Bend. Stronger tidal influence will lead to more or stronger reverse flow events at Freeport Bend. Some of those reverse flow events would be strong enough to require shutdown of the FRWP intake facilities, affecting SCWA's ability to provide water to its customers.

In developing the modeling and EIS analysis of these issues, USACE should carefully consider the expert evidence submitted in the WaterFix water rights change petition hearing by SCWA, EBMUD, and other stakeholders. Specifically, SCWA refers USACE to the work by MBK Engineers and Daniel B. Steiner relating to the CALSIM II model assumptions, which will inform USACE of the type of information, assumptions, and methodology necessary to properly evaluate these impacts.²

C. The EIS Must Evaluate Impacts to Groundwater Resources in the South American Sub-Basin

SCWA currently serves approximately 150,000 people about 34,500 acre-feet per year (af/yr) throughout its Zone 40 service area. SCWA serves its customers a combination of groundwater and surface water as part of a conjunctive use plan, using surface water during wet years when it is available, and relying on groundwater during dry years. SCWA extracts groundwater from the South American Sub-Basin to serve municipal and industrial demands throughout Zone 40. SCWA has recently produced 20,000-29,000 af/yr from the South American Sub-Basin. At buildout of Zone 40, SCWA anticipates producing about 25,000-63,000 af/yr, depending on hydrologic year type.

² See MBK Report on Review of Bay Delta Conservation Program Modeling, SVWU-102 (June 20, 2014), available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/SVG/svwu_102.pdf. (last visit Oct. 14, 2020).

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SCWA produces groundwater from a groundwater management area known as the Central Basin, which is located entirely within Sacramento County and almost entirely within the South American Sub-Basin. The Central Basin is bounded on the north by the American River, on the west by the Sacramento River and Interstate 5, and on the south roughly by the Cosumnes River. The groundwater in the Central Basin is interconnected with the Sacramento River.

The long-term decrease in surface-water flow resulting from Project diversions could have an impact on the hydraulic connection between the Sacramento River and groundwater in the South American Sub-Basin. Based on existing conditions and current groundwater pumping rates, additional decreases in surface flows could reduce current levels of natural recharge resulting in groundwater elevation decreases, groundwater quality degradation, and adversely affect stream/aquifer interactions. The EIS must thoroughly analyze the Project's potential impacts on stream-groundwater aquifer interactions upstream and downstream of the proposed Project diversions, including whether the Project would lower groundwater levels beneath the Sacramento River and in nearby domestic wells, and by how much.

D. The EIS Must Evaluate Impacts to Folsom Reservoir Operations, Surface Water Supplies, and Fish Species

SCWA holds two CVP water service contracts for water deliveries from the American River Basin. SCWA also holds an appropriative water right for diversion from the Sacramento River at the FRWP downstream of the confluence with the American River. The Project has the potential to threaten the availability and reliability of SCWA's water supplies through changes in CVP operations that can result in lower storage levels in Folsom Reservoir in certain dry years. Reduced storage and surface water deliveries to SCWA could also require an increase in groundwater production from the South American Sub-Basin in order to meet Zone 40 demands. The electronic modeling files prepared by DWR and Reclamation as part of the WaterFix CEQA/ NEPA process showed that implementing WaterFix could have these exact impacts. The Project EIS must consider the Project's potential to result in similar impacts, using appropriate modeling assumptions and methodology, and disclose the results of the analysis.

This analysis is important not only to assess the Project's potential adverse effects on water supply, but also because impacts to Folsom Reservoir storage and releases have the potential to result in significant impacts to sensitive fish species in the lower American River, including steelhead listed under the federal and state ESAs and fall-run Chinook salmon. SCWA coordinates management of the lower American River fishery through the Sacramento Water Forum. The health of the lower American River's aquatic resources are connected to operations of Folsom Reservoir. Reduced Folsom Reservoir storage could cause significant

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impacts to sensitive fish species in the Lower American River due to a reduced cold-water pool in the reservoir and resulting high water temperatures in the river. The EIS must analyze the impacts that lower Folsom Reservoir storage may have on the lower American River fisheries. The EIS's analysis of hydrologic and fisheries effects should incorporate the Modified Flow Management Standard for the lower American River developed by the Sacramento Water Forum, which has goals of protecting anadromous salmonids and avoiding catastrophic water shortages in the basin

E. The EIS Must Evaluate Impacts to Hood Wells and Domestic Water Supply

SCWA operates two groundwater wells that serve as the only source of drinking water and fire suppression for residents in the Hood. The wells are within close proximity to the proposed Project facilities. The Hood wells extend approximately 200-350 feet below ground surface, which is below the depth of the proposed Project tunnel.

SCWA has significant concerns about the tunnel's potential impact on Hood's wells. If there were a small alignment error, tunneling construction could damage the new Hood well hole. Construction could disrupt the existing geological structure and recharge capability, particularly the aquifers. Tunnel construction and operation vibrations could modify or collapse the aquifers, reducing productivity of the new Hood well, which is Hood's primary water source. This modification or collapse could permanently reduce well production since the well hole screens may no longer align with the geological water bearing structures. Further, vibrations from construction and operations have the potential to displace or dislodge existing contaminants, causing a significant adverse change in water quality.

The EIS must analyze the potential impacts on the Hood wells due to construction and the potential degradation of the groundwater aquifer that the wells draw from due to partial or full soil liquefaction. Any impacts to operational reliability must be clearly mitigated. USACE should consult with SCWA as it develops the EIS so that impacts can be avoided through Project design. The EIS also must address the potential for adverse effects to the groundwater aquifer stability from Project construction and operation. Specifically, the EIS must accurately describe the groundwater aquifer characteristics in and around Hood, and evaluate how the groundwater aquifer and water supplies might be affected by any compaction or alteration of groundwater flow paths. Impacts to local infrastructure or groundwater aquifers must be clearly avoided or mitigated.

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IV. CONCLUSION

USACE has the requisite control and responsibility to expand its review to impacts and alternatives to the operation of the intakes, and its analysis under NEPA must be expanded accordingly. Because Project construction and operations are likely to have significant adverse impacts to County and SCWA facilities and operations, and result in significant impacts to surface and groundwater resources and water supply, as well as fish, USACE's broadened NEPA analysis must include consideration of the indirect effects on water and aquatic resources, including a robust analysis of alternatives to ensure that all impacts are accurately and adequately evaluated and fully avoided or mitigated.

Sincerely,



Kelley M. Taber
Attorney for County of Sacramento and
Sacramento County Water Agency

Enclosure

KMT:mb

EXHIBIT A

NOTICE OF PREPARATION

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT FOR THE DELTA CONVEYANCE PROJECT

January 15, 2020

INTRODUCTION

Pursuant to the California Environmental Quality Act (CEQA), the California Department of Water Resources (DWR) will initiate the preparation of an Environmental Impact Report (EIR) for the Delta Conveyance Project in the Sacramento-San Joaquin Delta, California. DWR is the lead agency under CEQA.

The Delta Conveyance Project will also involve federal agencies that must comply with the National Environmental Policy Act (NEPA), likely requiring the preparation of an environmental impact statement (EIS). Federal agencies with roles with respect to the project may include approvals or permits issued by the Bureau of Reclamation (Reclamation) and United States Army Corps of Engineers. To assist in the anticipated federal agencies' NEPA compliance, DWR will prepare an EIR that includes relevant NEPA information where appropriate. Once the role of the federal lead agency is established, that federal lead agency will publish a Notice of Intent to formally initiate the NEPA process.

BACKGROUND INFORMATION

In July 2017, DWR had previously approved a conveyance project in the Delta involving two tunnels referred to as "California WaterFix." In his State of the State address delivered February 12, 2019, Governor Newsom announced that he did not "support WaterFix as currently configured" but does "support a single tunnel." On April 29, 2019, Governor Newsom issued Executive Order N-10-19, directing several agencies to (among other things), "inventory and assess... [c]urrent planning to modernize conveyance through the Bay Delta with a new single tunnel project." The Governor's announcement and Executive Order led to DWR's withdrawal of all approvals and environmental compliance documentation associated with California WaterFix. The CEQA process identified in this notice for the proposed Delta Conveyance Project will, as appropriate, utilize relevant information from the past environmental planning process for California WaterFix but the proposed project will undergo a new stand-alone environmental analysis leading to issuance of a new EIR.

PROPOSED DELTA CONVEYANCE PROJECT DESCRIPTION

Purpose and Project Objectives

CEQA requires that an EIR contain a "statement of the objectives sought by the proposed project." Under CEQA, "[a] clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers

in preparing findings or a statement of overriding considerations. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits” (State CEQA Guidelines Section 15124[b]).

Here, as the CEQA lead agency, DWR’s underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State’s Water Resilience Portfolio.

The above stated purpose, in turn, gives rise to several project objectives. In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:

- To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events.
- To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta.
- To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements.
- To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations.¹

Description of Proposed Project Facilities

The existing SWP Delta water conveyance facilities, which include Clifton Court Forebay and the Banks Pumping Plant in the south Delta, enable DWR to divert water and lift it into the California Aqueduct. The proposed project would construct and operate new conveyance facilities in the Delta that would add to the existing SWP infrastructure. New intake facilities as points of diversion would be located in the north Delta along the Sacramento River between Freeport and the confluence with Sutter Slough. The new conveyance facilities would include a tunnel to convey water from the new intakes to the existing Banks Pumping Plant and potentially the federal Jones Pumping Plant in the south Delta. The new facilities would provide an alternate location for diversion of water from the Delta and would be operated in coordination with the existing south Delta pumping facilities, resulting in a system also known as "dual conveyance"

¹ These objectives are subject to refinement during the process of preparing a Draft EIR.

because there would be two complementary methods to divert and convey water. New facilities proposed for the Delta Conveyance Project include, but are not limited to, the following:

- Intake facilities on the Sacramento River
- Tunnel reaches and tunnel shafts
- Forebays
- Pumping plant
- South Delta Conveyance Facilities

Figure 1 shows the areas under consideration for these facilities. Other ancillary facilities may be constructed to support construction of the conveyance facilities including, but not limited to, access roads, barge unloading facilities, concrete batch plants, fuel stations, mitigation areas, and power transmission and/or distribution lines.

Under the proposed project, the new north Delta facilities would be sized to convey up to 6,000 cfs of water from the Sacramento River to the SWP facilities in the south Delta (with alternatives of different flow rates, as described in the “Alternatives” section below). DWR would operate the proposed north Delta facilities and the existing south Delta facilities in compliance with all state and federal regulatory requirements and would not reduce DWR’s current ability to meet standards in the Delta to protect biological resources and water quality for beneficial uses. Operations of the conveyance facilities are proposed to increase DWR’s ability to capture water during high flow events. Although initial operating criteria of the proposed project would be formulated during the preparation of the upcoming Draft EIR in order to assess potential environmental impacts and mitigation, final project operations would be determined after completion of the CEQA process, obtaining appropriate water right approvals through the State Water Resources Control Board’s change in point of diversion process, and completing the consultation and review requirements of the federal Endangered Species Act and California Endangered Species Act. Construction and commissioning of the overall conveyance project, if approved, would take approximately 13 years, but the duration of construction at most locations would vary and would not extend for this full construction period.

Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions below. The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants). If Reclamation determines that there could be a role for the CVP in the Delta Conveyance Project, this role would be identified in a separate NEPA Notice of Intent issued by Reclamation.

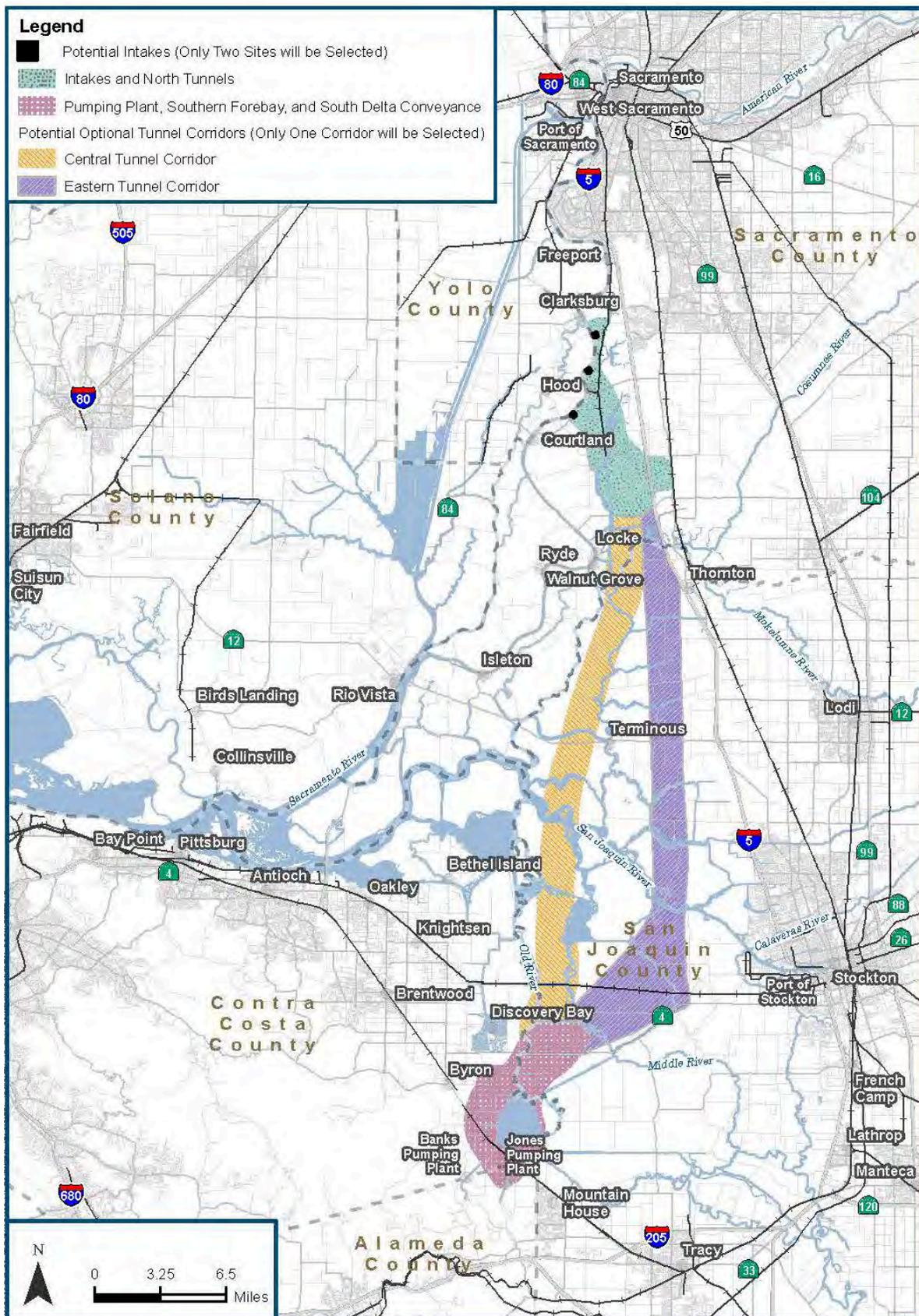


Figure 1. Proposed Project Facility Corridor Options

Intake Facilities

The proposed intake facilities would be located along the Sacramento River between Freeport and the confluence with Sutter Slough, as shown in Figure 1. The proposed project would include two intakes with a maximum diversion capacity of about 3,000 cfs each. The size of each intake location could range from 75 to 150 acres, depending upon fish screen selection, along the Sacramento River and include a state-of-the-art fish screen, sedimentation basins, tunnel shaft, and ancillary facilities. An additional 40 to 60 acres at each intake location would be temporarily disturbed for staging of construction facilities, materials storage, and a concrete batch plant, if needed.

Tunnel and Tunnel Shafts

The proposed project would construct up to two north connecting tunnel reaches to connect the intakes to an Intermediate Forebay (see “Forebays” section below), a single main tunnel from the Intermediate Forebay to a new Southern Forebay, and two connecting south tunnel reaches as part of the proposed project’s South Delta Conveyance Facilities (see “South Delta Conveyance Facilities” section below) to connect to the existing SWP and, potentially CVP, facilities in the south Delta. The single main tunnel would follow one of two potential optional corridors as shown in Figure 1.

The proposed single main tunnel and connecting tunnel reaches would be constructed underground with the bottom of the tunnel at approximately 190 feet below the ground surface. Construction for the tunnel would require a series of launch shafts and retrieval shafts. Each launch and retrieval shaft site would require a permanent area of about four acres. Launch sites would involve temporary use of up to about 400 acres for construction staging and material storage. Depending on the location, the shafts may also require flood protection facilities to extend up to about 45 feet above the existing ground surface to avoid water from entering the tunnel from the ground surface if the area was flooded. Earthen material would be removed from below the ground surface as tunnel construction progresses; this reusable tunnel material could be reused for embankments or other purposes in the Delta or stored near the launch shaft locations.

Forebays

The proposed project would include an Intermediate Forebay and a Southern Forebay. The Intermediate Forebay would provide potential operational benefits and would be located along the tunnel corridor between the intakes and the pumping plant. The Southern Forebay would be located at the southern end of the single main tunnel and would facilitate conveyance to the existing SWP pumping facility and, potentially the CVP pumping facilities. The forebays would be constructed above the ground, and not within an existing water body. The size of the Intermediate Forebay would be approximately 100 acres with an additional 150 acres disturbed during construction for material and equipment storage, and reusable tunnel material storage. The embankments would be approximately 30 feet above the existing ground surface. Additional appurtenant structures, including a permanent crane, would extend up to 40 feet above the embankments.

The Southern Forebay would be located near the existing Clifton Court Forebay and would be approximately 900 acres with an additional 200 acres disturbed during construction for material and equipment storage, potential loading and offloading facilities, and reusable tunnel material storage. The Southern Forebay embankments would be up to 30 feet above the existing ground surface.

Pumping Plant

The proposed project would include a pumping plant located at the new Southern Forebay and would receive the water through the single main tunnel for discharge in the Southern Forebay. The pumping plant would be approximately 25 acres along the side of the Southern Forebay and would include support structures, with a permanent crane for maintenance as the highest feature that would extend approximately 70 feet above the existing ground surface. The temporary and permanent disturbed area for the pumping plant is included in the Southern Forebay area, described above.

South Delta Conveyance Facilities

The proposed project would include South Delta Conveyance Facilities that would extend from the new Southern Forebay to the existing Banks Pumping Plant inlet channel. The connection to the existing Banks Pumping Plant would be via canals with two tunnels to cross under the Byron Highway. The canals and associated control structures would be located over approximately 125 to 150 acres. Approximately 40 to 60 additional acres would be disturbed temporarily during construction. These facilities could also be used to connect the Southern Forebay to the CVP's Jones Pumping Plant.

Contract Amendment for Delta Conveyance

The proposed project may involve modifications to one or more of the State Water Resources Development System (commonly referred to as the SWP) water supply contracts to incorporate the Delta Conveyance Project. Therefore, if modifications move forward, the Delta Conveyance Project EIR will assess, as part of the proposed project, potential environmental impacts associated with reasonably foreseeable potential contract modifications.

PROJECT AREA

The proposed EIR project area for evaluation of impacts consists of the following three geographic regions, as shown in Figure 2, below.

- Upstream of the Delta region
- Statutory Delta (California Water Code Section 12220)
- South-of-Delta SWP Service Areas and, potentially, South-of-Delta CVP Service Areas.

The study areas will be specifically defined for each resource area evaluated in the EIR. Figure 3 shows the SWP South-of-Delta water contractors.



Figure 2. Project Area



Figure 3. SWP South-of-Delta Service Areas

ALTERNATIVES

As described above, the proposed project has been informed by past efforts taken within the Delta and the watersheds of the Sacramento and San Joaquin Rivers, including those undertaken through the Bay Delta Conservation Plan (BDCP)/California WaterFix. As stated in CEQA Guidelines Section 15126.6(a), the “EIR shall describe a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.”

The scoping process will inform preliminary locations, corridors, capacities and operations of new conveyance facilities to be evaluated in the EIR. In identifying the possible EIR alternatives to be analyzed in detail, DWR is currently considering alternatives with capacities that range from 3,000 to 7,500 cfs, with varying degrees of involvement of the CVP, including no involvement. DWR will make its final choice of potentially feasible alternatives to include in the Draft EIR after receipt of scoping comments.

POTENTIAL ENVIRONMENTAL EFFECTS

DWR as the lead agency will describe and analyze the significant environmental effects of the proposed project. DWR did not prepare an initial study so none is attached; the EIR will include the suite of resource categories contained in Appendix G of CEQA Guidelines. Probable effects may include:

- Water Supply: changes in water deliveries.
- Surface Water: changes in river flows in the Delta.
- Groundwater: potential effects to groundwater levels during operation.
- Water Quality: changes to water quality constituents and/or concentrations from operation of facilities.
- Geology and Seismicity: changes in risk of settlement during construction.
- Soils: changes in topsoil associated with construction of the water conveyance facilities.
- Fish and Aquatic Resources: effects to fish and aquatic resources from construction and operation of the water conveyance facilities.
- Terrestrial Biological Resources: effects to terrestrial species due to construction of the water conveyance facilities.
- Land Use: incompatibilities with land use designations.
- Agricultural and Forestry Resources: preservation or conversion of farmland.
- Recreation: displacement and reduction of recreation sites.
- Aesthetics and Visual Resources: effects to scenic views because of water conveyance facilities.
- Cultural and Tribal Cultural Resources: effects to archeological and historical sites and tribal cultural resources.
- Transportation: vehicle miles traveled; effects on road and marine traffic.

- Public Services and Utilities: effects to regional or local utilities.
- Energy: changes to energy use from construction and operation of facilities.
- Air Quality and Greenhouse Gas: changes in criteria pollutant emissions and localized particulate matter from construction and greenhouse gas emissions.
- Noise: changes in noise and vibration from construction and operation of the facilities.
- Hazards and Hazardous Materials: potential conflicts with hazardous sites.
- Public Health: changes to surface water could potentially increase concerns about mosquito-borne diseases
- Mineral Resources: changes in availability of natural gas wells due to construction of the water conveyance facilities.
- Paleontological Resources: effects to paleontological resources due to excavation for borrow and for construction of tunnels and canals.
- Climate Change: increase resiliency to respond to climate change
- Growth Inducement and Other Indirect Effects: changes to land uses as a result of changes in water availability resulting from changes in water supply deliveries

Where the potential to cause significant environmental impacts are identified, the EIR will identify avoidance, minimization, or mitigation measures that avoid or substantially lessen those impacts.

ADDITIONAL BACKGROUND INFORMATION

DWR previously studied a similar project through efforts on the BDCP and subsequently the California WaterFix. The proposed Delta Conveyance Project is a new project and is not supplemental to these past efforts or tiered from previous environmental compliance documents. This section provides background on these past efforts.

In October 2006, various state and federal agencies, water contractors, and other stakeholders initiated a process to develop what became known as the BDCP to advance the objectives of contributing to the restoration of ecological functions in the Delta and improving water supply reliability for the SWP and CVP Delta operations in the State of California.

In December 2013, after several years of preparation, DWR, Reclamation, the United States Fish and Wildlife Service, and the National Marine Fisheries Service, acting as joint lead agencies under CEQA and NEPA, published a draft of the BDCP and an associated Draft EIR/EIS. The Draft EIR/EIS analyzed a total of 15 action alternatives, including Alternative 4, which was identified as DWR's preferred alternative at that time.

In July of 2015, after taking public and agency input into account, the lead agencies formulated three new sub-alternatives (2D, 4A, 5A) and released a Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS) for public comment. Alternative 4A, which is known as "California WaterFix" was identified as DWR and Reclamation's preferred alternative in the RDEIR/SDEIS.

On July 21, 2017, DWR certified the Final EIR and approved California WaterFix. Following

that approval, DWR continued to further refine the project, resulting in reductions to environmental impacts. These project refinements required additional CEQA/NEPA documentation.

On January 23, 2018, DWR submitted an addendum summarizing proposed project modifications to California WaterFix associated with refinements to the transmission line corridors proposed by the Sacramento Municipal Utility District. The Addendum described the design of the applicable modified California WaterFix power features, proposed modifications to those power features (including an explanation of the need for the modifications), the expected benefits of the modifications to the transmission lines, and potential environmental effects as a result of those power related modifications (as compared to the impacts analyzed in the certified Final EIR).

On July 18, 2018, DWR released the California WaterFix Draft Supplemental EIR, which evaluated proposed changes to the certain conveyance facilities of the approved project. (No Final Supplemental EIR was ever completed, due to the change in direction dictated by Governor Newsom's State of the State speech and Executive Order N-10-19.) On September 21, 2018, Reclamation issued the California WaterFix Draft Supplemental EIS, including an alternatives comparison.

SCOPING MEETINGS

The proposed project is of statewide, regional or area-wide significance; therefore, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9, subdivision (a)(2). Public Scoping meetings are scheduled to take place at the following times and locations:

- Monday, February 3, 2020, 1 p.m. – 3 p.m. California Environmental Protection Agency Building, 1001 I Street, Sacramento
- Wednesday, February 5, 2020, 6 p.m. – 8 p.m. Junipero Serra State Building, 320 West Fourth Street, Los Angeles
- Monday, February 10, 2020, 6 p.m. – 8 p.m. Jean Harvie Community Center, 14273 River Road, Walnut Grove
- Wednesday, February 12, 2020, 6 p.m. – 8 p.m. Santa Clara Valley Water District Board Room, 5750 Almaden Expressway, San Jose
- Thursday, February 13, 2020, 6 p.m. – 8 p.m. San Joaquin Council of Governments Board Room, 555 Weber Avenue, Stockton
- Wednesday, February 19, 2020, 6 p.m. – 8 p.m. Clarksburg Middle School Auditorium, 52870 Netherlands Road, Clarksburg
- Thursday, February 20, 2020, 6 p.m. – 8 p.m. Brentwood Community Center Conference Room, 35 Oak Street, Brentwood

Anyone interested in more information concerning the EIR process, or anyone who has information concerning the study or suggestions as to significant issues, should contact Marcus Yee at (916) 651-6736.

WRITTEN COMMENTS

This notice is being furnished to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to consider in developing the EIR. The primary purpose of the scoping process is to identify important issues raised by the public and responsible and trustee public agencies related to the issuance of regulatory permits and authorizations and natural resource protection. Written comments from interested parties are invited to ensure that the full range of environmental issues related to the development of the EIR are identified. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Written comments on this part of the Scoping process will be accepted until 5 p.m. on March 20, 2020 and can be submitted in several ways:

- Via email: DeltaConveyanceScoping@water.ca.gov
- Via Mail: Delta Conveyance Scoping Comments, Attn: Renee Rodriguez, Department of Water Resources, P.O. Box 942836, Sacramento, CA 94236

As required by the CEQA Guidelines, within 30 days after receiving the Notice of Preparation, each responsible and trustee agency is required to provide the lead agency with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the responsible or trustee agency's area of statutory responsibility that will need to be explored in the EIR. In the response, responsible and trustee agencies should indicate their respective level of responsibility for the project.

PLEASE NOTE: DWR's practice is to make the entirety of comments received a part of the public record. Therefore names, home addresses, home phone numbers, and email addresses of commenters, if included in the response, will be made part of the record available for public review. Individual commenters may request that DWR withhold their name and/or home addresses, etc., but if you wish DWR to consider withholding this information you must state this prominently at the beginning of your comments. In the absence of this written request, this information will be made part of the record for public review. DWR will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of, or officials of, organizations or businesses, available for public inspection in their entirety.



CITY OF STOCKTON

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October 20, 2020

Via Electronic Mail

U.S. Army Corps of Engineers, Sacramento Regulatory Division
Attn: Mr. Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814-2922
Zachary.M.Simmons@usace.army.mil.

Re: COMMENTS ON NOTICE OF INTENT FOR ENVIRONMENTAL IMPACT STATEMENT – DELTA CONVEYANCE PROJECT

Dear Mr. Simmons:

These comments in response to the U.S. Army Corps of Engineers Sacramento Division's (USACE) Notice of Intent (NOI) for the development of an Environmental Impact Statement (EIS) for the Delta Conveyance Project (Project) are submitted on behalf of the City of Stockton ("Stockton" or "City").

I. BACKGROUND

With 315,000 residents, Stockton is the largest municipality wholly within the Sacramento-San Joaquin River Delta. It has a large environmental justice community and higher than statewide average percentage of residents who live below the poverty line. Stockton derives a substantial percentage of its water supply from Delta surface waters. The well-being of the City, its residents, and economy is thus inextricably linked to the Delta, the quantity and quality of Delta water supplies, and the Delta ecosystem.

Stockton relies on a portfolio of water supply sources and supporting infrastructure to meet existing and future demands. The City's Municipal Utilities Department provides potable drinking water to a service population of more than 180,000, which is approximately 55 percent of the municipal and industrial potable water demand of the Stockton Metropolitan Area. Stockton's water supply includes surface water rights to divert water up to 30 million gallons per day from the San Joaquin River, contracted surface water supplies, and groundwater. Stockton's most significant source of water is its Delta Water Supply Project (DWSP), which derives its source water via diversion works from the Sacramento/ San Joaquin River Delta at the southwest tip of Empire Tract. The Delta Water Treatment Plant (DWTP) treats water diverted under the City's San Joaquin River water right, as well as purchased

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Mokelumne River water. Stockton's acquisition of its own surface water rights and construction of its associated water treatment plant was key in reducing the City's reliance on groundwater through an active conjunctive use program.

In addition to providing potable drinking water, Stockton owns, operates, and maintains wastewater collection and treatment facilities that serve the entire Stockton Metropolitan Area. The City discharges treated wastewater to the San Joaquin River from its Regional Wastewater Control Facility (RWCF) under a National Pollutant Discharge Elimination System permit issued by the Central Valley Regional Water Quality Control Board. Wastewater discharge to the San Joaquin River following tertiary treatment is an essential service to Stockton's residential, commercial, and industrial sectors.

The location and operation of the Project intakes presents the potential for significant adverse impacts to Stockton's water supply and operation of its RWCF treated wastewater discharge, through water quality degradation, as well as public health impacts. Construction of the conveyance project, including truck, barge, and rail trips, could have significant adverse impacts from criteria pollutant and toxic emissions, including impacts to environmental justice communities.

II. COMMENTS ON THE SCOPE OF IMPACT ANALYSIS

A. The Scope of the National Environmental Policy Act (NEPA) Review Must Be Expanded to Include Potential Effects of Operation of the Intakes

The NOI describes the scope of USACE's jurisdiction as "limited to construction activities" and the scope of USACE's review under NEPA for operations of the new facilities as "limited to potential effects to navigation and long-term operations and maintenance of the modifications of federal levees" – explicitly excluding "[t]he future operation of the intakes after completion of construction" from USACE's "control or responsibility." However, this approach improperly constrains the required analysis under NEPA, as USACE has the necessary control and responsibility to expand its review to impacts of, and alternatives to, the full scope of Project construction activities and proposed onsite tunnel muck disposal, which will result in significant air quality impacts for Stockton citizens. The proper scope of NEPA analysis necessarily includes the operation of the intakes, which will affect the quality and reliability of water supply for Delta water users.

1. Operations of the Intakes Are Within USACE Jurisdiction

USACE's regulations implementing its NEPA responsibilities require it to conduct an environmental analysis for portions of the project "over which [USACE] has sufficient control and responsibility to warrant Federal Review." 33 C.F.R. pt. 325, app. B §§ 7(b)(1), 8(d) (applying the scope of analysis outlined in paragraph 7(b) to

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USACE’s preparation of an EIS). The scope of USACE’s analysis “should include direct, indirect and cumulative impacts on all Federal interests within the purview of the NEPA statute.” *Id.* pt. 325, app. B § 7(b)(3). For the purposes of NEPA, indirect effects include reasonably foreseeable effects on water. 40 C.F.R. § 1508.8. Accordingly, USACE’s review of potential effects to long-term operations and maintenance of the modifications of Federal levees necessarily includes consideration of the operations of the intakes. Because modifications of Federal levees is an integral component of the proposed water diversion and conveyance system, review of Federal levee construction under NEPA must include consideration of the ongoing significant environmental consequences of the intake operations.

2. *The Extent of Cumulative Federal Control and Responsibility Warrant Extending USACE’s NEPA Review Beyond its Jurisdiction*

Additionally, or alternatively, the cumulative Federal control and responsibility of the Project require that USACE expand its NEPA analysis beyond mere construction activities to include operation of the intakes. Sufficient “control and responsibility for portions of the project beyond the limits of Corps jurisdiction” exists “where the environmental consequences of the larger project are essentially products of the Corps permit action.” 33 C.F.R. pt. 325, app. B § 7(b)(2). Relevant to this consideration is “[t]he extent of cumulative Federal control and responsibility,” where “environmental consequences of the additional portions of the project are essentially products of Federal financing, assistance, direction, regulation, or approval,” and/or where “other Federal agencies are required to take Federal action under the Fish and Wildlife Coordination Act, the National Historic Preservation Act, the Endangered Species Act,” and other environmental laws and orders. *Id.* pt. 325, app B § 7(b)(2)(iv)(A)-(B) (citations omitted).

First, as relevant here, the Project is being designed to provide operational flexibility not only for the State Water Project (SWP), but also the Central Valley Project (CVP), a federally owned and operated water supply project. The Notice of Preparation (NOP) issued pursuant to the California Environmental Quality Act (CEQA) by the Project applicant, the California Department of Water Resources (DWR), identifies the potential use of the Project to “restore and protect the reliability of . . . [CVP] water deliveries south of the Delta . . .” and the Project includes facilities designed to accommodate use for CVP operations. See Exhibit A, NOP of Environmental Impact Report (EIR) for the Delta Conveyance Project, DWR, Jan. 15, 2020, at pp. 2, 3.¹ The

¹ As stated on page 3 of DWR’s NOP:

Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants).

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NOI makes no mention of these foreseeable Federal aspects of Project operations. To limit the scope of NEPA review to construction activities ignores the Project's stated purpose (see *La. Wildlife Fed'n, Inc. v. York*, 761 F.2d 1044, 1048 (5th Cir. 1985) ["it would be bizarre if the Corps were to ignore the purpose for which the applicant seeks a permit and to substitute a purpose it deems more suitable"]), and excludes additional portions of the Project which are products of Federal financing, assistance, direction, regulation, and approval.

Therefore, the Project will have environmental consequences resulting from coordinated operations of the SWP and CVP, warranting a broader scope of analysis under NEPA. Even if the Bureau of Reclamation (Reclamation) does not authorize direct participation in the Project by the CVP, the SWP and CVP water infrastructure are operated in a coordinated manner, pursuant to a 1986 Coordinated Operations Agreement. Joint points of diversion allow the use of one project's diversion facility by the other under certain conditions. The operation of the CVP and SWP diversion facilities alters the flow in Delta channels, creating reverse flows and stagnant zones. This results in insufficient flushing of Delta waters and the concentration of both regulated and currently unregulated water quality constituents. Due to the inextricably interrelated operations of the SWP and CVP, a decision by the USACE to authorize construction of Project facilities will have clearly foreseeable environmental consequences from their operation that are within the scope of Federal control and responsibility.

Second, other Federal agencies are required to take Federal action in the review and approval of the Project. As stated in the NOI, the preparation of USACE's EIS will require compliance with the National Historic Preservation Act, the Endangered Species Act, and the Fish and Wildlife Coordination Act – all of which are explicitly listed in USACE's implementing regulations as sufficient Federal involvement to expand the scope of federal action. 33 C.F.R. pt. 325, app. B § 7(b)(2)(iv)(B).

B. The EIS Must Identify and Thoroughly Evaluate Alternatives That Avoid the Project's Significant Water Quality Impacts

Where, as here, sufficient Federal control and responsibility over the entire project exists, "the NEPA review [should] be extended to the entire project, including portions outside waters of the United States" 33 C.F.R. pt. 325, app. B § 7(b)(3). NEPA further requires that USACE "[r]igorously explore and objectively evaluate all reasonable alternatives" to the Project, including "reasonable alternatives not within the jurisdiction of the lead agency." 40 C.F.R. § 1502.14.

Given the potential for significant impacts to the quality and reliability of water supply for Delta water users, and significant health impacts to Stockton's citizens (as well as Delta Reform Act mandates), the EIS should fully evaluate an alternative integrated within a probable climate change setting that does not include a north-Delta

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diversion or tunnel. Such an alternative, or alternatives, should include water reclamation, localized desalination, and increased capture, storage, and conjunctive use of localized rainfall in lieu of continued or increased Delta exports. The EIS also should evaluate an alternative that would include Delta levee rehabilitation and modifications to existing south Delta diversion facilities to increase their resilience to sea level rise and reduce their impacts to fish (i.e., installation of fish screens). Finally, the EIS should evaluate an alternative that avoids Delta water quality degradation by limiting any Sacramento River diversions to periods of extreme high flows.

III. COMMENTS ON THE METHODOLOGY OF IMPACT ANALYSES

A. The EIS Must Use a Baseline that Accurately Depicts Impacts Throughout the Life of the Project

Impact analyses that depend on Sacramento-San Joaquin River and Delta hydrologic conditions (including impacts to water quality, water supply, and public facilities that divert water from or discharge into the Sacramento-San Joaquin River Delta) must utilize a baseline that accurately reflects conditions at the time the Project is expected to begin operating, as well as reasonably foreseeable future conditions. Operational impacts to surface water resources and Delta water quality will occur immediately upon commencement of Project diversions and near-term impacts may be substantially different from those occurring farther in the future, when background hydrologic conditions will be substantially different due to the effects of climate change.

B. The EIS Must Evaluate Impacts to Stockton Delta Water Supply

Prior Delta conveyance planning efforts for the Bay-Delta Conservation Plan and California WaterFix prioritized water supply quality and reliability for south of Delta exporters over Delta communities, including Stockton. As a result, the State and south of Delta project proponents ignored evidence of the significant impacts to the City's water supply that would have resulted from the twin tunnels, which would have increased public health risks to Stockton's citizens from toxic harmful algal blooms (HABs) and rendered the City's surface water supply unusable for up to two months a year. Diverting a significant amount of Sacramento River water from the north Delta will make the City's surface water supply more saline, exacerbating climate-related effects. It also has the potential to modify Delta hydrodynamics, making Delta waters warmer and more stagnant, increasing the risk of HABs. Depending on the timing and volume of a north-Delta diversion, the Project may lead to need for increased surface water treatment, and compromise Stockton's ability to recycle water or recharge groundwater.

The EIS must adequately identify, analyze, and avoid or mitigate the Project's potential impact on the City's San Joaquin River water supply diverted at the DWSP. In evaluating impacts to Stockton, the EIS must employ the appropriate methodology

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and account for the unique circumstances of the City's diversion location and treatment plant capabilities. In developing the modeling and EIS analysis of these issues, USACE should carefully consider the expert evidence submitted by Stockton in the WaterFix water rights change petition hearing before the State Water Resources Control Board (SWRCB). Specifically, Stockton refers USACE to the work by Dr. Susan Paulsen, which will inform USACE of the type of information, assumptions, and methodology necessary to properly evaluate these impacts.²

As detailed in Dr. Paulsen's testimony and expert reports, in order to provide meaningful information about the Project's potential water quality impacts, USACE must evaluate water quality changes using data from a new monitoring station located nearer to the DWSP diversion works or other location more representative of the conditions at Stockton's intake, and present information about water quality changes on daily, weekly, and monthly timescales relevant to drinking water operators in the Delta. In Stockton's case, this means the EIS must calculate and present data about changes on a daily basis, which is the relevant timescale for the City's real time operation of the DWTP (not the long-term monthly average data and cumulative probability diagrams used in the WaterFix EIR/EIS). It also must properly evaluate and account for changes in residence time, including the tidal nature of flows in the Delta and at Stockton's intake along the Deepwater Ship Channel.

With longer residence times, flushing of the Delta decreases. Certain water quality constituents, including chloride, electrical conductivity, bromide, and organic carbon, are present in high concentrations in sources within the Delta and can accumulate within the Delta over time. Thus, longer residence times correlate with higher concentrations of these constituents and result in higher potential for HABs and microcystis growth. Toxic HABs and cyanotoxins, such as microcystis, are a growing public health threat to Stockton residents that will be exacerbated by climate change and any new Delta conveyance that diverts water from the Sacramento River in the northern Delta. The EIS must recognize this threat, and thoroughly consider impacts to Delta hydrodynamics, including residence time, velocity, and water temperature effects, and evaluate alternatives that will not increase the frequency or duration of cyanotoxins or HABs.

² See Rebuttal Testimony of Susan Paulsen, STKN-025 (May 23, 2017), available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/Stockton/stkn_25.pdf (last visited Oct. 14, 2020); Report on the Effects of the California WaterFix Project on the City of Stockton, STKN-026 (May 23, 2017) available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/Stockton/stkn_26.pdf (last visited Oct. 14, 2020); Sur-Rebuttal Testimony of Susan Paulsen, STKN-047 (June 22, 2017), available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/Stockton/stkn_47.pdf (last visited Oct. 14, 2020); Technical Response to Petitioners' Rebuttal Testimony in the WaterFix Proceedings, STKN-048 (June 22, 2017); available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/Stockton/stkn_48.pdf (last visited Oct. 14, 2020). Please contact me if you are unable to access any of these materials.

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Chloride impacts must be assessed in light of the number of days the Project would cause water quality at the DWSP intake to exceed the City's operational threshold of 110 milligrams per liter (mg/L) chloride. USACE must not rely solely on existing water quality objectives to assess impact significance; as was demonstrated in the Stockton's WaterFix testimony, significant impacts to the City's water supply will occur if the Project causes chloride levels at the DWSP intake to exceed the City's operational threshold of 110 mg/L. Avoidance or full mitigation of impacts to Stockton's water supply must occur even if the Project would not cause exceedance of current water quality objectives.

IV. CONCLUSION

USACE has the requisite control and responsibility to expand its review to impacts and alternatives to the full scope of Project construction activities, including operation of the intakes, and its analysis under NEPA must be expanded accordingly. Because the Project is likely to have significant adverse impacts to Stockton's water supply, and the health of its residents, USACE's broadened NEPA analysis must include consideration of effects on air quality, human health, environmental justice communities, and water resources, including a robust analysis of alternatives to ensure that all impacts are accurately and adequately evaluated and fully avoided or mitigated. City staff are available to answer questions about these comments and provide any additional information that will help ensure that the Project EIS accurately evaluates and discloses, and thoroughly mitigates, impacts to Stockton. Please contact Dr. Mel Lytle at (209) 612-3147 or mel.lytle@stocktonca.gov.

JOHN ABREW
DIRECTOR OF MUNICIPAL UTILITIES



C. MEL LYTLE, Ph.D.
ASSISTANT DIRECTOR OF MUNICIPAL UTILITIES

JA:CML:jad

cc: John Abrew, Director of Municipal Utilities
John Luebberke, City Attorney
Lori Asuncion, Assistant City Attorney
Kelley Taber, Attorney, Somach Simmons & Dunn

From: [Briana Yah](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Cc: info@californiasalmon.org
Subject: [Non-DoD Source] Comment to the Army Corp: The Delta Tunnel project
Date: Tuesday, October 20, 2020 4:38:17 PM

Hello,

My comment today is on the federal 404 process for permits for the Delta Tunnel Conveyance Project. I'll be identifying issues with the Delta Tunnel project along with supporting the Indigenous communities that will be impacted because of it.

First off, the Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/ Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all at risk. Loss of habitat, low river flows and poor water quality are the main issues impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse!!!

Secondly, the Delta Tunnel Project would divert up to two-thirds of fresh water flowing into the Delta from the Sacramento River. Some of these freshwater flows come from the Trinity River, which would impact the Klamath River temperatures and water quality. Fresh water flows are critical for sustaining the habitat for hundreds of fish and wildlife species, as well as stopping salt water intrusion from the Bay and flushing out the hundreds of thousands of tons of pollutants and salts that accumulate in the Delta annually.

Thirdly, the fact that the State of California is working with the Trump Administration to permit this project and push it forward, without holding public hearings, and while the communities most impacted by the Tunnel cannot engage due to inequitable access to the internet, is unjust. Decisions should not be made without proper community engagement.

Lastly, in March 2020, over 200 people, including members from at least 7 Tribes, attended California's Delta Tunnel hearing in Redding and testified as to why the Delta Tunnel and associated Sites Reservoir would be detrimental to North Coast rivers and Native communities.

It is time to take the concerns of Tribal nations seriously!!

--

B. Yah-Diaz

Pronouns: they/them/theirs

Critical Race Gender & Sexuality Studies Major

Native American Studies Minor

"won't you celebrate with me

what i have shaped into
a kind of life? i had no model.
born in babylon
both nonwhite and woman
what did i see to be except myself?
i made it up
here on this bridge between
starshine and clay,

my one hand holding tight
my other hand; come celebrate
with me that everyday
something has tried to kill me
and has failed."

from "won't you celebrate with me" <Blocked<https://www.poetryfoundation.org/poems/50974/wont-you-celebrate-with-me>> " - Lucille Clifton

From: [Carrie Tully](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel Conveyance Project
Date: Tuesday, October 20, 2020 4:21:21 PM

Dear Mr. Simmons,

As people who support the efforts, lives, and future of not only California and its peoples, but the quality of its water and the lives that exist within it, the Delta Tunnel Conveyance Project needs to be stopped.

The Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/ Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all imperiled. They experience loss of habitat, low river flows and poor water quality, which impact the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse.

The Delta Tunnel Project would divert up to two-thirds of fresh water flowing into the Delta from the Sacramento River. Some of these freshwater flows come from the Trinity River, which would impact the Klamath River temperatures and water quality. Fresh water flows are critical for sustaining the habitat for hundreds of fish and wildlife species, as well as stopping salt water intrusion from the Bay and flushing out the hundreds of thousands of tons of pollutants and salts that accumulate in the Delta annually.

The fact that the State of California is working with the Trump Administration to permit this project and push it forward, without holding public hearings, and while the communities most impacted by the Tunnel cannot engage due to inequitable access to the internet, is unjust. Decisions should not be made without proper community engagement.

In March 2020, over 200 people, including members from at least 7 Tribes, attended California's Delta Tunnel hearing in Redding and testified as to why the Delta Tunnel and associated Sites Reservoir would be detrimental to North Coast rivers and Native communities. It is time to take the concerns of Tribal nations seriously. This effort was led by Indigenous youth, who should not have to travel hundreds of miles in order to tell the State of California that their plans are hurting them and their communities.

We know that you can help stop this project. We are in a global crisis unlike anything else ever experienced by humans. Now is the time to make the right decisions for California's people, water, fish....and FUTURE.

Thank you for taking the time to read this message.

Sincerely,
Carrie Tully

Environment & Community Graduate Student

I am on the land of the Wiyot peoples which includes the Wiyot Tribe, Bear River Rancheria and Blue Lake Rancheria. Arcata is known as Goudi'ni meaning "over in the woods" or "among the redwoods." The persistence of the Wiyot peoples to remain in relationship with these lands despite their attempted genocide, compels me to spread awareness to my inner and extended community regarding the true history of this space. I strive to hold myself and others accountable for the continuation of colonial acts which neglect to include the voices and needs of

these Tribes, while remembering to lead with compassion.

Also on the land of the Wiyot Peoples? Contribute <http://www.honortax.org/doc/taxform.pdf> ! Want to know whose land <https://native-land.ca> you're on?

From: [Caty Wagner](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel
Date: Tuesday, October 20, 2020 4:17:20 PM

Mr. Simmons,

The Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/ Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all imperiled. Loss of habitat, low river flows and poor water quality are the main issues impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse. We urge you not to move forward with the Delta Tunnel and instead improve existing infrastructure.

--

In solidarity,

Caty Wagner, MPA

she/hers

Southern California Water Organizer

203.988.3584

Facebook <Blocked<https://www.facebook.com/SierraClubCA/>> | Twitter

<Blocked<https://twitter.com/SierraClubCA/>> | Insta <Blocked<https://www.instagram.com/sierraclubcalifornia/>>

<Blocked<https://act.sierraclub.org/actions/California?actionId=AR0282870>>

From: [Charming Evelyn](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel Scoping Comments
Date: Tuesday, October 20, 2020 4:44:48 PM

Dear Mr. Simmons,

Through my role as a volunteer, I have worked on many water issues, and unfortunately I've been working on the Delta water issues for over 10 years. This project needs to be denied. This project would increase diversions from the Sacramento and Trinity Rivers, decimate the ecology and flows of the Bay Delta, and push already troubled ecosystems into collapse.

The Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/ Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all imperiled. Loss of habitat, low river flows and poor water quality are the main issues impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse. Since 2018 there have been no native Delta Smelt found, we now depend on hatcheries to release Delta Smelt into an ecosystem that the Salmon depend on for spawning.

Delta Smelt or the lack of denote an ecosystem in trouble. This project has been denied by the CA electorate under Jerry Brown in the 80's when it was the Peripheral Canal, defeated again as the Bay Delta Conservation Project and defeated in 2018 as CA WaterFix.

Not to mention the social justice impacts to the inhabitants of the Delta region who depend on fishing as a livelihood, the people of Stockton with the worst air quality in CA, being subjected to over 100 truck trips per day to haul out muck from the river for 5 years! Cost is another factor, why should disenfranchised communities pay for water they will never receive? The beneficiaries are big agriculture conglomerates.

These tunnels do NOT provide resilience in the face of snow droughts and excessive heat, neither does it provide sustainability - it is not earthquake proof, because it will be dependent on infrastructure to move water that was built along the San Andreas fault. For all the reasons above please stop the Delta Project.

Stop trying to deny the will of WE the people, we don't want this project!

Regards,

Charming Evelyn
Chair - Water Committee
Vice Chair Environmental Justice Committee
Sierra Club Angeles Chapter

Co-Chair CA Conservation Committee - Water
Sierra Club CA
Pronouns: she, her, hers

213-385-0903

From: [Cheryl Cox](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Cc: johnwcox@earthlink.net
Subject: [Non-DoD Source] Oppose Permit per Notice SPK-2019-00899
Date: Tuesday, October 20, 2020 11:36:30 AM
Importance: High

To: U.S. Army Corps of Engineers

Sacramento Regulatory Division

Zachary.M. Simmons@usace.army.mil

We are writing to protest the permit application per Public Notice SPK-2019-00899 to construct two water intakes and setback levees along the Sacramento River, as well as all accompanying tunnel shafts, forebays, etc. as part of the Delta Conveyance Project.

There are many excellent reasons to deny this permit based on scientific, economic and environmental factors which the Department of Water Resources continues to ignore, but there is another reason to deny this permit – because their plan will destroy our home, which has significant historical significance to the Delta community and is on the National Register of Historic Places.

Rosebud Rancho has been part of the Sacramento Delta since the 1860's. William Johnston, like so many others came to California bound for the gold fields on August 26, 1849. But after about a year, he purchased a squatter's title to a quarter section of land on the Sacramento River, where he lived and sought his fortune in the "gold" of the rich California soil. He married Elizabeth Hite, from another Delta family in 1854; they raised 5 children and expanded Rosebud Rancho to a magnificent 1,200 acres, with a 400' dock to ship produce and dairy both up river, and to San Francisco.

Johnston was a very active member of the community and achieved both state and national prominence, serving in many public positions. He was well respected and eventually served as assemblyman in 1871 and 1872, and as a state senator in 1880 and 1881. While in the Senate, he was honored as President Pro Tem.

As he expanded his farming operation, he sought to build a magnificent home for his family as well, and in the early 1870's he engaged the noted architect, Nathaniel Goodell, who also achieved fame as the designer of the Governor's Mansion in Sacramento. Eventually Rosebud Mansion was completed around 1877 and it was one of the grandest residences on the Sacramento River. Three generations of the Johnston/Edinger family lived in the home until it was sold in 1968 to prominent artist, Wayne Thiebaud. Thus started a nearly twenty year period of five different owners.

Rosebud was placed on the National Register of Historic Places in 1979, due not only to the magnificent Victorian design, but also to the prominence of her original owner. However when we purchased her in 1987, the "bloom was certainly off the rose" and we began a major restoration. A fire in 1989 set us back for a few months, until we

found architect Bob McCabe, renowned for his work on numerous historical buildings. Proponents of the “Tunnel” projects have used an article in the Sacramento Bee that said the fire “destroyed the entire house except for the façade” as a way to mitigate their determination to tear down our home which is in the path of one of their proposed intakes. But the original journalist never checked their facts, and you should never believe just what you read!

Much more than “the façade” was saved as fire fighters from 4 different departments pumped over 140,000 gallons of water from the nearby river to extinguish the fire. Most of what was burned completely was additions on the south east that had been built in 1912. Some rooms were mostly intact and others had various degrees of loss to the wood and plaster work. Bob McCabe’s resources and some miracle workers we found over the next two years guaranteed that we would not end up with a “reproduction.”

Their commitment to preserve the original fabric of our home made for an enormous jigsaw puzzle of work. Plaster walls and ceilings become a patchwork of the original plaster that only needed metal washers to stabilize it, next to original lath, merging with button board where new plaster was applied to both. Since the wood trim and doors of the entire main floor were again being “faux grained”, burned doors were saved with bondo, sanded and primed for painting, not replaced. The same painstaking restoration continued for the marble fireplaces -all five were restored, not replaced – even though one was broken into more than 100 pieces! There are dozens of other examples of the enormous commitment we made to preserve Rosebud.

In 1993, Rosebud Rancho won the California Preservation Foundation’s award for Craftsmanship. This is an excerpt from the recognition we received: “their decision to retain as much of the original historic fabric as possible was pursued with an impressive zeal. Burned structural members were retained and encapsulated; burned sections of original doors and woodwork were repaired with inlays and regrained; This project showed great dedication and skills on the part of all involved.”

But now, the proposed engineering facilities for this water diversion project includes a “Permanent Surface Impact” that runs right through our home as well as our property next door. The California Department of Water Resources has ignored testimony for over ten years about the devastation this water project will bring to our Delta communities and they have turned a blind eye to the mandatory environmental impact reports affecting properties on the National Register of Historic Places by lying about our current listing with the NRHP. Their rush to get federal permits is an abuse of the President’s June 4, 2020 Executive Order on Accelerating the Nation’s Economic Recovery by Expediting Infrastructure Investments. The Delta tunnel is not an economic stimulus project for Delta communities – it will destroy them.

Therefore, we urge you to deny this permit, and save our home!

Sincerely,

Cheryl and John Cox



Hood, California 95639

clcox@stlltd.com

From: [Kar Ellis](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel Conveyance Project Statement from a Concerned Citizen
Date: Tuesday, October 20, 2020 4:27:22 PM

Dear Zachary Simmons,

The Delta Tunnel project will have long-term, irreversible effects on the ecosystem and the future of California's water resources. Alongside the several keystone fish species that rely on the watershed to both spawn and travel, the people of California will lose out on healthy drinking water as these projects are carried out in the interest of the state's agriculture. Is it right to be going through with this project during a pandemic, where many people cannot actively protest or comment on the proceedings? 8 tribes in California have testified against the tunnel, and yet there will be NO public hearings on this permit. For the health of ALL of California, please reconsider this project.

Thank you for reading my email, I sincerely hope you take the time to read both my words and countless other statements on Twitter, Instagram, and, likely, alongside this message in your email. #NoDeltaTunnel, #ProtectTheDelta, #DeltaTunnel, and so on have been the most popular for online commentary on the topic, and I urge you to immerse yourself in what people, specifically Native communities, have to say online. I hope this email finds you well amidst the pandemic, and appreciate your time.

Sincerely,

Cody Ellis.

From: [Danielle Frank](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel Project
Date: Tuesday, October 20, 2020 5:05:36 PM

The Delta tunnel project threatens to exacerbate problems such as loss of habitat, low river flows, and poor water quality in the Klamath and Sacramento River / Bay Delta. These issues are already the main reason the spring chinook and coho salmon are currently facing extinction and the salmon, delta smelt, and green sturgeon are all imperiled in the Sacramento River. This project threatens to push entire ecosystems into collapse. Did you know that indigenous people protect 80% of the global biodiversity, all while only comprising less than 5% of the population? This is direct proof when this many tribes are telling you this is a terrible idea with devastating results you should listen. We've taken care of this land since time immemorial, just as it has taken care of us, and will continue to do so forever. Please if you want there to be beautiful places left in the world deny this project.

Sincerely,

Danielle Rey Frank (Hupa Tribal Member)

From: [Ethan Hirsch-Tauber](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Please stop the Delta Tunnel project!
Date: Tuesday, October 20, 2020 6:08:43 PM

Dear Zachary Simmons,

I am writing to you today to ask you to please take the health and well being of the people and ecological systems of California into account by taking the action to cancel the Delta Tunnel project. The following points describe several of the key reasons that I believe this plan needs to be ended now:

- * The Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all imperiled. Loss of habitat, low river flows and poor water quality are the main issues impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse.
- * The Delta Tunnel Project would divert up to two-thirds of fresh water flowing into the Delta from the Sacramento River. Some of these freshwater flows come from the Trinity River, which would impact the Klamath River temperatures and water quality. Fresh water flows are critical for sustaining the habitat for hundreds of fish and wildlife species, as well as stopping salt water intrusion from the Bay and flushing out the hundreds of thousands of tons of pollutants and salts that accumulate in the Delta annually.
- * The fact that the State of California is working with the Trump Administration to permit this project and push it forward, without holding public hearings, and while the communities most impacted by the Tunnel cannot engage due to inequitable access to the internet, is unjust. Decisions should not be made without proper community engagement.
- * In March 2020, over 200 people, including members from at least 7 Tribes, attended California's Delta Tunnel hearing in Redding and testified as to why the Delta Tunnel and associated Sites Reservoir would be detrimental to North Coast rivers and Native communities. It is time to take the concerns of Tribal nations seriously. This effort was led by Indigenous youth, who should not have to travel hundreds of miles in order to tell the State of California that their plans are hurting them and their communities.

Thank you for considering these important negative impacts on the people, lands, and waters of California. Please make the right decision in canceling the plans for the Delta Tunnel.

Sincerely,
Ethan Hirsch-Tauber

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Ethan Hirsch-Tauber

Founder and CEO, Worldwide Water Wizards, Ltd.

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ethan@worldwidewaterwizards.org <<mailto:ethan@worldwidewaterwizards.org>>

Blockedwww.worldwidewaterwizards.org <Blocked<http://www.worldwidewaterwizards.org>> | : Skype etauber

From: [Eva Iglesias](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] San Francisco Bay Area tunnel
Date: Tuesday, October 20, 2020 5:01:04 PM

Dear Zachary Simmons,

I am writing to you as a resident of the Bay Area and yearly vacationer at the Shasta-Trinity wilderness.

I think the Delta Tunnel project would have terrible consequences for California and it should be stopped:

- * Several species of fish at the Klamath River, Sacramento River, and Bay Delta are either facing extinction or seriously imperiled. For years, they have been submitted to loss of habitat, artificially low river flows (due to dams) and poor water quality. Currently, only 20% of the Sacramento River reaches the delta. The tunnel would exacerbate these problems and push ecosystems into collapse.
- * Fresh water flows are critical for sustaining the habitat for hundreds of fish and wildlife species, as well as stopping salt water intrusion from the Bay and flushing out the hundreds of thousands of tons of pollutants and salts that accumulate in the Delta annually. Without this fresh water flows, even drinking water quality may suffer.
- * There are freshwater springs underneath the delta, that the tunnels (35 miles at 150 feet depth) would likely disturb. These freshwater springs are believed to be critical to balancing the current fragile delta ecosystem.
- * The fact that the State of California is pushing this project forward, without holding public hearings, and while the communities most impacted by the Tunnel cannot engage due to inequitable access to the internet, is unjust. Decisions should not be made without proper community engagement.
- * In March 2020, over 200 people, including members from at least 7 Tribes, attended California's Delta Tunnel hearing in Redding and testified as to why the Delta Tunnel and associated Sites Reservoir would be detrimental to North Coast rivers and Native communities. It is time to take the concerns of Tribal nations seriously.

Sincerely,

Eva Iglesias

From: [Grace Brahler](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Conveyance Project Comment
Date: Tuesday, October 20, 2020 5:38:37 PM

Dear Mr. Simmons,

I am an Oregon resident with several close ties to California through family and friends. I often travel south to visit my brother, who has lived and worked in and around the Sacramento area for many years now. We love to spend time exploring the outdoors during these visits and I am always in awe of the unique beauty of California's waterways. With this beauty in mind, I write to you regarding the Delta Tunnel Conveyance Project and encourage you to meaningfully engage community members in the decisionmaking process.

The Delta Conveyance Project would exacerbate issues like habitat loss, low river flow, and poor water quality that threaten numerous fish species (endangered Klamath River spring Chinook and Coho salmon, Sacramento River/Bay Delta winter run salmon, spring salmon, delta smelt, and green sturgeon). The project proposes diverting freshwater flows that are crucial for flushing out pollutants and salts that accumulate in the Delta and maintaining habitable temperatures. The Environmental Impact Statement should analyze impacts to source waters as well as water conservation, efficiency, and additional demand reduction measures that would be less environmentally harmful and more economical than the tunnel while achieving the same water supply reliability goals and targets. The EIS should also take a hard look at the impacts of moving 300 million cubic yards of soil from the Delta during construction, including destruction of or interference with sacred or historical sites and soil contamination levels.

Most importantly, the voices of marginalized communities have been ignored throughout and largely excluded from this decision-making process. The Corps must take the time to engage the local communities who will be most severely impacted by the project—it is unjust not to. I implore the Corps to take the concerns of local Tribes, especially indigenous youth who traveled long distances to express their opposition to the project and all of its detrimental impacts, seriously. Tribal members have not had access to historic fish runs, which impacts folks financially, physically, and culturally. The Environmental Impact Statement should analyze impacts to California's salmon people, including salmon-dependent Tribes and coastal fishing communities.

Thank you for your work on this matter and for the consideration of my comments.

Best regards,

Grace Brahler

Grace K. Brahler
(she/her/hers)
grace.brahler@gmail.com <<mailto:grace.brahler@gmail.com>>

From: [Hazel Goode](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Deny the Tunnel Project
Date: Tuesday, October 20, 2020 4:19:28 PM

The Delta Tunnel Project would divert up to two-thirds of fresh water flowing into the Delta from the Sacramento River. A large amount of these freshwater flows come from the Trinity River, which would impact the Klamath River temperatures and water quality. Fresh water flows are critical for sustaining the habitat for hundreds of fish and wildlife species, as well as stopping salt water intrusion from the Bay and flushing out the hundreds of thousands of tons of pollutants and salts that accumulate in the Delta annually. Please deny the Delta Tunnel Project as it will be extremely detrimental to the Klamath River, the river delta, the drinking water quality for people throughout the state of California, and the livelihoods of the many Native peoples who rely on the river.

From: [Holly Christiansen](#)
To: Zachary.M.Simmons@usace.army.mil
Subject: [Non-DoD Source] Re Delta Tunnel project proposal
Date: Tuesday, October 20, 2020 4:27:41 PM

To: Project Manager, Zachary Simmons

Regarding the proposed Delta Tunnel project

There are so many reasons this project should not go forward with seen and unseen impacts that are not worth the risk for the small few it will benefit.

Climate change is upon us. California is entering a drought for the next few million years. Where will this this water be coming from?

The Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/ Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all imperiled. Loss of habitat, low river flows and poor water quality are the main issues impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse.

In March 2020, over 200 people, including members from at least 7 Tribes, attended California's Delta Tunnel hearing in Redding and testified as to why the Delta Tunnel and associated Sites Reservoir would be detrimental to North Coast rivers and Native communities. It is time to take the concerns of Tribal nations seriously. This effort was led by Indigenous youth, who should not have to travel hundreds of miles in order to tell the State of California that their plans are hurting them and their communities.

The fact that the State of California is working with the Trump Administration to permit this project and push it forward, without holding public hearings, and while the communities most impacted by the Tunnel cannot engage due to inequitable access to the internet, is unjust. Decisions should not be made without proper community engagement.

Also there is concern for the aquifers underground that are currently sustaining the remaining native fisheries.

Thank you for considering a just, sane solution.

Best regards,
Holly Christiansen

From: [Jess O](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] NO Delta Tunnel!
Date: Tuesday, October 20, 2020 4:12:46 PM

Dear Mr. Simmons,

NOBODY up here on the northcoast wants our rivers ruined by the Delta Tunnel. Please put a STOP to this horrible idea.

Klamath chinook and coho salmon are about to go extinct, we cannot be destroying the river with this awful tunnel.

We need to restore river flows and poor water quality.

Hopefully the Army Corp can help do that instead of these destructive tunnels.

Thanks for your time.

Sincerely,
Jess O'Brien
Arcata, CA

From: [Kelsey Reedy](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] #NoDeltaTunnel
Date: Tuesday, October 20, 2020 5:03:29 PM

Project Manager of Army Corp,

The Klamath River spring chinook and coho salmon are currently facing extinction, and the Sacramento River/ Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon are all imperiled. Loss of habitat, low river flows and poor water quality are the main issues impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse.

The Delta Tunnel Project would divert up to two-thirds of fresh water flowing into the Delta from the Sacramento River. Some of these freshwater flows come from the Trinity River, which would impact the Klamath River temperatures and water quality. Fresh water flows are critical for sustaining the habitat for hundreds of fish and wildlife species, as well as stopping salt water intrusion from the Bay and flushing out the hundreds of thousands of tons of pollutants and salts that accumulate in the Delta annually.

The fact that the State of California is working with the Trump Administration to permit this project and push it forward, without holding public hearings, and while the communities most impacted by the Tunnel cannot engage due to inequitable access to the internet, is unjust. Decisions should not be made without proper community engagement.

In March 2020, over 200 people, including members from at least 7 Tribes, attended California's Delta Tunnel hearing in Redding and testified as to why the Delta Tunnel and associated Sites Reservoir would be detrimental to North Coast rivers and Native communities. It is time to take the concerns of Tribal nations seriously. This effort was led by Indigenous youth, who should not have to travel hundreds of miles in order to tell the State of California that their plans are hurting them and their communities.

Please contact me if you have any questions!

#NoDeltaTunnel #SaveTheWater #SaveTheSalmon

-Kelsey

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Kelsey Reedy
Coordinator
Humboldt Affiliate
Move to Amend Coalition
Blocked<https://movetoamend.org> <Blocked<https://movetoamend.org/>>
(707) 362-7421

End Corporate Rule. Legalize Democracy. Move to Amend.

Find us on Facebook <Blocked<https://www.facebook.com/HCMETA/?ref=bookmarks>> & Twitter

<Blocked<http://twitter.com/MoveToAmend>> !

From: [Kerry Reynolds](#)
To: [Simmons, Zachary M CIV USARMY CESP \(USA\)](#)
Subject: [Non-DoD Source] Please deny permit for the Delta Tunnel Conveyance Project
Date: Tuesday, October 20, 2020 4:21:17 PM

Dear Zachary,

I am writing to comment that I strongly oppose the Delta Tunnel Conveyance Project. This project would push already suffering ecosystems into complete destruction. The salmon populations of the Klamath River are all declining, and some are near extinction. This project will cause even more loss of habitat and poor water quality. The Army Corp of Engineers can help bolster the recovery of the Klamath River by denying this permit. Please say no to the permit today!

Kerry Reynolds
Trees Foundation

From: [Lisa Kirk](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Comments Notice of Intent Delta Conveyance
Date: Tuesday, October 20, 2020 10:20:10 PM

My name is Lisa Kirk I live at [REDACTED]. I am also a business owner in Locke, California.

I requested that ACOE EIS analyze the tunnels consistency with the Delta reform act and the co-equal goals of the state legislation of 2009. Although these are state mandates Federal projects should include this in their scoping and any EIS.

A National Historical Preservation Act Section 106 should be conducted. Impacts on communities, fish and wildlife should be documented during and post construction. Any and all alternatives of one tunnel should be defined in the EIS and evaluated through NEPA.

It is the duty of the State of California to provide water quality protection to fish and wildlife that makes up the delicate ecosystem within the delta. Federal Acts mandate formulation of water quality standards to provide salinity control. This study should be included in the EIS.

A water availability analysis should be conducted before any action is taken.

Both the state and federal players have a duty to preserve the Waters of the state as trust property and to prevent harmful diversions by water right holders and consider the amount of water for recreation enhancement and a fish and wildlife.

Thank you, Lisa Kirk
925-382-5249

From: [Mar Cam](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] NO on the federal 404 process for permits for the Delta Tunnel Conveyance Project
Date: Tuesday, October 20, 2020 4:28:28 PM

To Project Manager, Zachary Simmons,

My name is Mari and I am a resident of California. I am writing to you today for stop the Delta Tunnel Project. There are many people in California that do not agree with the Project and are concerned over the long-term affects this will have on our habitats, water quality, and water costs. If there is loss of habitat, low river flows, and poor water quality the fish and our biodiverse ecosystem will collapse. Research has proven that we do not need dams, we need to restore native ecosystems such as beaver dams and we need a focus on providing quality drinking water and quality water for the rivers, home to many spring chinook, coho salmon, delta smelt, green sturgeon and so much more.

I urge you to take actions to stop the Delta Tunnel Project. We need more actions for a beautiful future where our rivers flow, rich with fish and no dams preventing this.

Thank you for your time.

Best,

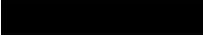
Mari

From: [Nancy K](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel - No
Date: Tuesday, October 20, 2020 4:29:00 PM

Dear

I write today opposing the Delta Tunnel project. This project will push salmon and other endangered species over the edge. Native Americans (NA) have not been able to fully engage their water rights due to historical discrimination and genocide. NA culture is damaged when salmon are unavailable for cultural and subsistence purposes. The entire ecosystem is damaged when salmon runs are depleted, removing a vital source of nutrients from forests. Restoring the river system and fisheries would bring a longer term benefit than the Tunnel project, and water can be further conserved to replace the Sites part of the project. We must protect our resources now more than ever due to climate change. Thank you.

Nancy Kuykendall


Eureka, CA 95503

From: [Neara Russell](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] LA Resident Opposes the Delta Tunnel
Date: Tuesday, October 20, 2020 4:28:22 PM

Project Manager Simmons,

I am a Los Angeles resident who is deeply concerned about the proposed Delta Tunnel. As you and your team analyze this project and its many impacts, I urge you to consider the following:

The Klamath River and Sacramento River/Bay Delta are home to several endangered fish, including spring chinook, coho salmon, and green sturgeon. Many of these fish are near extinction and will be forced closer to the brink because of this project. These river ecosystems are already drastically affected by loss of habitat, water pollution, and low flow rates. The Delta Tunnel project will exacerbate these issues and push already threatened ecosystems into irreversible damage.

As an LA resident, I am not only concerned for this destruction of habitat, but also of the increase in my water bills to fund this project. I also stand in support of the Delta Tribes whose sacred homelands and livelihoods will be directly impacted.

In your analysis, I encourage you to consider not only the immediate environmental effects of this tunnel, but also the far-reaching repercussions for this generation and beyond. This tunnel will negatively impact water and habitat quality for Stockton, Los Angeles, and the Bay-Delta; fisheries in Del Norte; the Klamath, Trinity, AND Sacramento Rivers; tribal lands; and nearly every stretch of California and its residents for years to come.

Sincerely,

Neara R.
Los Angeles, CA 90042

From: [Percy Vazquez](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] No Delta Tunnel
Date: Tuesday, October 20, 2020 4:17:50 PM

Dear Zachary Simmons,

I am writing in opposition to the Delta tunnels. It will be a destructive project that will impact the Klamath River spring chinook and coho salmon who are currently facing extinction. It will impact the imperiled Sacramento River/Bay Delta winter run salmon, Spring Salmon, delta smelt, and green sturgeon. I also say no to loss of habitat, low river flows and poor water quality that are impacting the fish in both watersheds. The Delta Tunnel would exacerbate these problems and would push ecosystems into collapse

Sincerely,
Priscilla Vazquez

From: [Sarah Springfield](#)
To: [Simmons, Zachary M CIV USARMY CESPK \(USA\)](#)
Subject: [Non-DoD Source] Delta Tunnel Comment
Date: Tuesday, October 20, 2020 4:20:06 PM

Hello,

I am writing to submit a comment in regard to the proposed Delta Tunnel project. Approval of the project would have an abysmally negative effect on local fish populations and is an act of environmental racism perpetuated against local Native people. As a voter and taxpayer, I urge the Army Corp of Engineers to deny permits for the project.

Thank you,
Sarah Springfield

Stephan C. Volker
Alexis E. Krieg (Of Counsel)
Stephanie L. Clarke
Jamey M.B. Volker (Of Counsel)

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svolker@volkerlaw.com

10.575.01
11.245.01

October 20, 2020

VIA EMAIL

Zachary M. Simmons
U.S. Army Corps of Engineers
Sacramento Division
Zachary.M.Simmons@usace.army.mil.

**Re: Public Notice SPK-2019-00899: Notice of Intent to Prepare an
Environmental Impact Statement for the Delta Conveyance Project**

Dear Mr. Simmons:

I. INTRODUCTION

On behalf of North Coast Rivers Alliance, California Sportfishing Protection Alliance, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, San Francisco Crab Boat Owners Association, the Winnemem Wintu Tribe, and Save California Salmon, we submit the following comments in response to the U.S. Army Corps of Engineers' (the "Corps") Notice of Intent to Prepare an Environmental Impact Statement (85 Fed.Reg. 51420, Aug. 20, 2020) in response to the Department of Water Resources' ("DWR's") application for a "permit to place dredged and fill material and/or work in waters of the U.S." for the construction of the Delta Conveyance Project ("Project"). Please include these comments in the administrative record for this matter.

The Project replaces the prior WaterFix Project for which the Corps sought comments in November 2015. While the WaterFix was a joint proposal of DWR and the Bureau of Reclamation, DWR is pursuing the Delta Conveyance Project without the Bureau of Reclamation's participation as a federal partner, despite the agencies' existing coordinated operations agreement for the operation of the State Water Project ("SWP") and Central Valley Project ("CVP"). Like the WaterFix Project that it replaces, the Project triggers the Corps' obligations under the National Environmental Policy Act ("NEPA"), 42 U.S.C. sections 4321 *et seq.*, the Clean Water Act, 33 U.S.C. section 1344, and the Rivers and Harbors Act, 33 U.S.C. section 403. Further, as proposed, the Project would adversely modify critical habitat, and have other severe negative impacts on species protected by the Endangered Species Act ("ESA"), 16 U.S.C. sections 1531 *et seq.* Therefore, after undertaking the comprehensive review required by NEPA – including a review of the impacts of Project operation, should the Project be completed – the Corps must deny these permits.

II. BACKGROUND

As a result of widespread habitat degradation caused by the construction and operation of dams on nearly all major California rivers flowing into the Delta, including many dams built and managed by Reclamation such as Shasta Dam on the Sacramento River, Folsom Dam on the American River, and Friant Dam on the San Joaquin River, anadromous and other imperiled fishes dependent on the Delta and its tributaries have suffered severe population declines.

The Sacramento River winter and spring run Chinook salmon, Central Valley steelhead, North American green sturgeon and Delta smelt, for example, have been driven perilously close to extinction. The National Marine Fisheries Service (“NMFS”) listed winter run Chinook salmon as a federally threatened species in 1990, and then due to continuing losses in population, NMFS declared them endangered in 2005. NMFS designated their critical habitat in the Sacramento River and its tributaries in 1993. NMFS listed spring run Chinook salmon as threatened, and designated their critical habitat, in 2005. NMFS listed Central Valley steelhead as threatened in 2000, and designated their critical habitat in 2005. Many species of fish endemic to the Delta have already gone extinct; just 12 indigenous species remain.

Habitat for the Sacramento River winter and spring run Chinook salmon, Central Valley steelhead, Southern DPS of the green sturgeon, and the Delta smelt has been increasingly degraded over the last several decades by excessive Delta water exports by the SWP and CVP. Those exports decrease freshwater flows, reduce dissolved oxygen, and increase temperatures, salinity and the concentration of herbicides, pesticides and toxic agricultural runoff, in Central Valley water bodies including the Delta. As a consequence, fisheries populations have plummeted. At the same time, the rivers that feed these water projects have been over-allocated so that there is not sufficient water to meet the competing demands. Thus there is increasing political and economic pressure to divert the remaining water despite the fact that it is absolutely essential to sustain the ecosystem’s delicate balance, in order to satisfy the unreasonable demands of large agricultural interests in the Central Valley, and the municipal water districts that divert this water for expanding municipal uses including urban sprawl.

The Project’s massive diversions pose significant impacts that must be examined in detail before the Project may be considered for approval. DWR’s proposed Project would divert up to 6,000 cubic feet per second (“cfs”) of water from the Sacramento River north of the Sacramento-San Joaquin River Delta (“Delta”) through a tunnel, where it will be delivered near the Clifton Court Forebay to be conveyed to the Harvey O. Banks pumping plant, where it will be pumped south as part of the SWP. By conveying this water through the Project’s tunnel, the Project will bypass the Delta completely. Thus, the Project will deprive the Delta of the incoming water’s historic and necessary flushing flows and the hydraulic pressure needed to keep salinity at bay, and it will remove the cold, clean and highly oxygenated freshwater flows that are essential to the survival of the Delta’s beleaguered fish and wildlife. The Project would potentially divert from

the Delta over 4,340,000¹ acre feet per (“afy”) for delivery to the SWP pumps. And under one of DWR’s Project alternatives, the Project would deliver 7,500 cfs – up to more than 5,429,750 afy – of vitally needed freshwater diverted from the Delta.

III. THE CORPS’ NEPA REVIEW MUST TAKE A HARD LOOK AT THE ENTIRE PROJECT ENABLED BY THE PERMIT APPLICATION

In preparing the EIS, the Corps must examine the Project’s direct and cumulative impacts. 42 U.S.C. § 4332; 33 C.F.R. § 320.4. In doing so, the Corps must address not only those impacts that arise directly from the Project’s construction, but also those that result from the operation that construction enables. This is so because

[a]lthough the Corps’ permitting authority is limited to those aspects of a development that directly affect jurisdictional waters, it has responsibility under NEPA to analyze all of the environmental consequences of a project. Put another way, while it is the [Project’s] impact on jurisdictional waters that determines the scope of the Corps’ permitting authority, it is the impact of the permit on the environment at large that determines the Corps’ NEPA responsibility. The Corps’ responsibility under NEPA to consider the environmental consequences of a permit extends even to environmental effects with no impact on jurisdictional waters at all.

Save Our Sonoran, Inc. v. Flowers, 408 F.3d 1113, 1122 (9th Cir. 2005). Yet, the Notice of Intent indicates that the Corps improperly plans to limit its review. It states:

The scope of the USACE NEPA review for operations of the new facilities is *limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees*. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.

85 Fed.Reg. at 51421 (emphasis added). Should the Corps improperly limit its analysis in this manner, the Corps will fail to take a hard look at the Project, violating NEPA. The Corps must reconsider this position and undertake the required analysis. The items that must be considered are discussed below.

A. THE CORPS MUST EXAMINE A REASONABLE RANGE OF ALTERNATIVES

An EIS must “[e]valuate reasonable alternatives to the proposed action” so that

¹ 6,000 cubic feet per second x 31,536,000 seconds per year / 43,560 cubic feet per acre foot = 4,434,801.65 acre feet per year.

“reviewers may evaluate their comparative merits.” 40 C.F.R. § 1502.14 (a), (b). “The existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” *Alaska Wilderness Recreation & Tourism Ass’n v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995). . Furthermore, because a project’s purpose and need statement “dictates the range of ‘reasonable’ alternatives,” the agency may not frame the purpose and need statement narrowly “to avoid the requirement that relevant alternatives be considered.” *City of Carmel-by-the-Sea v. United States Department of Transportation*, 123 F.3d 1142, 1155 (9th Cir. 1997) (first quote); *National Parks & Conservation Association v. U.S. Bureau of Land Management (“NPCA v. BLM”)*, 606 F.3d 1058, 1070 (9th Cir. 2010) (second quote) (“[a]n agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative among the environmentally benign ones in the agency’s power would accomplish the goals of the agency’s action, and the EIS would become a foreordained formality”).

The Corps indicates that the EIS will study three intake locations, of which two will be chosen, and two potential tunnel corridors, of which one will be chosen. In addition, the Corps indicates that the EIS will study variations in the amount of water that can be diverted through the Project. These variations are not, however, a reasonable range of alternatives. The Corps should also study a reasonable range of no-tunnel alternatives.

B. THE CORPS MUST DETAIL THE PROJECT’S IMPACTS ON BIOLOGICAL RESOURCES, INCLUDING SPECIAL STATUS SPECIES, AND WATER QUALITY

The Project’s physical infrastructure threatens the survival of fish at the Project’s intakes and at the Clifton Court Forebay, but it will also harm fish through its changes to the larger Delta ecosystem. Thus, the Corps must examine the impacts of the Project’s intakes and fish screens on fish, including analysis of the effects of different sweeping velocities. It must also look at the larger picture of the Project’s overall impacts on fish and wildlife. The Corps’ EIS must examine how the Project’s excessive diversions will increase the harms to the already reduced populations of the imperiled fish species in the Delta, including Chinook salmon, Central Valley steelhead, North American green sturgeon, and Delta smelt.

The Corps’ EIS must carefully examine the impacts of the Project’s diversions on water quality, including but not limited to changes in temperature, flow, and salinity, on the Sacramento River and in the Delta. In making this analysis, the Corps must consider applicable water quality standards set by the United States Environmental Protection Agency (40 CFR section 131.37) in addition to those set by the State Water Resources Control Board. It must model how the diversions will impair water quality in the Delta, including the ways that the Project will reduce flushing flows, and increase stagnant, contaminated water. In considering whether to approve DWR’s application, the Corps must not ignore these impacts. The Project is specifically designed to replumb the Delta, and the Corps cannot ignore the far-reaching consequences of that action without violating NEPA.

C. THE CORPS MUST ADDRESS SEA LEVEL RISE AND SALT-WATER INTRUSION

DWR's (and the Bureau of Reclamation's) prior environmental review for WaterFix failed to appropriately grapple with the issue of sea level rise. The Corps must do better here. The overwhelming scientific consensus is that the planet is getting warmer, and one result of this warming is sea level rise, which is likely to reach three to five feet by the end of this century absent enormous, immediate and unlikely reductions in greenhouse gas emissions.² As ice sheets in Greenland and Antarctica melt at alarming rates, what were once worst-case sea level rise projections have become more likely. The Corps EIS must examine the Project's ability to withstand sea level rise over the planned life of the Project, using up-to-date information regarding likely ranges of sea level rise. This analysis must address more than whether the Project's physical infrastructure can withstand the effects of climate change. It must also address the large influx of saltwater that would result from sea level rise and its related impacts on hydrology and the *operational integrity and feasibility* of the Project. The EIS must not conflate infrastructure resilience with feasibility of the Project. Even if the Project would be able to physically withstand the rising sea level, that fact does not mean that the Project would remain feasible at the higher rates of sea level rise predicted over the long term. To the contrary, at the chosen intake locations, all indications are that it would not, since rising saline intrusion could extend upstream of the diversion points, rendering them useless. The Corps must not artificially divorce hydrologic modeling from infrastructure design, in preparing its impacts analysis.

² See, e.g. Oppenheimer, M., B.C. Glavovic, J. Hinkel, R. van de Wal, A.K. Magnan, A. Abd-Elgawad, R. Cai, M. Cifuentes-Jara, R.M. DeConto, T. Ghosh, J. Hay, F. Isla, B. Marzeion, B. Meyssignac, and Z. Sebesvari, 2019: Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities. In: IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (available at <https://www.ipcc.ch/srocc/chapter/chapter-4-sea-level-rise-and-implications-for-low-lying-island-s-coasts-and-communities/>); see also National Research Council (2012) Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Washington, DC: The National Academies Press; Chapter 5: Projections of Sea-Level Change (available at <https://www.nap.edu/read/13389/chapter/7>); Garbe, J., Albrecht, T., Levermann, A. et al. The hysteresis of the Antarctic Ice Sheet. *Nature* 585, 538–544 (2020) (available at: https://www.nature.com/articles/s41586-020-2727-5.epdf?sharing_token=JnZS86TEbgJlyzarW8qdStRgN0jAjWeI9jnR3ZoTv0OuZB9Rvamxk4HmXZx1OT90oi5_ByA7GJo49TBx_C-1rhkTnSu0U34nWwMyTEqKGiDCuNXaUeh03RaM93xso5_USoygNZ732yfKc6YmPBEwAQEaDB-AfcBA1JW7O6q9iLcZayHOG9Px_187vImY81XRYv2S9KyKVeqewXVMXSgtxZw5RRAVS9bmjxhd1VNnXR9JzG8ZCDpDo_n4Hgwy9_uj1GTn7G46dFFUKeyYXk2IV9Wb7RPjInZfhDS0wxilY2_CyTjxVTmmnQME0QOiHE7gRSD02iwEDUmMC7e0HQP5d4SlawWiHXWjN7l5XyW XVnXkRgNAvNOFCP9nTWo4PPZf7-Cd6YmbOBZr4rKFxTtUg%3D%3D)

IV. THE CORPS MUST CONSULT ON AND ADDRESS THE PROJECT'S IMPACTS ON SPECIAL STATUS SPECIES

If the Corps continues to disclaim the need to study or address impacts that stem from its action that are outside its “jurisdiction,” it will violate NEPA and the ESA. The Project is likely to affect the critical habitat of at least five listed fish species, and this impact must be addressed through consultation with the National Marine Fisheries Service (“NMFS”) and Fish and Wildlife Service (“FWS”), and studied in the EIS. 40 C.F.R. § 1502.24(a) (“[t]o the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with” analyses or studies required by the ESA); 50 C.F.R. § 402.14(a).

By enacting the ESA, “Congress intended endangered species to be afforded the highest of priorities.” *Tennessee Valley Authority v. Hill*, 437 U.S. 153, 174 (1978). “The plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, *whatever the cost.*” *Id.* at 184 (emphasis added.) The ESA’s goal is to ensure not only that species survive, but that their populations recover to the point that they can be removed from the endangered and threatened lists. *Alaska v. Lubchenko*, 723 F.3d 1043, 1054 (9th Cir. 2013). Therefore, the ESA requires that federal agencies ensure that their actions, or actions that they fund or authorize, are “not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of [critical] habitat of such species.” 16 U.S.C. § 1536(a)(2) (quote); *Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059, 1076 (9th Cir. 2004) (“existing or potential conservation measures outside of the critical habitat cannot properly be a substitute for the maintenance of critical habitat that is required by Section 7” of the ESA).

To ensure that projects do not “tip a species from a state of precarious survival into a state of likely extinction,” agencies must review their actions “at the earliest possible time to determine whether any action may affect listed species or critical habitat.” *National Wildlife Federation v. National Marine Fisheries Service*, 524 F.3d 917, 929-930 (9th Cir. 2008) (first quote); *Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1020 (9th Cir. 2012) (second quote), *cert. denied*, 568 U.S. 1228 (2013). “If such a determination is made, formal consultation [with the FWS and/or NMFS] is required.” 50 C.F.R. §§ 402.14(a), 402.12(a) (a biological assessment determines whether the action will adversely affect listed species or their critical habitats, “and is used in determining whether formal consultation is required”).

At the conclusion of formal consultation, FWS and NMFS must prepare Biological Opinions discussing whether the proposed action and its cumulative effects are “likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.” 50 C.F.R. § 402.14(g)(4); *see also Center for Biological Diversity v. Bureau of Land Management*, 422 F.Supp.2d 1115, 1144-45 (N.D. Cal. 2006). If the biological opinion concludes that the action may adversely affect a species or its critical habitat but will not jeopardize its continued existence, it can include an incidental take statement permitting a specific level of take, and prescribing mandatory “reasonable and prudent measures”

designed to minimize harm to the species. 50 C.F.R. § 402.14(i)(5).

For nonfederal applicants, such as the state agencies here, FWS or NMFS may issue “incidental take permits” under section 10(a)(1)(B) of the ESA. An applicant for an incidental take permit must submit a “habitat conservation plan” (“HCP”) describing the potential impacts of the project and the taking, and mitigation measures to minimize the taking of the species. The HCP must ensure that the “taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild,” and it must be adequately funded. 16 U.S.C. § 1539(a)(2)(B)(iii)-(iv). A similar provision exists under state law. California Fish and Game Code section 2835 allows for take of protected species only if their “conservation and management is provided for in [an approved] natural community conservation plan.”

Unless it is authorized under either section 7 or section 10 of the ESA, any taking of a listed species is strictly prohibited. 16 U.S.C. § 1538(a)(1)(B). “Take” is defined broadly, including “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.” *Id.* at § 1532(19). 50 C.F.R. § 17.3 defines “harm” to include any act that actually kills or injures the species, including any death or injuries as a result of habitat modification or degradation that impairs essential behavioral patterns such as feeding, breeding, or sheltering. NMFS regulations include spawning and migrating as “essential behavioral patterns.” 50 C.F.R. § 222.102. The California Endangered Species Act (“CESA”) contains a similar prohibition and definition of take. Cal. Fish & Game Code §§ 2080, 2086.

By further reducing freshwater flows in the Delta, the Sacramento River, and their interrelated sloughs the proposed Project could adversely modify designated critical habitat for at least five endangered and threatened species: the Sacramento River winter-run Chinook salmon, the Central Valley spring-run Chinook Salmon, Central Valley steelhead, southern distinct population segment of North American green sturgeon, and the Delta smelt. This threatens the potential extirpation of mainstream Sacramento River populations of winter-run and spring-run Chinook salmon.

In the past, both FWS and NMFS found, in the context of the prior Project, that continued operation of the CVP and SWP are likely to jeopardize the continued existence of the delta smelt and other various fish species. *See, e.g.,* NMFS, June 4, 2009, *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project*; FWS, December 15, 2008, *Biological Opinion of the Coordinated Operations of the Central Valley Project and State Water Project*. And in its 2014 Recovery Plan for the Sacramento River winter-run Chinook salmon, the Central Valley spring-run Chinook salmon and the California Central Valley steelhead, NMFS confirmed that “recovery” of the three listed salmonid species “would require that *no more populations are allowed to become extirpated* and that *habitat must be expanded*” – *not contracted* – “to allow for the establishment of additional populations.” 2014 Recovery Plan at 4. While FWS and NMFS have since arbitrarily revised their jeopardy findings, under pressure from the Trump Administration, that change of position has been challenged in court. The prior determinations make clear that actions such as this

Project risk immense harm to these species.

In light of these devastating threats, and the fact that the Project constitutes “agency action” triggering ESA obligations, the Corps must prepare a Biological Assessment, or initiate formal consultation triggering the FWS’ and NMFS’ duties to prepare a Biological Opinion that addresses these Project impacts. *See Pacific Rivers v. Thomas*, 30 F.3d 1050, 1053-1054 (9th Cir. 1994) (“agency action” includes programmatic plans). Conducting NEPA analysis prior to and without the benefit of the ESA consultation process violates the ESA’s mandate that the ESA process be commenced “at the earliest possible time,” 50 C.F.R. § 402.14(a), and violates NEPA’s requirement that the NEPA and ESA processes be carried out “concurrently” and in an “integrated manner.” 40 C.F.R. § 1502.25(a).

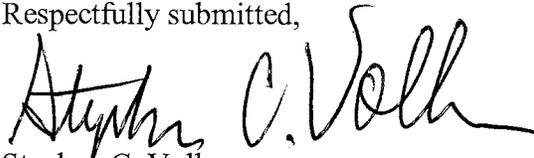
V. THE PROJECT IS CONTRARY TO THE PUBLIC INTEREST AND MUST BE DENIED

When considering DWR’s permit application, the Corps must evaluate whether the Project is in the public interest, taking into account the direct and cumulative impact of the Project on fish, wildlife, navigation and a host of other factors. 33 CFR § 320.4.(a). Upon the completion of the EIS, the Corps will discover that the Project is counter to the public interest, and that its benefit is outweighed by its harms. The Corps must reject the permit applications after performing its required review.

VI. CONCLUSION

For the foregoing reasons, the Corps must expand the anticipated scope of its NEPA review to encompass all of the Project’s environmental impacts. And, the Corps cannot approve DWR’s application for permits under Clean Water Act section 404 and Rivers and Harbors Act section 10. Approval of DWR’s deficient application would violate the ESA, NEPA, the Rivers and Harbors Act, and the CWA.

Respectfully submitted,



Stephan C. Volker

Attorney for North Coast Rivers Alliance, California Sportfishing Protection Alliance, Pacific Coast Federation of Fishermen’s Associations, Institute for Fisheries Resources, San Francisco Crab Boat Owners Association, the Winnemem Wintu Tribe and Save California Salmon



October 19, 2020

U.S. Army Corps of Engineers Sacramento District
Attn: Mr. Zachary Simmons
1325 J Street, Room 1350,
Sacramento, CA 95814-2922
916-557-6746ee
Zachary.m.simmons@usace.army.milee

Re: Notice of Intent to Prepare an EIS for construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

Greetings Mr. Simmons,

Buena Vista Rancheria of Me-Wuk Indians (BVR), a federally recognized Tribal Government, would like to offer the following input regarding a Notice of Intent for an Environmental Impact Statement (EIS) the U.S. Army Corp of Engineers (USACE, the Corp) will draft regarding the Delta Conveyance Project.

First, The Tribe has been engaged in the California Environmental Quality Act process with the Department of Water Resources (DWR) regarding their development of the Environmental Impact Report for the Delta Conveyance Project, and the Tribe has submitted, to the State of California, its input regarding this project. Currently the State has not considered the concerns put forth by BVR by various means including scoping comments, Government to Government Tribal Consultation, and comments submitted to DWR through the Tribal Engagement Committee that BVR sits on. It is apparent to BVR that the State is meeting its basic CEQA requirements, however, is not meaningfully meeting the AB-52 Tribal consultation requirements the State must adhere to with Tribes whose Aboriginal territory is impacted by this project.

BVR intends to make it clear to the Army Corp that Tribal perspectives are imperative to the future of water management in the State of California and beyond and that Tribal Governments need to be engaged early and often in large scale water projects. We expect a notification to engage in Government to Government Consultation following EO-13175 see 65 FR 67249.

Buena Vista of Me-Wuk Indians requests that the Army Corp identify Tribal Cultural Resources as a study category in the Environmental Impact Statement. The Notice of Intent (NOI) lists several categories of analysis; however, excludes the analysis of Tribal Cultural Resources. A Cultural analysis must be conducted as this project will impact the living and historic cultural resources of California Native Americans. The Corp does state that it will consult with the State Historic Preservation Officer and with Native American Tribes to comply with the National Historic Preservation Act. BVR stresses that this is an imperative step in the NEPA process and would like to point out that BVR has not received any notification directly to the tribe from the Army Corp regarding consultation for this project.

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Secondly, The NOI states that the scope of the EIS analysis “does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.” BVR would like to point out to the Army Corp the importance of analyzing the impacts to downstream waters these new intakes will have. Present day intakes in the south delta have a tremendous impact on water quantity and quality in the Delta and downstream San Francisco Bay, and the ecosystem has suffered tremendous changes as a result of the complex of water quality issues in the South Delta. The new intakes proposed on the Lower Sacramento River between the towns of Clarksburg and Hood will have impacts on the water quantity and quality and overall aquatic ecosystem of the delta and downstream San Francisco Bay. The Sacramento River provides most of the freshwater supply into and through the Delta and it is crucial that this freshwater input remain in the river to support the near collapsing aquatic ecosystem downstream of these proposed intakes as most notably indicated by the near extinction of the salmonids (Reis, G., et al. 2019, The Bay Institute, 2016, Moyle, P., et al. 2017).

The USACE stated in its NOI that it would include an analysis of alternatives in its EIS. The NOI states, “A number of project alternatives, including the no action alternative and the Applicant’s preferred alternative will be evaluated...” BVR recommend that the USACE analyze several project alternatives including the “Bethany Reservoir Alternative” and alternatives that include a no tunnel alternative.

BVR also suggests the USACE study:

- Impacts to Cultural Resources including historic and living cultural resources such as fish, wildlife, wetlands, and riparian forests in addition to archaeological sites and sites with spiritual and cultural significance.
- Impacts to water quality in the Delta and San Francisco Bay at various proposed pumping rates including 0 cfs, 3000 cfs, 6000 cfs and 7500 cfs
- Impacts to delta soils and islands from construction compaction and subsidence - furthering the vulnerability to sea level rise and flooding
- The decommissioning of the south delta intakes
- Upgrading fish screens on the south delta intakes

Buena Vista Rancheria of Me-Wuk Indians thanks you for taking the time to consider our comments in response to your NOI and scoping process regarding the Delta Conveyance Project.

Sincerely,

Buena Vista Rancheria of Me-Wuk Indians


Michael DeSpain Chief Operations Officer


Emily Moloney Water Program Coordinator

References

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The Bay Institute., "*San Francisco Bay: The Freshwater-Starved Estuary How Water Flowing to the Ocean Sustains California's Greatest Aquatic Ecosystem*"
www.thebayinstitute.org

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October 19, 2020

Zachary Simmons, Project Manager
US Army Corps of Engineers, Sacramento District
1325 J Street, Room 1350
Sacramento, California 95814-2922

RE: Department of the Army Permit Process for the Delta Conveyance Project– October 20, 2020,

Dear Project Manager Zachary Simmons and the U.S. Army Corps of Engineers, Sacramento District,

Our comments are related to the continuance, and acceleration of the planning, design, permitting and process of the Delta Conveyance Project.

We request that the Department of the Army and the U.S. Army Corps of Engineers, Sacramento District and all related entities suspend all Delta Conveyance Project (DCP) planning, permitting and project related actions during the duration of the novel COVID-19 Coronavirus Pandemic emergency.

In light of the novel COVID-19 pandemic, we are asking that all planning and action items related to the Delta Conveyance Project be suspended until regular planning and meetings can take place; once the COVID-19 virus shelter in place order has been lifted via Governor Gavin Newsom. To move forward at this time does not constitute a good faith effort of engagement, and it will not allow for true meaningful Tribal engagement, or engagement from the general public. It is our understanding that similar requests have been advanced to DWR and other agencies by multiple California Tribes, nonprofits and community-based organizations, and that these requests have been ignored.

The U.S. Army Corps of Engineers said in their “Delta Conveyance Project” video that they are



committed to making the proposal work “through fair and balanced decisions.” Part of this Environmental Impact Report should consider a no project alternative, and we see that this is included in your report. We however, not that in the Delta Conveyance Project video It sounds as if this proposal has already been approved, it is just a matter of how it will be completed. This is alarming and we are hopeful that all alternatives including the no project option will receive the full attention of the Army Corps of Engineers, and that these analyses will be instructive on deciding if this project should move forward.

To date we are concerned that not all Tribes and Tribal communities that will be impacted by the proposed Delta Conveyance System have been contacted, following AB-52 guidelines. The people that will be negatively impacted by this proposal are Tribes of California from the headwaters through the Delta and to the ocean. These effects will include loss of water, potentially the loss of sustainable traditional foods and desecration of sacred lands. All Tribes that will be impacted need to be outreached to, and included in the decision-making conversations about this project.

According to AB52, the state is required to invite and engage in consultation with Tribes regarding Tribal cultural resources. We understand that Tribes had been invited to engage in consultation before this pandemic, and that Tribes were just beginning to initiate that process with the expectation that meaningful consultation could take place early in the planning process and would include basic tenants of consultation. It is our understanding that Tribes have not agreed to the advancement of this project and very few Tribes have had an opportunity to deliberate with state agencies about what assurances need to be in place should this project proceed. We are acutely aware that the process to arrive at agreements through consultation cannot continue meaningfully under existing Covid-19 conditions.

Our request is about priorities and perspectives: the vast majority of the California public is focused on surviving and coping with personal and social health and economic effects of the spread of COVID-19, the disease caused by transmission of the novel COVID-19 Coronavirus. At this time key decision-makers for many Tribal communities are focused on keeping their family members and elders protected from this virus, in addition to striving to keep their communities in place during the unprecedented fire season that we recently have moved through. We know that meaningful stakeholder engagement and Tribal consultation cannot happen while we are worried about survival of ourselves and for our loved ones.



Continuing the planning process and actions during this time reflects negatively on state and federal levels of government. By agencies moving forward California is sending a message that our state disregards the existence of Tribal Peoples, and the lives of community members in general by using this deadly pandemic as an “opportunity” to move forward. This is not the message that the State of California and its agents should be promoting. Instead the state should allow families to focus on physical safety and reinitiate the process when meaningful participation is possible.

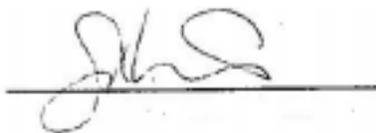
Public outreach and input are essential to ensuring that the state is held fully accountable as it proceeds with planning the Delta Conveyance Project. An example of an activity of this project that should not move forward during this pandemic includes a seemingly pro-forma action by DWR to the Central Valley Flood Protection Board. DWR has requested a “Statement of No Objection” to signal the US Army Corp of Engineers in Sacramento to proceed with the Corps’ 408 Levy Protection Assurance Process in relation to this Project. To advance this request without clear explanation or notice to the public at this time is unacceptable.

The state should further cease actions because shifts to our priorities for Delta Protection and regional budgets may be necessary after the full impacts of the pandemic have been evaluated. It is short-sighted to allow this high-profile project to advance at this time. These are significant public agency decisions that should not be made without public and Tribal participation, when California is under a statewide “shelter in place” order for social and physical distancing for the health and safety of California families.

For the above reasons we recommend that activities for the advancement of the Delta Conveyance Project cease until public and Tribal participation can resume fully.

Thank you!

Sincerely,



Sherri Norris
California Indian Environmental Alliance



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(510) 848-2043
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www.cieaweb.org





October 20, 2020

Via email

Zachary Simmons, Project Manager
US Army Corps of Engineers, Sacramento District
1325 J Street, Room 1350
Sacramento, CA 95814-2911
Zachary.M.Simmons@usace.army.mil

RE: Public Notice regarding SPK-2019-00899, Application, Delta Conveyance

Dear Mr. Simmons,

Please accept the following comments, submitted on behalf of California Water Research.

The following topics are covered:

- I. Effects on Navigable Capacity of the Sacramento River and Delta
- II. Army Corps Authorization of the Project
- III. Cumulative Effects with the Sacramento Deep Water Ship Channel
- IV. Potential Adverse Impacts
- V. Tunnel Construction Impacts on Flood Risk in the Delta
- VI. Long Term Risks
- VII. Toxics

Sincerely,

A handwritten signature in black ink, appearing to read "D. Des Jardins", is positioned above the typed name.

Deirdre Des Jardins
Director, California Water Research
145 Beel Dr
Santa Cruz, CA 95060
(831) 566-6320
ddj@cah2oresearch.com

I. Effects on Navigable Capacity of the Sacramento River and Delta

The Notice of Preparation states,

The scope of the USACE NEPA review for operations of the new facilities is limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.

The associated PowerPoint further states, “*Future operations of the diversions are outside of the Corps’ control and responsibility.” This is contrary to the court’s decision on the scope of Rivers and Harbors Act Section 10 in *Sierra Club v. Morton* 400 F.Supp. 610 (N.D. Cal. 1975.) The EIS should include an analysis of effects of operations of the diversions on water levels, and also on the potential to cause flow reversals.

In *Sierra Club v. Morton, supra*, the court considered that the operation of the CVP Tracy pumping plant “has two major effects on water in the Delta: (1) It tends to lower the water levels in the Delta, and (2) It causes net flow reversals.” *Id* at 630. The court also noted that the SWP Delta pumping plant “tended to lower water levels in the Delta region and to cause net flow reversals.” *Id* at 631. The court noted that “[i]t is not only the physical structure of the [SWP] Delta Plant, the Tracy Plant, or the Peripheral Canal which is significant but also the operation of these structures. If the functional effect of these structures is to obstruct navigable capacity in the Delta, then Section 10 approval will be required. *Id* at 628-29.

The court concluded that an obstruction to navigable capacity of the Sacramento River, and hence was governed by the third clause of Rivers and Harbors Act Section 10:

Accordingly, the Court concludes that the operation of the Tracy and Delta Plants presently obstructs the navigable capacity of various navigable waters in the Delta. The Court further concludes that as presently proposed, the Peripheral Canal will also result in an obstruction to navigable capacity of the Sacramento River. More specifically, the Court finds that, in the case of each of the three facilities, the obstruction is the result of the modification or alteration of the condition or capacity of the channel of navigable water of the United States and hence is governed by the third clause of Section 10 (*Sierra Club v. Morton* at 632.)

Effects of lowered water levels and reverse flows were noted in simulations of operations of the three intake WaterFix project. Furthermore, the WaterFix operational simulations assumed bypass flows to protect Delta smelt, Longfin smelt, and Winter run and Spring run Chinook salmon. Given current population trends for these endangered fish, the Army Corps must not assume that bypass requirements to protect these fish will be operational for the lifetime of the project. The EIS should consider alternatives for bypass flows adequate to protect navigation on the Sacramento River at and below the intakes and in the channels of the Delta.

II. Army Corps Authorization of the Project

Sierra Club v. Morton, supra, also notes that the third clause of Section 10 of the Rivers and Harbors Act “makes it unlawful to alter or modify in any manner the condition or capacity of the channel of any navigable water unless such alterations or modifications are recommended by the Chief of Engineers and authorized by the Secretary of the Army prior to beginning the same.” *Id* at 628.

Because the USACE approval of the project under Rivers and Harbors Act Section 10 will constitute federal authorization by the Chief of Engineers for the project’s alterations to the Sacramento River and Delta channels, the EIS must adequately analyze the project design, both in terms of construction impacts, and in terms of potential long term effects.

III. Cumulative Effects with the Sacramento Deep Water Ship Channel

The US Army Corps of Engineers 1949 Report on the Sacramento Deep Water Ship Channel noted that the project would increase the tidal prism by 7%, creating an increase in tidal flow in and out of the area.¹ The EIS should analyze the cumulative effect of reduced flows from the proposed action and the increased tidal prism of the Deep Water Ship Channel on salinity intrusion.

35. Salinity conditions. - Construction of the deep water channel will increase the tidal prism in the Sacramento-San Joaquin Delta by approximately 7.5 percent with a resultant theoretical increase in tidal flow into and out of the area in the order of approximately 3,000 acre-feet together with a tendency to decrease the amplitudes of tidal fluctuations throughout the area. The net effect, unless compensated for by increased fresh-water flow into the delta, or by other means, will tend to increase saline conditions throughout the delta area. Present Central Valley Project objectives require that the saline content not exceed 100 parts per 100,000 at Antioch in order for the water to be satisfactory for irrigation purposes. Present operation requirements for Shasta Dam provide for 3,300 c.f.s. in the Sacramento River at Collinsville for prevention of damaging saline water intrusion.

36. Practical consideration of the salinity problems indicates that after the ship channel is constructed, without any compensating works, the damaging saline content line would move upstream only a few miles, over reaches where there are no large scale irrigation diversions. Also it is possible that future releases from such reservoirs as the Folsom Dam Project, which is presently under construction, will provide sufficient incidental flow into the delta

¹ U.S. Army Corps of Engineers, Sacramento District, Sacramento River Deep Water Ship Channel Project, Definite Project Report, July 1949, p. 11-12. https://deltarevision.com/1848-1989_docs/sac_river_deep_water_ship_channel_project_1949_07.pdf.

to prevent damaging upstream shifting of the saline intrusion line. However, if after the completion of the Sacramento Deep Water Ship Channel, it develops that the project has created detrimental saline conditions in the delta area, then it is proposed to reclaim one or more of the presently unreclaimed delta tracts with a minimum area of 1,500 acres in order to reduce the tidal prism volume by 75,000 acre-feet, thus restoring it to preproject conditions.

IV. Potential Adverse Impacts

A. Floodplain modification

The proposed project will be constructed almost entirely in floodplains in the Sacramento-San Joaquin Delta, which have been reclaimed with levees. CFR 33 Section 320.4(k)(2), the U.S. Army Corps of Engineer's regulations on Floodplain management, states:

In accordance with the requirements of Executive Order 11988, district engineers, as part of their public interest review, should avoid to the extent practicable, long and short term significant adverse impacts associated with the occupancy and modification of floodplains, as well as the direct and indirect support of floodplain development whenever there is a practicable alternative. For those activities which in the public interest must occur in or impact upon floodplains, the district engineer shall ensure, to the maximum extent practicable, that the impacts of potential flooding on human health, safety, and welfare are minimized, the risks of flood losses are minimized, and, whenever practicable the natural and beneficial values served by floodplains are restored and preserved.

CFR 33 Section 320.4(k)(2) states:

In accordance with Executive Order 11988, the district engineer should avoid authorizing floodplain developments whenever practicable alternatives exist outside the floodplain. If there are no such practicable alternatives, the district engineer shall consider, as a means of mitigation, alternatives within the floodplain which will lessen any significant adverse impact to the floodplain.

B. Alternatives

To minimize the impacts of potential flooding on human health, safety, and welfare, the EIS should consider alternative locations for the Delta tunnel intakes that are further away from Delta legacy towns than intakes #3 and #5, and on better levees. The proposed locations for the Delta Conveyance intakes are on the sandiest and crumbliest levees in the North Delta. Gil Cosio, the engineer for many North Delta Reclamation Districts, has expressed concerns about the intakes for the Delta tunnel being on the "weakest levy in the entire North Delta." At the July 22, 2020 Stakeholder Engagement Committee, Cosio stated that "the Delta Stewardship Council estimated that with combined seismic and flood probability failure it's about a 14-year protection." Cosio also related that "We're currently working on a Maintenance Area 9 levee trying to help a farmer

replace that irrigation pipe and we went to ... fill up the excavation we couldn't get compaction because the levee is still dry. It's so sandy that we did not get compaction.”

The County of Sacramento also expressed concerns in CEQA scoping comments² that “The proposed intake locations threaten significant impacts to cultural and historic resources, community health and welfare, the SRWTP, FRWP, Town of Hood wells, and surface and groundwater supplies.” (p. 5.)

For alternative locations, Sacramento County suggested consideration of intake locations further downstream below Steamboat Slough:

Information in the WaterFix EIR Appendix 3F, Intake Location Analyses (pp. 3.F.6 - 3.F.8), relying on the Fish Facilities Technical Team report, indicates that there are suitable intake locations farther downstream below Steamboat Slough (identified as intakes 6 and 7). Moving intakes farther south on the Sacramento River would reduce the potential for conflicts with and significant impacts to SRWTP operations, and thus the FRWP operations, as well as Town of Hood wells, and have the benefit of being better for salmon.

Moving the intakes to avoid impacts to the FRWP and SRWTP also would avoid significant impacts to tribal cultural resources identified by Miwok Tribal government representatives at the February 26, 2020 Delta Stakeholder Engagement Committee meeting, where DWR staff was informed that all three intakes are highly sensitive to the Miwok and include several village sites and more than 5 burial grounds.

(Sacramento County CEQA scoping comments p. 5-6.)

Angelica Whaley, the North Delta Business Representative to the Stakeholder Engagement Committee, also requested that the Delta Conveyance Design and Construction Authority evaluate intakes downstream of Steamboat Slough, as well as evaluating smaller intakes, which would have more flexibility about location and fewer local impacts.³

In CEQA scoping comments, the County of Sacramento also requested evaluation of the Far Eastern main tunnel route suggested by the first Independent Technical Review Panel:

The ITRP identified significant problems with feasibility, including road and transportation impacts, from both of the tunnel corridor options described in the NOP. The panel thus recommended an alternative tunnel alignment, much closer to Interstate 5, indicating this alignment is potentially feasible. (See Exhibit A, p. 8.) This alternative should be fully evaluated in the EIR.

² County of Sacramento, Comments on Notice of Preparation for Environmental Impact Report – Delta Conveyance Project, April 17, 2020. https://mavensnotebook.com/wp-content/uploads/2020/04/04172020-Sac-Co-Comments-on-NOP-for-Delta-Conveyance-w_Exh-A-00082420xD2C75.pdf

³ Angelica Whaley, Letter to Kathryn Mallon, September 23, 2020. https://static1.squarespace.com/static/5f1873bac534a82106522228/t/5f7c1a91183dc561daae7c36/1601968786588/AW+SEC+Letter+09_23_2020.pdf

(Sacramento County CEQA scoping comments p. 5-6.)

The Far Eastern alignment would also have less impact on floodplains, and less flood risk during construction and operation.

The EIS must include a range of reasonable alternatives to the proposed action and identify the Least Environmentally Damaging Practicable Alternative (42 USC Sec 4332(2)(D)). The EIS should consider alternatives with 1,500 cfs intakes, intakes downstream of Steamboat Slough, and the Far Eastern Corridor proposed by the ITRP.

V. Tunnel Construction Impacts on Flood Risk in the Delta

A. Channel crossings

The economic costs of a levee failure due to tunneling damage are potentially very high. The 2004 failure of the Upper Jones Tract, an island of 6,259 acres, cost approximately \$120 million to restore. This did not include damage to buildings and crops.



1 Scour Hole from Jones Tract Levee Failure Source: East Bay MUD

A levee breach on the northern part of Woodward Island has been estimated by URS corporation to cause a 50 deep scour hole, 1700 feet long, and 600 feet wide.⁴ Such a scour hole could take

⁴ URS Corporation, In-Delta Storage Program Risk Analysis, 2001.
https://deltarevision.com/2001_docs/DraftRiskAnalysesReport%20FWV.pdf

out part of the Mokelumne Aqueduct, which would affect the water supply for 1.3 million people. It could also damage the Kinder-Morgan fuel pipeline, potentially causing a major leak. A levee breach on the northern part of Bouldin Island could impact the support structures for State Route 12.

B. Risks of tunnel boring

Chapter 9 of the WaterFix Final EIR/EIS, on Geology and Seismicity, discussed risks of tunnel boring:

Impact GEO-3: Loss of Property, Personal Injury, or Death from Ground Settlement during Construction of Water Conveyance Features

Two types of ground settlement could be induced during tunneling operations: large settlement and systematic settlement. Large settlement occurs primarily as a result of over-excavation by the tunneling shield. The over-excavation is caused by failure of the tunnel boring machine to control unexpected or adverse ground conditions (for example, running, raveling, squeezing, and flowing ground) or operator error. Large settlement can lead to the creation of voids and/or sinkholes above the tunnel. In extreme circumstances, this settlement can affect the ground surface, potentially causing loss of property or personal injury above the tunneling operation.

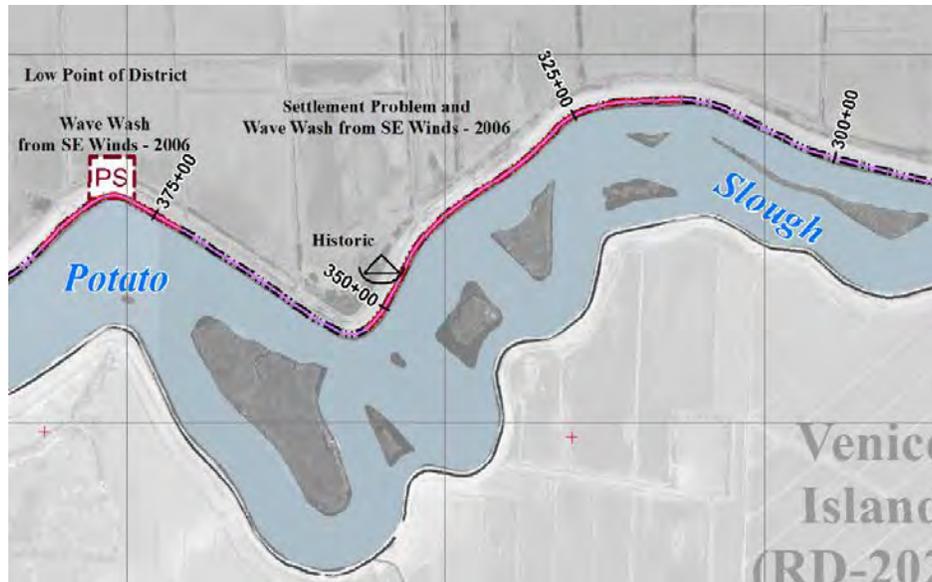
Systematic settlement usually results from ground movements that occur before tunnel supports can exit the shield and the tunnel to make full contact with the ground. Soil with higher silt and clay content tend to experience less settlement than sandy soil. (p. 9-195)

Boring logs show that there are adverse ground conditions in the Delta at the level of the tunnels, including wet, plastic clay soils that could be subject to squeezing, and wet silt that could be subject to running during tunnel boring. The ground is also very inhomogeneous so soil conditions could change unexpectedly.

While the effect of the maximum settlement on the freeboard of levees in the Delta is not large, the horizontal and vertical stresses on the levees from the tunneling movements could cause cracks, especially in levee areas that are prone to slope instability. Cracks in a levee could result in seepage and failure if they happened during times of high flows in the Delta, or if they happened during times of low flow and were not identified and repaired.

C. Evaluating Fragile Levee Sections Prior to Tunnel Boring

The Delta Risk Management Strategy estimated fragility classes of Delta levee segments. This information should be considered in the EIS, as well as any evaluations of historic issues with the levee sections from the local Reclamation Districts. An example below is shown from the San Joaquin County hazard mitigation map for Reclamation District on Bouldin Island. The pink colored sections of the levee have had historic problems. The section of levee next to Little Potato Slough has had problems with settlement and wave wash. To avoid flooding Bouldin Island, it may be necessary to reinforce vulnerable levee sections before tunnel boring.



D. Ground loss calculations

Tunneling boring machines excavate a larger amount of soil than is replaced by the volume of the tunnel lining, which typically causes a wide, shallow settlement trough on the surface. The over-excavation is measured by the volume of ground loss, which is defined as the percent difference between the volume of excavated soil and the volume of the tunnel lining. The volume of the settlement trough on the surface can be as large as the volume of ground loss. If groundwater is drained for tunnel construction, soil layers above the tunnel could settle even further.

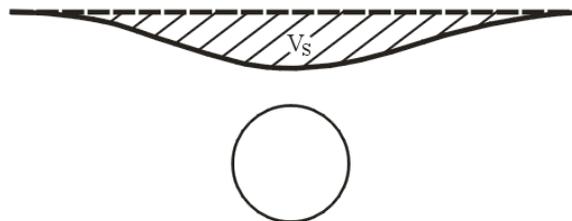


Figure 2 Tunnel settlement trough

East Bay Municipal Utilities District is proposing to construct a 21-foot diameter tunnel in the Delta to replace the Mokelumne Aqueduct. The Conceptual Design report⁵ included a section on Ground Loss and Settlement, which states that ground loss could be up to 4% of the face.

Similar calculations of ground loss and settlement should be included in the EIS. Without such analysis, there can be no assessment of needed monitoring and mitigation, and the discussion in the EIS of channel crossings will be incomplete.

⁵ East Bay MUD, *Technical Memorandum Number 2, Delta Tunnel Study Conceptual Design*. http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/EBMUD/ebmud_178.pdf.

E. Ground Loss Criteria

The Waterfix Final EIR/EIS referred to *Settlements Induced by Tunneling in Soft Ground*, by the International Tunneling and Underground Space Association, 2007. The monograph showed the ground volume loss in the tunneling for three London segments of the London Channel Tunnel Rail Link. The mean ground loss was around .5% for many segments, but the maximum was over 2.5% in the initial trials. In the Stratford to St Pancras link, once the tunnel ground volume loss exceeded 1, the boring was stopped, and the tunnel boring machine was reconfigured for clay soils.

The London Channel Tunnel Rail Link construction was tightly monitored and had provisions to stop tunneling when ground loss exceeded 1%. The 1% ground volume loss would be an appropriate criterion for maximum allowed ground loss for tunnel boring. The EIS needs to consider appropriate ground loss criteria for tunneling under Delta levees and Delta channels.

The EIS should consider seasonal limitations on tunneling under levees as a mitigation measure, particularly when storms could cause high flows. The levee fragility classes from the Delta Risk Management Strategy should be used in an assessment of potential effects of tunneling on the levees, as well as in an assessment of potential effects of vibration from intake construction on the levees.

F. Construction Safety Plan

The EIS should consider a safety plan to address risks to people on Delta islands in the event of a levee breach during tunnel construction.

G. Standard of Care for Tunnel Construction

For the public interest evaluation, the Army Corps needs to consider whether there is appropriate allocation for responsibility for risk management for the tunnel construction. The Standard of Care for construction of underground tunnels is defined in the International Tunneling Association's "Code of Practice for Risk Management of Tunnel Works" and the Underground Construction Association's *Guidelines for Improved Risk Management on Tunnel and Underground Construction Projects in the United States of America*⁶. The Guidelines state in part:

The process of risk management—including risk assessment, characterization, and response, as well as elimination, mitigation, avoidance, transference, or acceptance—is required to identify and clarify ownership of risks and should detail clearly and concisely how the risks are to be allocated, controlled, mitigated, and managed.

⁶ Available at <http://www.smenet.org/SME/media/UCA/Resources/SME3409-GIRM-Report-Booklet-WEB.pdf>. Incorporated by reference.

The Delta Conveyance Design and Construction Joint Powers Agreement⁷ fails this basic standard of care, in that it does not identify how the risks of tunnel construction are to be allocated, controlled, mitigated, or managed. Instead, it simply states that the member agencies are not liable for the activities of the Delta Conveyance Design and Construction Authority. Article XIII, Liability, section 13.1 states

No Member Liability. The debt, liabilities and obligations of the Construction Authority shall be the debts, liabilities and obligations of the Authority alone, and not the individual Members.

VI. Long Term Risks

The construction of a forty-foot diameter tunnel in soft soils consisting of sedimentary layers of sand and peat is a significant engineering challenge. Given the large diameter of the tunnel, the amount of water it will be carrying, and the sedimentary deposits surrounding the tunnels, significant preliminary engineering is required to document that the proposed conceptual design will have sufficient structural integrity to protect the main Delta tunnel, the water supply, and structures and people on the surface.

Assessments, monitoring, and mitigation under NEPA cannot be adequately addressed until adequate preliminary analyses of the probability of tunnel leakage and of seismic-induced tunnel lining and ground failures, are completed as summarized below.

A. Long Term Settlement and Leakage

The proposed Delta tunnel lining has a circumferential joint every five feet. Settlement could cause the tunnel lining segments to move relative to one another, opening up gaps at the circumferential joints over time. This has caused a shortened expected lifetime for tunnels in deep sedimentary soils in Shanghai.⁸ Leaks also progressively increase the forces pulling the tunnel segments apart.⁹ East Bay MUD commented on the Waterfix tunnel design in 2015, stating:

Long-term degradation of segmental concrete lining may result in failure of the lining. In the event that the tunnel lining fails and results in a tunnel collapse or blowout, a collapse

⁷ Joint Powers Agreement Forming the Delta Conveyance Design and Construction Authority, Effective May 14, 2018. <https://dcdca.org/wp-content/uploads/2020/06/DCA-JPA-2018-05-14-EXMA-JPA-Formation.pdf>.

⁸ Xu, Yeshuang & Ma, L & Shen, Shui-Long, 2011, Influential factors on development of land subsidence with process of urbanization in Shanghai. *Yantu Lixue / Rock and Soil Mechanics*. 32. 578-582. https://www.researchgate.net/publication/288360364_Influential_factors_on_development_of_land_subsi_dence_with_process_of_urbanization_in_Shanghai

⁹ Yoo, Chungsik, 2016, Effect of water leakage in tunnel lining on structural performance of lining in subsea tunnels, *Marine Georesources & Geotechnology* Vol. 35, Iss. 3. Available at <http://www.tandfonline.com/doi/abs/10.1080/1064119X.2016.1162235>.

during operations would result in major ground movement extending to the ground surface and potentially sinkholes or blowout.

This potential leakage is of particular concern where the tunnels pass under important structures, including Delta island levees and channels, the Mokelumne aqueduct, and natural gas and other product and services pipelines.

The EIS should consider an inspection, monitoring, and remediation program and discuss contingencies, controls, and recovery following indication and evidence of leakage of the tunnel lining.

B. Seismic Safety

The EIS should consider seismic safety of the project, and in particular, whether adequate engineering analyses have been done to ensure that the tunnel lining and other critical project facilities will not have catastrophic failure in a Maximum Considered Earthquake.

The proposed tunnel lining has circumferential joints every five feet, so the seismic design criteria, and adequate strength for the circumferential joints, is a significant engineering concern. Since the tunnel may be bedded in silty clay or clayey silt, the opening of a joint could result in long term differential settlement.

The EIS should consider the performance of the tunnel lining and other critical project facilities in a Maximum Considered Earthquake, and associated risk to loss of life and critical infrastructure. Without such seismic analysis, the public interest analysis and the evaluation of potential seismic effects for the NEPA process is incomplete.

Particular attention should be paid to locations where the tunnel crosses under any occupied surface structures or critical infrastructure. State Route 12 and State Route 4 are in the main tunnel path for both the Central and Eastern Corridors, as are the Burlington Northern / Santa Fe railroad tracks used by the Amtrak train.

C. Differential movement of Tunnel and Shafts

Given the ground plasticity and potential liquefaction of the soft ground surrounding the tunnel, the issue of differential movement of the tunnel, intakes/outlets, and shafts is substantial. These must be carefully analyzed in the EIS and their impacts adequately addressed and mitigated.

Differential movements between the Delta Conveyance tunnel, intakes/outlets, and shafts also need a differential analysis and appropriate assessment of impacts and required mitigation. This is especially important because the shafts will be fixed vertically, while the tunnel will be bedded in deep alluvial deposits.

VII. Toxics

A. Reusable Tunnel Material

According to the Reusable Tunnel Material testing report for the previous project¹⁰, there needs to be a public health evaluation before placing the tunnel muck as fill in the landscape. The testing report states:

However, exposure of people, wildlife and plants to conditioned soil has not been fully assessed under unrestricted-use conditions, creating an uncertainty for potential adverse effects. If RTM is to be placed in the environment where people could contact the soil, either directly (e.g., through skin contact) or indirectly (e.g., as airborne particulate, or as leachate in surface or drinking water), then human health risk assessment(s) will need to be developed. Development of appropriate exposure scenarios for evaluation in the risk assessment will depend on the specific environmental context; for example, uses as surficial landscape fill for a residential area or subsurface use at a construction site. (p. 53.)

This public health assessment needs to be done, prior to approving any disposal of RTM on Bouldin Island across from the Tower Park Marina, or any other location where people could contact the soil directly or indirectly.

B. Chromium at Intakes

A 2011 twin tunnel project report, the Draft Phase II Geotechnical Investigation¹¹, documents that DWR found levels of chromium in the test borings at several of the proposed intake sites which could potentially meet the definition of hazardous wastes in Title 22 of the California Code of Regulations.

The Draft Phase II Geotechnical Investigation described environmental screening tests that were done on p. 2-13 (pdf p. 24):

2.3.4 Environmental Screening

A detailed discussion of the environmental sampling program is provided in the DHCCP report Environmental Sampling Report – Phase I Geotechnical Investigations (DHCCP Team, 2010c). Environmental screening involved laboratory testing of soil samples obtained using the Mod Cal sampler described in Section 2.3.3.4. The target sampling zones were sediments immediately below the river bottom and tunnel grade soil samples. For the shallow samples, the planned analyses included CAM 17 metals plus

¹⁰ URS Corporation, Reusable Tunnel Material Testing Report. Prepared for the California Department of Water Resources, March 2014. https://snugharbor.net/images-2020/borings/dwr_207.pdf.

¹¹ Draft Phase II Geotechnical Investigation—Geotechnical Data Report—Pipeline/Tunnel Option, Revision 1.1, August 22, 2011. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/docs/dd_jardins/ddj_312.pdf

mercury and methyl mercury. Analysis performed from the tunnel grade included CAM 17 metals plus mercury and TPH.

The report further stated on p. 2-18 (pdf p. 29):

A summary of these results is presented in Table 3-6, and complete listing of these results will be presented in the DHCCP report Environmental Sampling Report – 2010 Phase II Geotechnical Investigations (DHCCP Team, 2011).

Table 3-6 on p. 3-36 of the Geotechnical showed exceedances for hazardous waste limits for Chromium at intakes 1,2,3, and 4. The sites, boring numbers, boring depths, and values of chromium that are found are shown below. The table below is compiled from Table 3-6 on p. 3-36, cross-referencing the boring numbers with the boring locations. Further testing should be done and the results analyzed in the EIS.

Site	Boring number	Depth (feet)	Chromium (mg/kg)
Intake 1	DCR1-DH-010-43	43	56.20
	DCRA-DH-001-01-158	158	57.00
Intake 2	DCRA-DH-002-01-155	155	91.20
Intake 3	DCR3-DH-005-01	1	56.60
	DCR3-DH-005-01	1	56.60
Intake 4	DCR4-DH-008-01 (no depth)	-	51.10

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October 20, 2020

Via Email Only to Zachary.M.Simmons@usace.army.mil

Attn: Mr. Zachary Simmons
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Sacramento Regulatory Division
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Re: CDWA & SDWA SUPPLEMENTAL Comments on PN SPK-2019-00899 –
Notice of Intent to Prepare an EIS for Construction of the Proposed Delta
Conveyance Project.

The attached comments are hereby being submitted on behalf of the Central Delta Water Agency and the South Delta Water Agency and supplement other comments submitted by those agencies on the above-referenced matter.

Thank you for considering these comments and concerns.

Very truly yours,



Dante J. Nomellini, Jr.
Attorney for the CDWA

Enclosure

Central Delta Water Agency and South Delta Water Agency SUPPLEMENTAL Comments on the Notice of Intent to Prepare an EIS for Construction of the Proposed Delta Conveyance Project

I. Introduction.

These supplemental CDWA and SDWA comments are divided into the following sections which include: the Project Basis (which includes Executive Order N-10-19 (EO), DWR's Notice of Preparation, USACE's Notice of Intent and Delta Conveyance Authority Alternatives Scoping Conclusions); identification of potential project alternative components; and EIS Preparation.

II. Project Basis.

The project basis is an essential foundation for USACE to evaluate as they are the sole legitimate source for the criteria to screen and develop project alternatives. The DWR project basis documents and discussion are particularly important to the USACE as DWR has determined project alternatives will be limited to tunnel conveyance alternatives by using screening criteria that are not supported by the project basis documents. As discussed at length in the following document comments, DWR has utilized criteria which are not supported in the project basis and has failed to support the rationale for their conclusions regarding alternatives screening and selection rationale.

The USACE must evaluate the Project Basis information for themselves to develop alternatives evaluation, screening criteria and alternatives development rationale. The USACE must not submit to the liability of adopting DWR's flawed and conflicted alternatives development criteria and corrupted process which is not supported by the Project Basis. First, the EO does not provide the basis for the initiation of a project and no other is given so this is not an authorized project. Second, the NOP is fundamentally deficient and proposes that "no operations" will be proposed or evaluated in the EIR. Without detailed operations, USACE cannot evaluate water quality, navigation, affects to listed species or any of the USACE's core responsibilities as the federal lead agency on the EIS and more importantly as in the developer of the EIS as a decision support document for USACE construction and operations-related permits. The level of project description detail disclosed in the NOP or any DWR document is insufficient to support even a programmatic EIS, let alone one sufficient to support evaluation and mitigation of construction-related impacts. USACE must not rely upon any other documents or information from the applicant than those that define the project basis and objectives for the project (the EO, the NOP and NOI for the project basis). The USACE must not rely upon subsequent DWR documents which claim they define the project, but have no legal basis to support the EIS alternatives development and evaluation process.

a. Executive Order N-10-19.

The EO defines the requirements and principles for the Water Resiliency Portfolio, which the Delta Conveyance Project is (misrepresented as) part. The comments below on the EO identify mandatory components and principles which must be included in all of the Water Resiliency Portfolio components and provides preliminary comments regarding how the Delta Conveyance Proposed Project/Action fails to comply with or embody. The EO is important to analyze as, 1) it does not authorize the initiation of the Delta Conveyance Project or an EIS/R, 2) it identifies the objectives for any project under the Water Resiliency Portfolio (most of which the Delta Conveyance Proposed Project/Action does not include), and, 3) it provides a set of requirements that must be utilized as screening criteria for the evaluation of any project alternative or alternative component that is part of the EO Water Resiliency Portfolio, i.e. must be applied to the Delta Conveyance Project alternatives screening and development. In this section we provide detailed comments on the failures of the Proposed Project/Action to meet each EO Water Resiliency Portfolio mandate.

b. DWR's Notice of Preparation.

The purpose of providing these comments to the Corps on DWR's CEQA process NOP is that the NOP is deeply flawed and if the Corps relies upon this document without knowledge of these deficiencies, errors, omissions and misrepresentations it could lead to problems with flawed screening criteria in the alternatives scoping and mistaken geographic and impact topic scope in the EIS.

The NOP for the EIR is deficient in its omission of material disclosures and proposes violations of CEQA which have NEPA compliance implications. The NOP proposes that Delta Conveyance Project operations would not be defined until after the CEQA process is completed (NOP page 3, paragraph 3). This plan to violate CEQA by not analyzing, disclosing or mitigating operations-related impacts in the EIR fundamentally violates the responsibilities of the CEQA Lead Agency to the point of malfeasance. As a result of the lack of water operations (at any level let alone the level of specificity required to support project-level impact analysis), the USACE does not and will not have information sufficient to conduct the required water operations impact analyses in the EIS to support decision-making relative to construction (no construction dewatering location, timing, volumes or water quality information) or water diversion operations-related and ESA-related permits.

The NOP, and therefore the NOI and information to conduct the EIS, is fundamentally deficient by not disclosing the proposed operations of the project. It is not possible for the public to determine the extent of potential project impact to them without relevant proposed operations information being disclosed. Proposed Project/Action operations description and disclosure must be included in a recirculated NOP and round of public scoping meetings.

• **DWR's NOP notice** (<https://water.ca.gov/Programs/State-Water-Project/DeltaConveyance/Environmental-Planning>), *"Modernizing Delta conveyance is part of the state's Water Resilience Portfolio, which describes the framework to address California's water challenges and support long-term water resilience and ecosystem health."* The NOP notice informs the public that the

project is about water supply resilience and ecosystem health. The NOP Project Purpose is conspicuously and deceptively in conflict with the notice and leaves out any reference to “ecosystem health”. The word "ecosystem" is not included in the NOP even once, but “ecosystem health” is represented as a coequal goal in the NOP notice. This is glaringly inconsistent and misleading. Health of the environment and watersheds are specified as objectives of the Water Resilience Portfolio. Neither of these objectives is included in the NOP; “ecosystem health”, "environmental health" and "watershed health" must be added to the Delta Conveyance Project objectives so that it is consistent with the NOP Notice and the mandates of EO N-10-19.

The Corps EIS must include these alternatives screening criteria for “ecosystem health”, "environmental health" and "watershed health" from these fundamental project basis documents.

- **Introduction, paragraph 2,** " ... likely requiring the preparation of an environmental impact statement (EIS)." The project from the beginning obviously required 401 and 404 permits from the USACE prior to construction. The project would also require a Biological Assessment and Biological Opinion to potentially support Incidental Take Permits from US Fish and Wildlife and NOAA Fisheries. Both of these sets of permits create a federal nexus that require a NEPA compliant EIS. DWR delayed engaging the Corps on this project even though the federal nexus and need for Corps permits was plain and evident from before the inception of this project based on the precedents of its predecessor projects, the BDCP and WaterFix.

- **Introduction, paragraph 2,** "DWR will prepare an EIR that includes relevant NEPA information where appropriate." It is at the discretion of the Federal NEPA Lead Agency to determine who will prepare the EIS, not DWR. The NEPA Lead Agency may choose to accept or not accept analysis prepared in coordination with the preparation of a joint EIS/EIR document or it may chose to conduct its own entirely independent EIS, solely at their discretion. DWR claims it will prepare information for the EIS (without agreement from the NEPA Lead Agency), but it has already violated the NEPA requirement for equal level of effort (including information collection and analysis) for all alternatives by initiating an effort to collect additional geologic core samples along its Proposed Project/Action conveyance corridor with no consideration or equal effort applied to alternative conveyance routes or alternative to the tunnel conveyance. To satisfy NEPA, an equal level of effort in collecting geologic information (and all other information) must be applied to all other alternatives.

- **Introduction, paragraph 2,** "Once the role of the federal lead agency is established ..." The role and authority of the NEPA Lead Agency are statutorily defined so it is already established and the federal nexus requiring an EIS are clear as identified in the first comment in this section. USFWS and NOAA Fisheries both would have one permit to issue and USACE would have 2 or more permits to issue. USFWS and NOAA must prepare a Biological Assessment (SA) as part of their Section 7 ESA authority. They may take EIS information (or not) and will conduct their own analyses of listed species impacts in their Biological Assessment (BA) document. This mandatory Section 7 ESA document makes the information requirements of the USFWS and NOAA Fisheries less critically dependent upon the EIS than the USACE requirements which are entirely dependent upon decision making information provided in the EIS. The BA document is independent of the EIS so it falls upon the USACE as the appropriate NEPA Federal Lead Agency to conduct the EIS to make all EIS preparation decisions relevant to developing information to support their permit decision making needs.

• **Background information,** *"Executive Order N-10-19, directing several agencies to (among other things), "inventory and assess ... [c]urrent planning to modernize conveyance through the Bay Delta with a new single tunnel project." The Governor's announcement and Executive Order led to DWR's withdrawal of all approvals and environmental compliance documentation associated with California WaterFix. The CEQA process identified in this notice for the proposed Delta Conveyance Project will, as appropriate, utilize relevant information from the past environmental planning process for California WaterFix but the Proposed Project/Action will undergo a new stand-alone environmental analysis leading to issuance of a new EIR."* The EO authorizes a report to "first" inventory and assess "current planning" to modernize conveyance through the delta. The EO does not authorize a project to design and build a conveyance, it specifies that first an inventory and assessment on current planning must be conducted. DWR has mistakenly initiated "new planning" by undertaking this Delta Conveyance Project EIR. An EIR is a planning process so a new EIR is new planning, not current planning. See previous comments on the EO regarding the Delta Conveyance Project and funding not being authorized.

• **Purpose and Project Objectives, paragraph 1,** *"Under CEQA, a clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives ...".* Correct, CEQA requires a clearly written statement of objectives. Unfortunately what this NOP provides is a poorly written conflation of "Purpose" and "Objectives" which confounds the CEQA requirement for clarity in defining project objectives to use to develop a reasonable range of alternatives. To support discussion of our following comments regarding how this NOP section fails to meet the requirement for clearly written project objectives, here are the definitions of "Objective" vs. "Purpose".

"Objective" definition: "something that one's efforts or actions are intended to attain or accomplish".
"Purpose" definition: "the reason for which something exists or is done, made, used, etc." The word "reason" is the key here. Anything that is not a reason for doing a project does not belong in the Purpose Statement. Anything that is a reason does not belong in the section describing the Project Objective. These difference between "Objective" and "Purpose" are essential to clarify as they are the basis for the project alternatives screening criteria. The Corps EIS alternatives screening criteria must correctly differentiate these.

• **Purpose and Project Objectives, paragraph 2,** *"... purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries ... "* Again, this is poorly written, not clear, and conflates purpose and objective which must remain clearly defined to support development of alternatives per NEPA requirements. The first part, "develop new diversion and conveyance facilities" is an objective. The second part, "to restore and protect the reliability of SWP water deliveries" is a purpose (reason) for the project. It is important to separate the two concepts distinctly as the objective is how the project proponent conceives achieving a project purpose.

Alternatives are other methods to reasonably accomplish the same purposes. The NOP conflation of the difference and importance of objective vs. purpose violates the CEQA requirement for clarity and will confound a clear and consistently evaluated alternatives development and screening process. If the Corps relies upon this document for the foundation of the NEPA process, it must discern the difference between the conflated purpose and objective in the NOP so that it has a correct framing of the

“purpose” (reason for) the project. If the Purpose for the project is miss-framed as DWR has done in the EIR, the alternatives development and screening process in the NEPA EIS will be corrupted.

- **"Restore ... SWP water deliveries" (NOP page 2, paragraph 2)** The Project Purpose declares the intent to increase reliance upon delta water supplies, which is in direct violation of the legal requirement of SB-X7. Alternatives and alternative components identified in these comments are compliant with SB-X7 while the Proposed Project/Action is in violation of the requirements of the law. As stated elsewhere in our comments, it would be a violation of NEPA for the Corps to approve a project which is in violation of the law.

Additionally, the term "restore" is not defined and therefore is not meaningful as a definition of a project purpose. Restore the water supply to what quantity or what period? Does this mean restore water supplies to unimpaired flows from current hydrology 1921-present (the "hydrologic record"), pre-SWP development, pre-D1641, to 01641 standards, pre-Wanger or post-Wanger rulings, Oroville FERC Relicensing pre- or post-, yesterday? If the term "restore" is kept as part of the project purpose it must be defined or alternative concepts cannot be reasonably evaluated for how well they meet this project purpose. Restoring water supply means quantities of water will change which have environmental impacts which must be evaluated, disclosed and mitigated. How much quantity of water change "restoration" requires is directly proportional to the magnitude of the environmental impacts the project will precipitate.

The term "restore" must be quantified and defined in order to complete anything other than a programmatic EIS. In order for the Corps to consider using even a quantitatively defined “restored water supply” project objective, the EIS must include operations impact analysis in order to evaluate alternatives under that criterion. Given the Corps declaration that the EIS will not include operations impact analyses, this criterion for screening EIS alternatives may not be used by the Corps process.

- **Purpose and Project Objectives, paragraph 2, "DWR's ... purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of ... potentially, Central Valley Project (CVP) water deliveries south of the Delta ... "** The stated purpose now also includes, potentially, to restore and protect the water supply of a Federal Agency that has to this date not indicated an interest in participating in the project. It is not a NEPA project purpose (reason) for a state to propose a project for a federal agency. This project objective must be withdrawn from the NOP as it is not a viable objective for the state and must not be utilized as any component of the Corps screening criteria for EIS alternatives development.

- **Purpose and Project Objectives, paragraph 2, " ... consistent with the State's Water Resilience Portfolio."** Yes, if the project is authorized by EO N-10-19 (it isn't - see EO Comments), then it must be consistent with it. The CEQA Project Purpose as stated in this paragraph is not consistent with EO N-10-19. The words "restore and protect the reliability of SWP water deliveries" or even combinations of those words is not anywhere in the EO. DWR's proposed "project purpose" is made up, whole cloth, and is not from or consistent with the EO and the Corps must not include "restore and protect the reliability of SWP water deliveries" in their EIS alternatives screening criteria. An essential part of consistency with the EO's Water Resilience Portfolio is the project must include all of the objectives, requirements and principles required and identified by EO N-10-19. The Delta Conveyance Project as proposed in this NOP

does not include or meet the objectives and mandates of the EO - see EO Comments. Therefore the EIS may not utilize "restore and protect the reliability of ... potentially, Central Valley Project (CVP) water deliveries south of the Delta" as a project Objective or an alternative screening criteria.

• **Purpose and Project Objectives, paragraph 3,** *'The above stated purpose, in turn, gives rise to several project objectives.'* DWR has this exactly backwards here. In the statement above DWR refers mostly to the objective (see previous comments), "to develop a new diversion and conveyance in the Delta".

"Objective" definition: "something that one's efforts or actions are intended to attain or accomplish". In other words the objective is, "we want to build something that does this".

"Purpose" definition: "the reason for which something exists or is done, made, used, etc." The word "reason" is the key here. Anything that is not a reason does not belong in the purpose statement. The project objectives drive the purpose, not the other way around. DWR's NOP would not be so confused if the Project Purpose was clearly written as CEOA requires.

All 4 bullets in the NOP that follow are all "reasons" (purpose) for a project, not objectives. Any alternative that reasonably satisfies accomplishes these reasons for a project must be included in the EIS analysis as viable alternatives.

• **Purpose and Project Objectives, paragraph 3,** *"In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:"* This is another example of how DWR has gotten purpose and objectives backwards. Their objective is to build a project. Their stated reasons (purpose) for the Proposed Project/Action is to accomplish their following bullet points. Again, this is important to correct as alternatives to the project must not be evaluated against what DWR has proposed as their project, but against the ability of a proposed alternative to satisfy the purpose (reason) for the project. The Corps must not repeat this fundamental flaw and avoid this potential NEPA requirement failure. If purpose and objective are misconstrued as DWR has done, the screening criteria for alternatives development will be equally flawed and the evaluation of alternatives incorrect and indefensible.

• **Purpose and Project Objectives, paragraph 3, first bullet,** *"To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events."* This is a potential reason for a project therefore it is a purpose, not an objective as confusingly and incorrectly claimed in the NOP. The NOP misidentifying project purpose as project objectives does not meet the CEOA requirement for clearly written project objectives.

The State (and the Corps) has adopted climate change assumption standards that all new projects must adhere to. Although we do not agree with these climate change assumptions or standards, it was imperative for the NOP to disclose the standard that this project purpose sets in order for the public to understand the project proposed as well as potential alternatives to the project. The sea level rise assumption in the Delta Conveyance Project is reportedly 10 feet, but it is not disclosed in the NOP.

The Delta Conveyance Authority exempted the Delta Conveyance project from these sea level rise and climate change project requirements. The Proposed Project/Action design and analysis only addresses

55" of sea level rise by the year 2100. This is inconsistent with and deficient in comparison to the CA state requirements and the Corps requirements of 10' sea level rise by 2100. The Proposed Project/Action is therefore incompatible with an objective of addressing anticipated sea level rise and therefore must be disqualified as a viable project alternative for the EIS.

Climate change is a global problem and cited as the primary driver for the need to "restore and protect SWP water supplies". This defines the project as a response to a problem which is global in scope and yet the project attempts to (incorrectly) limit the range of appropriate project alternatives to those implemented only in the "Delta". If climate change is a global problem, the delta consists of only 0.0005% of the surface area of it. Surely the SWP's water supply reliability "and restoration" cannot be solely dependent upon the Delta 0.0005% geographic area as the sole solution. In the face of reality of climate change impacts to water supplies all over the world, why would it be a reasonable proposition for the project to "restore water supplies" to some unspecified earlier unaffected date and time when everyone else in the world is being forced to adapt to new climate and precipitation patterns.

• **Purpose and Project Objectives, paragraph 3, second bullet,** *"To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta."* By DWR's statement here in the NOP, SWP Water Contractor district Californian's get preferential treatment to other Californian's as this project does nothing to protect Californian's that get their water supply from the Delta that are not part of the SWP. The very first and presumably most important statement in the EO is that "water is a human right". The Delta Conveyance Project not only ignores the human rights for water for non-SWP customers as they do not benefit at all from the project, but the project proposes to improve protections of water supplies for SWP customers at the expense to the quality and reliability of water supplies of non-SWP customers. Making one group's water rights and supply security superior to and at the expense of another group's is antithetical to the first precept of the EO. A project and alternatives to a project must comply with this fundamental principle of the EO and the current Delta Conveyance Project Proposed Project/Action does not. We do propose alternative components, e.g. Carquinez Straight Flow Management Structure and additional water storage projects downstream of the Delta, which do address this "purpose" for the project even though the Proposed Project/Action fails to.

• **Purpose and Project Objectives, paragraph 3, third bullet,** *"To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements."* This statement is so poorly worded as to be unsuitable for use as alternatives scoping screening criteria.

"Protecting" a Federal Project is not a viable objective for a State Project so that cannot be a screening criteria. "Sufficient amounts" is subjective and undefined and therefore cannot be utilized as an alternatives screening criteria. A project being consistent with state and federal law is a mandatory screening criteria for all projects as a project cannot plan to break the law. It should be noted that current SWP operations fail to comply with water quality standards on a routine basis and therefore

violate the law routinely. Given that the SWP current operations violate the law and this fundamental project alternative screening criteria, the project may not assume that continuation of existing operations and standards of the SWP will not result in violations of the law.

- **Purpose and Project Objectives, paragraph 3, fourth bullet**, *"To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations."* "Aquatic conditions" is too vague a term to be useful in evaluating if a project alternative meets this objective or not. The project alternative scoping screening criteria for this objective must be changed to "protect delta water quality and habitat values for delta residents, water users and wildlife" so that it is consistent with the EO and SB-X7 legal requirements. It should be noted that the Proposed Project/Action does nothing to improve aquatic conditions and therefore must be eliminated from the alternatives in the EIS if this criteria is used. All of the project alternative components identified in our submittal here do potentially improve aquatic conditions.

- **Page 3, paragraph 3**, *"DWR would operate the proposed north Delta facilities and the existing south Delta facilities in compliance with all state and federal regulatory requirements and would not reduce DWR's current ability to meet standards in the Delta to protect biological resources and water quality for beneficial uses."* SWP operations currently and historically have routinely violated water quality standards in the Delta. DWR is saying here that it is planning to build a facility that is intended to violate the law at the same frequency as the current facility. The new facility and operations must be compliant with the law to protect water quality and wildlife habitat or it cannot be permitted. The Proposed Project/Action has no defined operations so there is nothing to be analyzed in the EIS to determine the frequency, magnitude or geographic extent of water quality violations the project may cause. The new facility objective, if it is built at all, must be to ensure that all water quality criteria are met under all conditions, at all times, and at all locations.

- **Page 3, paragraph 3**, *"Although initial operating criteria of the proposed project would be formulated during the preparation of the upcoming Draft EIR in order to assess potential environmental impacts and mitigation, final project operations would be determined after completion of the CEQA process ..."* (emphasis added) In this statement, DWR has declared its intent to violate CEQA law. NEPA requires that all environmental impacts of a project be disclosed, analyzed and mitigated and that agencies that rely upon the EIS for decisions based upon the EIS for permit issuance will be inaccurately and misinformed. By DWR either ignoring operations-related impacts or by assuming a set of operations to evaluate in the EIS analysis that it will not conform to in the event that the project is approved and implemented, it ensures that the true impacts of the project will not be disclosed or mitigated.

This statement of intent by DWR to violate CEQA is so serious that we request all staff or contractors involved in this proposed decision to violate CEQA law and mislead agencies which rely upon this document be immediately removed from the project and reprimanded in the case of DWR staff or terminated in the case of contractors. This DWR plan to violate CEQA by not analyzing, disclosing or mitigating the true operations-related impacts in the EIR fundamentally violates the responsibilities of the CEQA Lead Agency to the point of malfeasance.

If the EIS covers only construction-related impacts and does not address the "actual" operations the facility will use when implemented, then there can be no statement of overriding considerations of

significant impacts because without the coverage of the EIS to actually operate the facility, there could be no public benefits to the facility.

If, after the NEPA process is completed, proposed operations of the Delta Conveyance are modified in any way from those analyzed, disclosed and mitigated in the EIS, a supplemental EIS must be conducted prior to any consideration of issuance of construction- or operations-related permits by any agency. The Corps must not certify an EIS in which operations and operations-related impacts and mitigations are known to be subject to subsequent change.

• **Page 3, paragraph 3,** "*Construction and commissioning of the overall conveyance project, if approved, would take approximately 13 years, but the duration of construction at most locations would vary ...* " The NOP fails to identify specific areas of construction disruption and disruption duration. This vague description is inadequate to inform the public if the project may have an impact upon their quality of life, property or ability to earn their livelihoods. The NOP must be revised and republished along with new Public Scoping Meetings to disclose this essential information to the public.

• **Page 3, paragraph 4,** "*Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions below. The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants). If Reclamation determines that there could be a role for the CVP in the Delta Conveyance Project, this role would be identified in a separate NEPA Notice of Intent issued by Reclamation.*" Since a CVP component is not part of the current Delta Conveyance project and is entirely speculative in its language at this time, if BOR elects to participate in the Project at some future date, it will require either a separate EIS or a reissuance of the NOP (and NOI) for a joint document as there would be material design or operations (not defined at this time anyway) changes to the project not disclosed to the public in the original scoping of the Delta Conveyance EIR. The NOP proposed accommodations of the CVP under the Delta Conveyance Project would have profound water operations, water supply, and water quality impacts that must be analyzed, disclosed and mitigated in the EIR. If BOR does join the project, the NOP is materially deficient and misleading in terms of its project description and operations (missing anyway).

• **Page 5, paragraph 1,** "*The size of each intake location could range from 75 to 150 acres, depending upon fish screen selection, along the Sacramento River and include a state-of-the-art fish screen, sedimentation basins, tunnel shaft, and ancillary facilities. An additional 40 to 60 acres at each intake location would be temporarily disturbed for staging of construction facilities, materials storage, and a concrete batch plant, if needed.*" The map figure does not show proposed locations of the intakes. The map shades a large and poorly defined reach of the river as the potential intake locations. With the proposed intake locations ambiguous and the size of the facilities varying as much as 100% it is not possible for the public to determine if they will be potentially affected by the project or not and supports only a programmatic level of impact analysis not sufficient to support construction-related permitting. A revised NOP must be issued that determines the type and design (e.g. over or through levee construction) of fish screen.

• **Page 5, paragraph 3,** *"The proposed single main tunnel and connecting tunnel reaches would be constructed underground with the bottom of the tunnel at approximately 190 feet below the ground surface."* The BDCP and WaterFix projects designed their tunnel for 80 feet below the ground surface. 190 feet deep is more expensive and generates more tunnel muck which creates additional increments of environmental impacts which must be analyzed. What hazard did DWR find at 80' deep they wanted to avoid by going to 190' deep? Was that risk fully mitigated by this additional depth and cost? There is a reason for this change and it must be disclosed.

• **Page 5, paragraph 3,** *"Construction for the tunnel would require a series of launch shafts and retrieval shafts. Each launch and retrieval shaft site would require a permanent area of about four acres. Launch sites would involve temporary use of up to about 400 acres for construction staging and material storage."* The map figure and description fail to disclose the proposed locations for these actions. These areas will require land seizures that displace property rights and use, people and livelihoods, as well as special status species populations; but are not disclosed in the NOP. As a result of this material information withheld from the NOP, the affected public remain ignorant and uninformed. A revised NOP must be issued that discloses this material information relevant to the location of these land seizures as well as specificity that allows the analysis of impacts to special species status populations.

• **Page 5, paragraph 3,** *"... this reusable tunnel material could be reused for embankments or other purposes in the Delta or stored near the launch shaft locations."* The reusability or suitability of tunnel muck has not been determined. The time and area required for drying must be disclosed and analyzed. It is extremely unlikely that this material will have suitable characteristics to be useful for "embankments" intended to hold back water. The difference in environmental, land use and traffic impacts between reuse of tunnel muck on site or transportation to a disposal site is significant. The Proposed Project/Action must specifically identify the location and describe and define where and how tunnel muck will be dried, used or disposed of in a revised NOP or the EIR may only be conducted at a programmatic level which will require subsequent environmental analysis, documentation and public participation prior to any project action.

• **Page 5, paragraph 4,** *"Intermediate Forebay would provide potential operational benefits and would be located along the tunnel corridor between the intakes and the pumping plant."* The location of this proposed large and environmentally disrupting facility is not disclosed in the description or map figure. The Intermediate Forebay will have a big impact that results in land seizures which have not been disclosed in this deficient NOP that fails to adequately inform the public and that must be revised and republished.

It seems this facility was materially omitted from the NOI description and maps and therefore the facility footprint and disclosure between the EIR and EIS are in conflict.

• **Page 5, paragraph 4,** *"The embankments would be approximately 30 feet above the existing ground surface."* The Intermediate and Southern Forebays are functionally flow reregulating reservoirs. As such, the Forebay impoundments will always hold back water which is the definition of a "Dam" according to USACE regulations. The NOP use of the term embankment is misleading and grossly technically inaccurate. A "dam" is something that holds back water most of the time, a "levee" holds back water only some of the time and an "embankment" is a meaningless term in this context that is not

appropriate or relevant to the description of Forebay facilities. The Intermediate and Southern Forebays are dams and the engineering and construction specifications must be consistent with those requirements and evaluated in the EIS impact analysis. The construction materials type, methods, labor, equipment, materials volumes and schedules for constructing a dam are radically different in environmental impact that just piling up some dirt in an "embankment" as implied by the inaccurate and misleading NOP description.

- **Page 6, Contract Amendment for Delta Conveyance**, "*... the Delta Conveyance Project EIR will assess, as part of the proposed project, potential environmental impacts associated with reasonably foreseeable potential contract modifications.*" This means that the impacts of all water transfers resulting from new excess capacity created by the Delta Conveyance Project must be completely evaluated in the Delta Conveyance Project EIS as they are proposed to not be included in the impact analysis of the SWP Water Supply Contract Amendment environmental review.

As stated previously, since the Delta Conveyance has a federal nexus requiring an EIS and the SWP Water Supply Contract Extension Amendment impacts are dependent upon that facility, the Water Supply Contract Extensions also then have a federal nexus as it is the project with the federal component which enables them. How, when, where and how much water transfer volume must be defined to a project level specificity in order to meet this project level impact analysis to cover this other project impact analysis. DWR through any of its Delta Conveyance project documents or in the SWP Water Supply Contract Extension Amendment have failed to provide any detail regarding the origin, timing, water volume or destination of these water transfers. Detailed and specific operations for these transfers must be defined and analyzed or these water transfer operations cannot be permitted under any Delta Conveyance project.

The Corps must address the EIS requirements of the SWP Water Supply Contract Extension Amendment. In addition to the Delta Conveyance facilitation of the Amendment nexus, the COAA also is a federal nexus to the Amendment that must be addressed.

- **Page 6, Project Area**, "*Upstream of the Delta Region*" "Upstream" must include SWP facilities that operations are changed in any way due to Delta Conveyance Project operations. This includes all SWP reservoir operations timing and magnitude of water releases and tributaries flow and temperatures downstream from those facilities. This is important for the geographic scope for the EIS impact analysis. The operations of these upstream facilities will change from the operation of the Delta Conveyance facility so these impact areas must be addressed in the EIS. These analyses to downstream tributaries below SWP reservoirs are required to assess impacts to fish habitat temperature suitability, spawning habitat suitability (depth, flow velocity and temperatures) and to assess anadromous fish straying and introgression impacts from altered tributary attraction flows and temperatures. Streams upstream of SWP reservoirs are affected by exposure of sediment wedges in the reservoir which affect seasonal fish movement and spawning in the upstream tributaries up to the next impassible fish barrier. All of these areas upstream of the Delta affected by operations of the Delta Conveyance Project must be included in the geographic and impacts scope of the project. This, among many reasons, is why the project must define, disclose evaluate and mitigate the true operations impacts of the project. If the EIS does not analyze the real and fully developed and detailed project operations, the EIS will be a programmatic document that cannot be the basis for construction- or operations-related permits.

• **Page 6, Project Area, "Statutory Delta (California Water Code Section 12220)"** Proposed Project/Action flow impacts alter the timing, magnitude and water quality of delta outflows such that the San Francisco Bay complex, Suisun Marsh, Napa River and Pacific Ocean resources are affected. The BDCP and WaterFix impact areas, with exactly the same types of general locations of proposed facilities as the Delta Conveyance Project, were required to also include the Napa River, Suisun Marsh, San Francisco Bay and the Pacific Ocean in their project impact analysis area. Reclamation was Federal Lead for the EIS for these documents. If the Corps is to depart from the analytical standards and methods of these previous documents, it must present a strong, defensible and compelling logic for the departure from these previous plans, policies, procedures and precedents.

• **Page 6, Project Area, "South-of-Delta SWP Service Areas and, potentially, South-of-Delta CVP Service Areas"**. The EIS project impact assessment area must also include drainages that are downstream of the SWP and CVP service areas as water deliveries from the project affect the timing, quality and magnitude of flows and resources in these tributaries and drainages. SWP service areas drain all the way back to the Delta, Salton Sea or Pacific Ocean depending on which service area and or if the CVP is included in the project. As stated previously, Corps responsibilities do cover ocean mammal and other aquatic resources that are affected by the project in this geographic scope.

• **Page 9, Alternatives, "An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible."** CEQA alternatives must include those which reasonably meet the project purpose and objectives so the language in the NOP is incorrect and misleading. The NOP excludes many of the project objectives and purposes as defined by EO N1 0-19. These criteria and mandates as identified in our comments on the EO must be included in the project alternative screening criteria (for the EIS too). Based on the EO requirements, the Proposed Project/Action does not perform very well and sets a low bar for evaluating other alternatives which do meet these EO criteria as well or better than the Proposed Project/Action. Screening criteria must be rational, defensible and consistently applied in the evaluation of alternatives and alternatives components. The Alternatives Scoping Document, to be released for public review and comment, must disclose the criteria and rationale for proposed alternatives either being included or excluded from full analysis in the EIS.

• **Page 9, Alternatives, paragraph 2, "The scoping process will inform preliminary locations, corridors, capacities and operations of new conveyance facilities to be evaluated in the EIR."** The NOP (and NOI) and the respective Public Scoping Meeting materials and presentations were devoid of any water operations description other than theoretical maximum flow capacity of the tunnel. The scoping process failed to inform the public on any intake operation tributary flow bypass standards, intake diversion operations daily intertidal variations in screen intake sweeping and approach velocities, reservoir operations changes to facilitate the project operations, the type of fish screens proposed, water supply delivery quantities that constitute the stated objective to "restore water supply deliveries", excess transfer capacity created by the Project and many other material omissions to inform the public and decision makers for the alternatives scoping process. In every possible aspect of project description (location, size, type, function, design, artistic renderings, site design plans, operations), the public

disclosures either omitted critical information or was so non-specific as to be non-functional as a project-level disclosure.

- **Page 9, Alternatives, paragraph 2**, *"DWR will make its final choice of potentially feasible alternatives to include in the Draft EIR after receipt of scoping comments."* DWR must consider and evaluate the alternatives identified in the scoping comments, not just make a final decision after receiving them – and that appears to be exactly what they have done. This DWR statement is a declaration of the intent to ignore the input from the alternatives scoping process which the Corps must not emulate. A Scoping Report that discloses the alternatives assessment methods and rationale and the final selection process must be issued for public disclosure and comment. This precedent has been set by numerous DWR joint EIR/S projects including the BDCP and WaterFix. Only after public disclosure and comment on the alternatives development process in the Scoping Report document can DWR or the Corps make choices regarding feasible alternatives to include in the EIR or EIS.
- **Page 9, Potential Environmental Effects**, *"Water Supply: changes in water deliveries."* The project here has declared that water supply deliveries will change under the undisclosed operations of the Delta Conveyance facility. The Corps must analyze these impacts in the EIS. These impact assessments must include impacts to non-SWP and CVP water users including, but not limited to: changes in water surface elevation for diversion access, water diversion facility fouling from changes in aquatic weeds from alteration of water circulation patterns and duration of nutrient accumulation before flushing flows, changes in the rate and location of toxic algae and methylation of mercury, water supply suitability for designated beneficial uses, growth inducing impacts, etc.
- **Page 9, Potential Environmental Effects**, *"Surface Water: changes in river flows in the Delta."* There will be upstream and downstream of delta flow changes from the project that must be assessed in the EIS. Construction dewatering discharge flow impacts must also be quantified, specified in location and timing and evaluated in the EIS.
- **Page 9, Potential Environmental Effects**, *"Groundwater: potential effects to groundwater levels during operation."* There are groundwater impacts from construction- and operations-related dewatering (see related comments) and from ongoing variability in SWP water supply deliveries which must be quantified and assessed in the EIS.
- **Page 9, Potential Environmental Effects**, *"Water Quality: changes to water quality constituents and/or concentrations from operation of facilities."* The BDCP and WaterFix EIR/S failed to conduct scientifically defensible best available science analysis of impacts to water quality including dissolved oxygen and salinity. Construction dewatering discharge water quality affects must also be evaluated, especially with respect to point discharge water quality requirements. The EIS must also address these impacts.
- **Page 9, Potential Environmental Effects**, *"Geology and Seismicity: changes in risk of settlement during construction."* The EIS impact assessment scope must include impacts to collapse of aquifer structure from construction dewatering; risk to levee integrity from construction vibration, settlement and fracturing; risk to levee integrity from tunnel or intake structural failures; risk to levee integrity from failure of Forebay impoundment dams, etc.

- **Page 9, Potential Environmental Effects, "Soils: changes in topsoil associated with construction of the water conveyance facilities."** The EIS must assess impacts of ongoing and incremental salt accumulation in soils on productivity and land use suitability from continued operation and increased water deliveries from the SWP, impacts from the storage, drying and transport of tunnel material - please see previous related comments.

- **Page 9, Potential Environmental Effects - "Air Quality and Greenhouse Gas..."**. Air quality impact assessments require construction location, timing, duration, equipment used, etc. Greenhouse gas impacts require analysis of changes in reservoir operations and SWP system-wide water quality as they affect and contribute to CO₂ greenhouse gas emissions. This later impact contribution requires detailed project water operations information which the NOP has declared the project will not provide until after the completion of the EIR process and the NOI omitted to address.

- **Page 9, Potential Environmental Effects** - All of the impacts types described in this section of the NOP by the DWR EIR Team demonstrate limited understanding of the SWP system and operations, the complexity and functions of the Delta, and previous and closely related SWP/CVP EIR/S analyses or those analyses conducted under the almost identical projects of the BDCP or California WaterFix EIR/S. The Corps should take this into account in their selection of prospective contractor for the EIS and DWR preferred contractor list.

The NOP (flawed) copying of the CEQA checklist with little professional knowledge or judgment relevant to the California water system or the Delta Conveyance Project does not convey an expectation of a competently executed draft EIR to come. There are huge amounts of materials available to the Delta Conveyance Project EIR team on other EIR/S conducted on similar projects, but it is clear they have not utilized them or are not mindful or respectful of the previous agency legal precedents and standards set by them. Due to the extreme similarity of the Delta Conveyance Project and the BDCP and California WaterFix projects, previously submitted scoping, draft EIR/S, and final EIR/S comments by CDWA and SDWA on those projects are hereby incorporated as scoping comments herein for the Corp's required consideration. These are all part of the public record so the Corp's should already have copies of them. If for any reason the Corps does not have or have access to these incorporated by reference documents, we would provide them directly to the Corps upon request. CDWA and SDWA as agencies have invested enormous amounts of limited resources in contributing comments to the EIR/S process in these previous and so closely related projects. The Corps, in the preparation of alternatives scoping and the draft EIS of the Delta Conveyance Project, must look closely to these previously submitted comments and address the multitude of inadequacies and deficiencies in these previous EIR/S documents as well as the alternatives identified within those comments.

- **Page 12, paragraph 2, "each responsible and trustee agency is required to provide the lead agency with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the responsible or trustee agency's area of statutory responsibility that will need to be explored in the EIR. In the response, responsible and trustee agencies should indicate their respective level of responsibility for the project."** Seeing as the Corps has a parallel responsibility with its Cooperating Agencies, it is requested that the Corps publicly disclose the Cooperating Agency responses on the project website as part of the public record and include them in the Scoping Report when it is

made available to the public so that the public can be informed and comment upon identified agency needs and requirements from the Delta Conveyance EIS.

i. DWR NOP Comment Summary.

It was important to include for the Corps these comments on the NOP as the Corps may rely upon this document for some of its information and EIS project basis needs. As demonstrated in the comments, the NOP is substantively deficient as it omits material information regarding Proposed Project/Action operations required for a project-level EIS. Additionally, the NOP statements make it clear the scope of the impacts is significantly more extensive than the scope the Corps committed to for the EIS in their NOI. The NOP is in violation of CEQA, which the Corps needs to avoid emulation of as pitfall violations of NEPA, as DWR proposes to complete the EIR process prior to determination or analysis of final project operations or analysis or mitigation of those final operations impacts.

The NOP Project Purpose and Objectives incorrectly only selectively include 2 the 15 mandates of Executive Order N-10-19 and specifically exclude the required "special status species", "ecosystem health" and "watershed health" from the EO. The Corps must make sure that they do not omit these project basis criteria from their evaluation, screening and formulation of alternatives. If correctly applied in the EIS alternatives screening process, the Proposed Project/Action fulfills almost none of these criteria, see **Table 1** following.

As a cautionary note for the Corps in interpreting the EIR's alternatives screening process, the DWR Proposed Project meets NONE of the Project Objectives identified in the NOP, see **Table 1** and this preceding NOP comment and analysis section.

The NOP Project Purpose and Objectives are not legally compliant with SB-X7 (Delta Reform Act) as they do not include the legally mandated coequal goals of water supply reliability and habitat conservation or the legally mandated reduced reliance upon Delta water supplies. The EIS will need to address this project violation of legal requirement in the "Regulatory Environment" section of the EIS.

Also as a cautionary note for the Corps in interpreting the EIR's alternatives screening process, the NOP geographic scope for Alternatives is arbitrarily and capriciously limited to the Delta which does not address the SWP water supply delivery reliability as a whole and is in direct conflict with the mandate from Executive Order N-10-19 for regional solutions.

The NOI proposed impact analysis geographic scope is incorrect as it must include drainages downstream of SWP service areas and areas upstream of SWP reservoirs which will have altered operations as a result of the Delta Conveyance operations omitted from public disclosure in the NOI and NOP and proposed to be omitted from EIS analysis.

The Proposed Action intakes locations are in intertidal zones under current conditions (much more so under assumed future No Action conditions) and are not compatible with the 10' Sea Level Rise assumption and the water supply reliability Project Objective. The Proposed Action presumes the abandoning the Delta, its population, and wildlife in response to projected Sea Level Rise which is in

direct violation of the Corps mission statement and responsibilities as a Public Trust Agency for flood protection.

The Delta Conveyance Project proposes to "Restore Water Supply" but fails to functionally or quantitatively define this objective. Further, the Corps has declared in its NOI its intention not to analyze project operations which would be required in order to determine if said "water supplies" were "restored" or not. As such, the EIS may not rely upon this as alternatives screening criteria.

The NOP incorrectly presumes the current SWP operations result in Water Quality Standard compliance. The Corps must not make this presumption in the EIS as currently and historically the SWP routinely, and sometimes significantly, violates water quality standards. It would be a violation of NEPA to approve a project that violates the law. The Corps must avoid assuming as DWR does that the Delta Conveyance has an equal level of legal compliance with water quality standards as the current SWP – especially in the absence of proposed water operations which must be evaluated to prove it. Based on the current and historical record of the SWP water quality standards violations it would be more appropriate to assume that the Delta Conveyance project will be in violation of the water quality protection laws.

c. Notice of Intent.

The following are comments on the specific sections of the USACE Notice of Intent.

- **Section 1** *"The scope of the USACE NEPA review for operations of the new facilities is limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries."*
 - The NOI statement of limitation of the scope of analysis in the EIS fail to include environmental and aquatic resource impacts downstream from the Proposed Action intakes which is in direct conflict with the Corps Mission Statement. The first sentence in the Corps of Engineers mission statement is "The mission of the Corps of Engineers Regulatory Program is to protect the Nation's aquatic resources,..."
(<https://www.lrl.usace.army.mil/Missions/Regulatory/Mission-Statement/>)

The previously prepared Bay Delta Conservation Plan EIS/R and WaterFix EIS/R (almost identical projects to the Proposed Action) demonstrated that reduced flows downstream of north delta intakes adversely impacts water-quality suitability of fish habitat for designated critical fish habitat for ESA listed fish species in large portions of the delta downstream from the proposed north delta intakes. Many Proposed Action construction activities (dredging, barge operations, fill) that occur in the Waters of the US occur downstream of the intakes. The Corps is incorrectly declaring in the NOI that they will not evaluate these impacts in the EIS. The Corps cannot omit these impacts to aquatic resources in their EIS by declaring a limitation to the scope of analysis that is in contradiction to the easily foreseeable impacts of the Proposed Action and would be in dereliction of the Corps Mission Statement defined

public trust responsibilities for 404(b)(1); Executive Order 11990, and 50 CFR Parts 400-499, 600, 660.5.

- 33 CFR Ch. II defines the criteria for the scope of the Corps jurisdiction and responsibility for the scope of the EIS impact analysis in <https://www.govinfo.gov/content/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part325.pdf>, page 22, paragraphs 1-5. Paragraph 3, *“...for those activities that require a DA permit for a major portion of a transportation or utility transmission project, so that the Corps permit bears upon the origin and destination as well as the route of the project outside the Corps regulatory boundaries, the scope of analysis should include those portions of the project outside the boundaries of the Corps section 10/404 regulatory jurisdiction. To use the same example, if 30 miles of the 50-mile transmission line crossed wetlands or other “waters of the United States,” the scope of analysis should reflect impacts of the whole 50-mile transmission line.”* The example given illustrates the conditions in which the Corps must analyze the project in its entirety of geographic scope exactly describes the characteristics of the Proposed Action. The origin and the destination of the project are in waters of the US, involve Corps Project Levees and require Corps permits. For the proposed 26 or so mile project corridor there are 30 odd crossings of navigable Waters of the US. The Corps permit requirements will bear upon the route of the project which is another criteria met by the project that requires the Corps analyze the project in its entirety. By the requirements of this statute, the Corps scope of analysis must include all aspects of the project, not just those with direct Corps jurisdiction.
- One of the Corps other principle missions is flood risk management. The Proposed Action north delta intakes and dual operations have direct downstream impacts on redirected flood risks. If the north delta intakes operate during peak flow events or king tides, the Proposed Action is redirecting flood risk to the south delta. Under the No Action, south delta SWP pumping would have contributed to lower stage elevations in the area of the south delta intakes. These redirected downstream flood risks from the Proposed Action are common sense to anticipate that they would occur, but cannot be analyzed at a project-level of detail in the EIS due to the omission in the project description of how the Proposed Action will be operated. These redirected flood risks must be evaluated in the EIS as they are real impacts of the Proposed Action and are at the core of the Corps defined mission responsibilities to protect.
- Another regulatory responsibility that Corps would be delinquent in with the NOI proposed scope limitation is their obligations for Section 103 of the Marine Protection, Research and Sanctuaries Act (33 U.S.C. 1344). The Proposed Action will alter the timing and magnitude of Delta net outflows which affects marine resources which must be evaluated in the EIS for compliance with these statutory Corps responsibilities.
- Water permitted for diversion by the Corps will have environmental consequences along the entire SWP conveyance, in the water delivery service areas and in downstream drainages from those service areas. The Corps must not take a myopic view of the water diversion impacts solely at the point of diversion when it is obvious Corps issued permits would result in downstream system impacts.

- The Corps also omitted from their announced scope the myriad of construction-related impacts. Any Corps issuance of construction-related permitting would allow impacts to occur that were not analyzed, quantified or mitigated in the EIS. A significant amount of construction site and on-going operations-related facilities dewatering would occur with the Proposed Action. DWR's Proposed Project fails to disclose or detail the location, timing, volume, proposed water treatment and water quality of construction dewatering discharges to the waters of the United States. Section 320.4(d) requires the Corps to evaluate the water quality from these discharges that would occur as a part of the Proposed Action.
- The EIS cannot review the "long-term operations" as they propose in the NOI as DWR's Proposed Action project description does not include water operations descriptions or daily intertidal operations rules that can be modeled for flow and habitat impact assessments.
- Settling basins at the intakes will require periodic dredging and sediment disposal. The quantity and timing of these dredging operations and disposal are not defined in the Proposed Action. Proposed Action tunnel muck storage areas are located downstream of the proposed north delta intakes. Erosion sediments from these tunnel muck storage locations drain into waters of the US which the EIS must evaluate. The scope of the Corps EIS analysis is compelled to include tunnel muck and dredge spoil areas by (<https://www.govinfo.gov/content/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part325.pdf>, page 21, second column, paragraph 6, "...if an applicant seeks a DA permit to fill waters or wetlands on which other construction or work is proposed, the control and responsibility of the Corps, as well as its overall Federal involvement would extend to the portions of the project to be located on the permitted fill." By the requirements of this statute, the Corps is compelled to include these areas and impacts in their EIS scope.
- Areas in the river channel adjacent to the intakes may scour channels undermining Project Levee toe structural support or require dredging. Section 320.4(k) requires the Corps to "insure that the structures comply with established state dam safety criteria." Clifton Court Forebay which will be modified in structure and operation by the Proposed Action is NOT Division of Safety of Dams compliant. None of these Proposed Action facilities or operations are described at a project-level of detail in the Proposed Action and therefore they cannot be evaluated to meet this requirement of the Corps and EIS. Project level location of the intakes and design characteristics are required to conduct Corps Project Levee integrity related impact assessments to support Corps 33 CFR Parts 321 and 322 permit decisions. The Proposed Action is deficient in providing this information. Information in the Proposed Action is insufficiently defined such that analysis of these affects on the levee integrity, navigability or wetlands could be analyzed in the EIS. Without sufficient specificity of the project description it is a foregone conclusion that the EIS will fail to meet the Corps needs as a decision support document and resource and project impacts that would occur would to undisclosed, unevaluated and unmitigated.
- The NOI proposed limitation of the geographic scope of analysis to exclude affects downstream of the Proposed Action north delta intakes is in conflict with the EIS information needs to support Federal Cooperating Agency analysis and decision support

needs. USFWS and NMFS will require EIS fisheries analysis and impacts assessments of the Proposed Action downstream of the north delta intakes to and including the Pacific Ocean to support the preparation of their related and dependent Environmental Assessment, Biological Opinions and potentially, Section 10 Incidental Take Permits. The BDCP and WaterFix EIS/R demonstrated that the Proposed Action will have significant adverse impacts to water quality and fisheries habitat suitability downstream of the north delta intakes.

The USACE needs to revise the scope of the EIS impact analysis to encompass all of its regulatory scope and those of other federal agencies which would rely upon this document for decision making.

- **Section 1** *“tunnel material storage areas,”* The Cambridge Dictionary defines “storage” as “the putting and keeping of things in a special place for use in the future”. In other words, “storage” is a condition of finite duration, but the Proposed Action has not defined or disclosed the storage duration or what actions will occur when the finite duration of storage has expired and the undisclosed “future use” will be. Section 320.4 (2) requires the Corps to “..consider in the evaluation of every application:” ... “(iii) The extent and permanence of the beneficial and/or detrimental affects which the proposed structure or work is likely to have on the public and private uses”... (<https://www.govinfo.gov/content/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part320.pdf>) The Proposed Action does not define what the future use of the tunnel muck would be or when and where that would occur so the impacts of these undefined future uses cannot be analyzed, quantified, mitigated and disclosed in the EIS as required in this statute. As a result, the impacts of the future uses of stored tunnel muck cannot be permitted. Subsequent EIS documents cannot be conducted to support issuance of permits for future uses of tunnel muck as this would be piece-mealing impacts of the project and therefore a violation of NEPA. Erosion of tunnel muck stored material that is drains into Waters of the US must be evaluated by the Corps in the EIS for compliance with 33 CFR Part 323 and potential permit issuance.
- **Section 1** *“The future operation of the intakes after completion of construction would not be within control or responsibility of the Corps.”* 33 CFR 325, App. B Ch. II (7-1-11 edition)(7)(b)(2) *“The district engineer is considered to have control and responsibility for portions of the project beyond the limits of Corps jurisdiction where the Federal involvement is sufficient to turn an essentially private action into a Federal action. These are cases where the environmental consequences of the larger project are essentially products of the Corps permit action.”* The environmental impacts of the Proposed Action are entirely dependent upon the Corps issuance of their permits so the Corps is responsible for the environmental impacts that would occur in the implementation of the Proposed Action, and therefore the Corps has jurisdiction and responsibility for the entire project according to this statute and criteria. Further, monitoring of DWR compliance and enforcement of the terms and conditions of any Corps issued permits (33CFR Part 326) would continue to be a responsibility of the Corps. As an example, future operations of the Delta Conveyance may result in redirected flood risk under the condition of the north delta intakes being operated during storm or king tide events causing volumes of water that would have been diverted from the south delta under the No Action condition that, under the Proposed Action, would result in increased stage elevations and flood risk in the south delta. If permit conditions are violated, the Corps has a continuing obligation to monitor compliance and revoke permits if necessary.

- **Section 2** *"Current alternatives to be analyzed include variations of the proposed project. Options include two of three possible intake structures, multiple intake structure designs based on impact footprint and fish screen designs, intake and tunnel capacity between 3,000 to 7,500 cfs, and optimizing a tunnel alignment to minimize impacts within either a central Delta or eastern Delta corridor."* The "current alternatives" described are not functionally project alternatives, they are "variations of the Proposed Project" which are slight permutations of the same project. These proposed alternatives that are not actually functional alternatives to the project but variants of the same project, will predictably have the same types of impacts as the Proposed Action but insignificant variances in the magnitude of impacts. The intent of NEPA project alternatives is to have true alternative projects; a different mode or method to achieve the same project purpose and objectives. Further Corps is required to "...discuss geographic alternatives, e.g., changes in location and other site specific variables, and functional alternatives, e.g., project substitutes and design modifications." (<https://www.govinfo.gov/content/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part325.pdf>, page 24, paragraph 2). We anticipate the Corps evaluation of project alternatives will be much more open minded regarding the range of real and practicable alternatives to solve the water supply and environmental issues the Delta Conveyance project purports as Project Objectives than permutations of the same Proposed Action. We anticipate a close review of the screening criteria and alternatives selection rationale of the Corps' EIS Scoping and Alternatives Development Report.

Submitted as part of these comments are new and novel potential project alternatives and alternatives components we believe merit serious consideration and detailed environmental analysis as they more fully meet the project Purpose and Needs, but also have less environmental impacts (i.e. LEDPA). Many of these alternative components occur outside of the floodplain whereas the Proposed Action would occur in its entirety within the floodplain. Section 320.4(k)(3) requires the Corps to "...avoid authorizing floodplain developments whenever practicable alternatives exist outside the floodplain."

- **Section 2b** *"Potentially significant issues to be analyzed in depth include impacts to waters of the United States (including wetlands), the federal flood control project, and air quality. Other impacts include biological resources, special status species, hydrology and water quality, land use, navigation, water supply, aesthetics, recreation, and socioeconomic effects."* Air quality impacts require a detailed calendar of construction activity, by equipment model, hours of use and location. The Proposed Action includes none of this level of detail to support a project-level air quality impact analysis that would support consideration of construction-related air quality permits. Water deliveries in the SWP service areas also have air quality impacts, e.g. dust from fallowed fields or changes in land use due to the project so there is yet another reason the EIS cannot have an artificially truncated geographic scope of analysis as proposed by the Corps in the NOI.
- **Section 2c** *"USACE has invited the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Environmental Protection Agency to participate as cooperating agencies in the preparation of the EIS."* The NOI declared limitation in geographic scope of the EIS impact analysis

does not support the decision making requirements of the permits the USFWS and NMFS must consider. Additionally, Bureau of Reclamation's south delta pumping plant is in close physical proximity and intertwined in hydrologic condition to the SWP south delta pumping plants. The Coordinated Operating Agreement between the SWP and CVP means that Reclamation's operations will be directly affected by the Proposed Action potentially changing CVP water deliveries and affecting their ability to fulfill current contractual obligations. Changes in flows, water quality and stage elevations of tributaries from the Proposed Action dual operations will impact Reclamation's CVP operations, water supply, energy usage and water quality. As a federal agency directly affected by this Proposed Action, Reclamation must also be included as federal cooperating agency.

- **Section 4** *"Scoping Meetings. Due to the current COVID-19 pandemic and in compliance with Army and USACE directives, no in-person public scoping meetings will be held."* The Corps must disclose the directive that specifically obviates their public hearing requirements under Section 327.4 General Policies. Under Section 327.4, we formally request that a public hearing be held. If the Directives specifically prohibit in person meetings then we require that live web presentation and question and answer sessions be conducted via the internet. Many other projects have accommodated public participation in projects using these commonly used virtual meeting tools so the USACE conductance of virtual meetings rather than no meetings is precedented and more closely fulfills the Corps requirements under Section 327.3(a). A virtual meeting would more closely fulfill the requirements of Section 327.8(b) for submittal of oral statements which the in writing only comments defined in the NOI fail to meet and which discriminate against Minority and Disadvantaged Populations that may be illiterate to submit written comments.
- **Section 4** *"Members of the public are invited to view project information and a presentation on the USACE proposed action at <https://www.spk.usace.army.mil/Missions/Regulatory/Permitting/Environmental-Impact-Statements/>"* The material available at this location does not provide the promised "presentation" and the information provided at this location is deficient to support NEPA disclosures required for Public Scoping or Section 327.3(a). In order for the public and interested parties to develop potential project alternatives in their scoping comments, they need access to detailed project maps and detailed descriptions of the Proposed Action to determine the relevance to potential impacts on their lives and livelihood. As an example, saying that the intakes will be somewhere between Courtland and Clarksburg does not allow the public to determine whether the project would physically displace them, will be an immediate neighbor that would materially affect their future quality of life and enjoyment and use of their property, or is a project that is peripheral to their lives and livelihood and only affects them at a community or regional level.

The NOI failed to define and disclose the NEPA "Project Purpose and Need". The explicit disclosure of the Project Purpose and Need statement in the NOI is essential for public project scoping comments as the Purpose and Needs of the project are the criteria that will be used to evaluate the suitability of Proposed Project/Action alternatives. Without the Purpose and Need, the public is denied the information to know how their proposed alternatives would be screened and evaluated. The NOI must be reissued with a clear NEPA Purpose and Need statement.

- **Section 4** “Comments may be submitted via the website or through email or written comments submitted to the contacts listed above.” There does not appear to be any method to submit comments via the website as instructed in the NOI. Directing the public to submit comments via a mechanism that does not exist results in suppression of public participation in the project which is a violation of NEPA.
- **Section 4** “project milestones” The EIS milestones listed omit the important EIS Scoping and Alternatives Development Report which discloses to the public the scoping comments made, the EIS criteria and process used for alternatives screening, alternatives development, and alternatives selection with their supporting rationale. The draft Scoping Report is issued for public comment and the final Scoping Report must document how public scoping comments were addressed.
- **Section 5** “The draft EIS is scheduled to be available for public review and comment in mid-2021.” The Corps proposed EIS project schedule is unrealistic and is in direct conflict with DWR’s published EIS/EIR schedule (see https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/DC_Schedule_August2020_508.pdf?la=en&hash=9069D624DB200C0BC9C8B57BAA51DB7FC3CCB19B) which has the EIS scheduled to release the Public Draft EIS at the first part of the second quarter of 2022 (9 months later than the Corps published EIS schedule in the NOI). Given the scope and complexity of the project, agency mandatory draft review periods; interdependent, sequential and iterative analytical modeling logistic constraints, etc., and the precedent of the previous EIR/S taking 3 years to produce a public draft, DWR’s published schedule is also unrealistic.

The NOI was deficient in non-disclosure of the Project Purpose and Need, non-specificity of project location, directing the public to presentations and portals to submit comments to the wrong location, and incorrectly announcing a restricted scope of analysis which fails to fulfill the Corps regulatory responsibilities.

d. Corps Public Scoping Website.

(<https://www.spk.usace.army.mil/Missions/Regulatory/Permitting/Environmental-Impact-Statements/>)

As part of the Public Scoping process, the Corps employed a web page. Following are comments on the materials disclosed on that web page as part of the Alternatives Scoping process.

- **Process section, paragraph 1**, “The Corps will choose the first qualified contractor on the list and notify the applicant of the choice. The Corps will work with the applicant and the contractor to prepare a Statement of Responsibilities and Scope of Work for the EIS preparation. As the lead Federal agency, the Corps is responsible for the preparation and content of the EIS to ensure an independent review. Although the applicant incurs the cost of the preparation of the EIS, the contractor is under the sole direction of the Corps, and will have limited interaction with the applicant.” Further, “In accordance with Regulatory Guidance Letter 05-08 (<https://usace.contentdm.oclc.org/utis/getfile/collection/p16021coll9/id/1251>), we will approve

the first contractor that is fully acceptable to the District using your order of preference.” (emphasis added)

We agree that the Corps must not abrogate its responsibilities as Federal Lead Agency and must conduct an independent and unbiased EIS which retains its integrity from the direction or influence of the applicant. However, the NOP declared EIS project contractor selection process has violated Corps contracting rules 40 CFR Section 1506.5 Agency responsibility, paragraph C, “It is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, ...” (<https://www.law.cornell.edu/cfr/text/40/1506.5>) The Corps did not independently or in cooperation with Federal Cooperating Agencies select the contractor to conduct the EIS.

Allowing the Applicant to dictate which 3 contractors the Corps had available to choose from in descending order of the applicant’s preference clearly violates 40 CFR Section 1506.5 requirement for the EIS contractor selection process to be independent. The Corps must adhere to their EIS contracting guidelines and redo the contractor selection process unencumbered by the previous constraints of the Applicant approved contractor selection in their descending order of preference.

In the USACE cover letter for the NOI it identifies that the potential contractor will be evaluated based on criteria for “knowledge of the geographic area, experience with the type of project being proposed, NEPA, and the Corps Regulatory Program Section 404(b)(1) requirements”. What are the USACE criteria and how were the 3 preferred (in descending order) prospective contractors specifically scored regarding these requirements and the criteria for USACE “acceptability”?

- **EIS Contractor Evaluation Criteria for Corps Consideration.** As part of the determination of a qualified contractor, the Corps must take into account the depth of qualified staff available to independently prepare the EIS. As a criterion for selecting a qualified contractor, an overriding consideration must be that the contractor selected not be the same one as used by the Applicant for the EIR. The rationale for disqualifying the Applicant selected contractor for the EIR for the preparation of the EIS is twofold. First, this would avoid the cross contamination and inherent conflict of control of the contractor that would work both for the federal lead and the applicant which would inherently compromise the Corps “independent review” and “sole direction of the EIS”. The second and very important criteria that disqualifies the contractor selected for the EIR preparation by the Applicant from being suitable for preparing the EIS is due to the scope and magnitude of the project and the resulting personnel and magnitude of labor hours required to complete it. The previously prepared WaterFix EIS/R that shares the same scope and complexity with the current Delta Conveyance EIS was 40,000 pages in volume and took 10’s of thousands of staff hours to prepare. The consulting team selected to prepare the WaterFix EIS/R included 17 companies and over 180 dedicated staff. There are no qualified environmental consulting firms that have depth of staff with the specific skills, experience and qualifications for this project to provide separate non overlapping staff teams for the preparation of a separate EIS and EIR. If the same firm is selected for both contracts, then there would be absolutely no ability for the Corps to control

“limited interaction with the applicant” as their stated principles mandate in this proposed Process statement. If the same contractor is selected for the EIS as the EIR, the same staff would prepare both documents and the independence of the Corps direction to prepare the EIS would be forfeit. To protect the integrity of the preparation of the content of the document and the control by the Corps of the process they have legal responsibility for as the Federal Lead Agency, any company included in the team selected to prepare the EIR should be excluded from consideration for selection of the contract selected to prepare the EIS. If DWR’s first preference for the EIS contractor is the same as they retained for the EIR, they must be disqualified as conflicted for “independent direction by the Corps” and that they would be without sufficient independent resources to successfully conduct the EIS.

- **Process section, paragraph 2,** *“The NOI is intended to solicit from the public factors to consider in the EIS.” 40 CFR ' 1508.22 The Notice of Intent (NOI) notifies the public that an EIS will be prepared and considered. This determination may be based on information contained in an EA or on other available information which indicates that potentially significant effects may be associated with a proposed action”.* The NOI failed to disclose any of the “potentially significant effects associated with the proposed action” which makes this NOI deficient and in violation of NEPA disclosure requirements. The NOI also failed to disclose the Purpose and Need for the project which is also a violation of NEPA requirements for the NOI. The NOI also failed to describe and disclose the beneficial/adverse impacts of the proposed action as required by <https://www.govinfo.gov/content/pkg/CFR-2011-title33-vol3/pdf/CFR-2011-title33-vol3-part325.pdf>, page 23, column 2, paragraph 1. The NOI is materially deficient in these 3 core NEPA requirements and Corps statute and must therefore be revised and recirculated.
- **Process section, paragraph 2,** *“The public will be given a specific period in which to comment on the DEIS.”...“ The public will be given a minimum of thirty days to comment on the FEIS. Following the close of the comment period on the FEIS, if all information has been received to make a permit decision, the Corps will prepare a Record of Decision (ROD) for the action.”* We appreciate the Corps project commitment in your published process to taking, addressing and taking into consideration, prior to agency decision making, public comments on the DEIS and the FEIS.

e. Delta Conveyance Authority Alternatives Scoping Conclusions.

Although the DCA Alternatives Scoping Conclusions are not a Project Basis document, they are illustrative of DWR’s fundamental flaws in their Alternatives Scoping and Development Process that the Corps must avoid emulating. DWR utilized screening criteria that were not supported by any project basis document and which were made up to artificially constrain the project alternatives to only tunnel conveyance options with minor variations which do not constitute a “reasonable range of alternatives”. We submit this information in our scoping comments so the USACE will be aware of DWR’s indefensible process and criteria and to avoid accepting those in the EIS Alternatives evaluation and development process.

i. DWR Was Wrong to Reject All Non-Tunnel Project Alternatives.

DWR has summarily rejected all project alternatives other than a tunnel conveyance.

(<https://cah2oresearch.com/>) DWR has not released an Alternatives Development Report which would disclose the process, rationale and criteria DWR has utilized to reach this conclusion. USACE should require DWR provide and publicly disclose this information prior to any reliance upon DWR's alternatives evaluation and selection conclusions. The rationale reported in the quotes below indicate that DWR utilized screening criteria which were not supported by the NOP, the Project Purpose and Objectives or Governor Newsome's Executive Order N-10-19.

Following is the detail of the DWR's rejection of all non-tunnel conveyance project alternatives.

"The Delta Conveyance Design and Construction Authority" convened the 10th meeting of the Stakeholder Engagement Committee on Wednesday, July 22, 2020. Carrie Buckman, the Environmental Manager for the Department of Water Resources, gave a presentation on DWR's screening of alternatives used in their alternatives scoping process.

Buckman summarized the Delta tunnel project objectives as follows:

- CLIMATE RESILIENCY –Addresses climate change, extreme weather, and rising sea levels in the Delta for the SWP
- SEISMIC RESILIENCY –Minimizes health/safety risk to public from earthquake-caused reductions in water delivery quality and quantity from the SWP
- WATER SUPPLY RELIABILITY –Restores and protects ability to deliver SWP water in compliance with regulatory and contractual constraints
- OPERATIONAL RESILIENCY –Provides SWP operational flexibility to improve aquatic conditions and manage risks of additional future constraints

Buckman described all the No Tunnel and Through-Delta project alternatives considered as including some combination of:

- Increase water recycling and conservation efforts
- Desalination facilities
- Continued through-Delta conveyance (use of existing facilities) with improvement to Delta levees

Buckman then showed a slide which stated that the alternatives which continued to use through-Delta conveyance did not meet the project objectives of climate resiliency, seismic resiliency, and water supply reliability."

Through-Delta Screening Discussion

Filter 1

- Climate Resiliency
- Seismic Resiliency
- Water Supply Reliability
- Operational Resiliency

Filter 2

- Avoids/lessens impacts

Filter One – Meets Basic Project Objectives?

- Improving levees and through-Delta conveyance would not address the water quality component of the project objectives of climate change and sea level rise for the SWP
- Continued use of the existing system (even with upgrades) as a long-term plan does not address seismic resiliency and the associated water supply reliability concerns

No Tunnel Screening Discussion

Filter 1

- Climate Resiliency
- Seismic Resiliency
- Water Supply Reliability
- Operational Resiliency

Filter 2

- Avoids/lessens impacts

Filter One – Meets Basic Project Objectives?

- Alternatives that rely on water agencies to implement additional projects (such as water recycling, conservation, or desalination) provide alternate supplies instead of the SWP
- Alternate supplies do not meet the fundamental project purpose of enabling the SWP to continue to function through challenges such as climate change, sea level rise, and earthquake risk

<https://cah2oresearch.com/>

ii. Response to Each DWR Alternative Scoping Rationale Claim.

- CLIMATE RESILIENCY – Includes: 1) climate change, 2) extreme weather, and, 3) rising sea levels in the Delta
 - The Proposed Project/Action: score 0 out of 3**
 - DCA changed the sea level rise construction criteria for the Delta Conveyance from to just 18” of sea level rise in the next 100 years. “Sea Level Rise (SLR) due to climate change over the next 100 years, estimated at 18 inches in the Delta.” (<https://dcdca.org/wp-content/uploads/2020/09/JEPA-Exhibit-A.pdf> page 6, paragraph 3, last bullet) We believe the Corps climate change impact standards require analysis of a 10’ sea level rise by the year 2100. This DCA reduction in sea level design criteria fails to protect the Proposed Project/Action from sea level rise.

- DWR’s proposed intake locations are within the tidal exchange range and salinity affects zone of current climate and hydrology of the Sacramento River. The historical salinity monitoring station on Randall Island is less than ½ mile downstream of the Proposed Project/Action intake. With their assumed 18” of sea level rise (let alone the 10’ required) the intakes would need to be located north of the I Street Bridge in Sacramento (or farther). The Proposed Project/Action fails to adequately address sea level rise.
- The Proposed Project/Action includes no facet to address any aspect of extreme weather.
- The Proposed Project/Action does not alter the timing and magnitude of water supply diversions in anticipated change of precipitation and hydraulic patterns of higher peak winter flows and lower spring-summer flows in the future. The Proposed Project/Action fails to address climate change.

The Proposed Project Alternative: Score 3 out of 3 (see “Alternatives” descriptions and evaluations below)

- The through delta conveyance project alternative combined with four operable gates on the Carquinez Straights, address extreme weather by the ability to moderate peak storm tides from sea level rise and extreme weather events.
- Through delta conveyance combined with criteria fish screens and downstream storage allows increased diversion operations during peak winter flows with anticipated climate changes in seasonal hydraulic patterns which also allow diversion timing of better water quality under sea level rise conditions.

- SEISMIC RESILIENCY – Includes: 1) Minimizes health/safety risk to public from earthquake-caused reductions in water delivery quality and quantity from the SWP

The Proposed Project/Action: score 0 out of 1

- DCA lowered earthquake construction standards for the conveyance so it fails to protect the project from earthquake to the level required for “critical infrastructure”. “SEISMIC CRITERIA AND PERFORMANCE The project is a new facility that transports water from north of the Delta to south of the Delta. The facilities within the California WaterFix are considered “critical facilities” as long delays in water delivery from the north to the south of the Delta could have a significant negative impact on human life and the California economy. Critical facilities comprise all public and private facilities deemed by a community to be essential for the delivery of vital services (FEMA 543). As a consequence of this classification, the facilities shall be designed as described as Essential Facilities as described in California Building Code (CBC) and American Society of Civil Engineers (ASCE) 7. Facilities that require extended time frames for repair/replacement (e.g. large pumps or tunnel structures) shall be designed with the highest seismic standard to prevent prolonged delays in water delivery after a large earthquake event.”

“DWR’s Water Resources Engineering Memorandum No. 70 (WREM-70) prescribes minimum Seismic Loading Criteria for the State Water Project...”. (Emphasis added) The WREM-70 allows the DCA to construct the Delta Conveyance at a standard that violates FEMA 543. A failure of the project infrastructure (tunnels, intakes or Forebays) can result in failure of surrounding infrastructure, i.e. Project Levees. The Proposed Project/Action fails this due to the lowered seismic construction standard and violation of FEMA requirements.

The Proposed Project Alternative: Score 1 out of 1

- The through delta conveyance project alternative combined with four operable gates on the Carquinez Straights, addresses earthquake-caused risks to the delta by reinforcing conveyance levees, adding operable gates, flow patterns which clear saltwater intrusion more quickly, and can prevent saltwater intrusion by temporarily closing the Carquinez structure until hydraulic equilibrium is reached.
 - The proposed alternative project components for seismic upgrades to the California aqueduct and Tracy pumping plants also increase SWP system seismic system robustness.
 - The proposed alternative project components to address the Oroville Reservoir Slip Fault and Dam Green Spot Leak also increase SWP system seismic system robustness.
 - The proposed alternative project components of distributed and intertied delta intakes also increase SWP system seismic system robustness by allowing water diversions from several different delta locations based upon need and conditions.
 - The proposed alternative project component to add downstream of delta water storage also increase SWP system seismic system robustness.
 - The alternatives proposed satisfy this criterion several ways which is indicative of the rigor and range of conditions this alternative would meet this criterion.
- WATER SUPPLY RELIABILITY – Includes: Restores (as previously discussed, not defined so cannot be a criteria) and 1) protects ability to deliver SWP water in compliance with regulatory and contractual constraints

The Proposed Project/Action: score 0 out of 1

- The most significant historical operating constraints were to protect endangered fish species. The Proposed Project/Action moves the intakes to the north delta which is still in the designated critical habitat range of the delta smelt and exposes even a larger population of listed anadromous fish in this new location. With sea level rise and climate change, fish population habitat utilization patterns and locations will change. The Proposed Project/Action is in a location that the Delta and Longfin smelt would likely increase habitat usage. The fish protection water operations constraints are likely to occur at this north delta

intake location has not changed their regulatory constraint problem, they have just moved the location of it. The Proposed Project/Action fails to meet this criterion.

The Proposed Project Alternative: Score 1 out of 1

- The proposed alternative project components of distributed and intertiered delta intakes allow flexible water diversion location operation to avoid the presence of endangered fish populations.
 - The proposed alternative project components of criteria compliant fish screens at Clifton Court protects endangered fish populations so water operations constraints to protect fish would be unnecessary.
 - The proposed alternative project component to add downstream of delta water storage also increases SWP water supply reliability by having a larger water supply reserve closer to the end users. More stored water means less risk of times with reduced water deliveries.
 - The alternatives proposed satisfy this criterion several ways which is indicative of the rigor and range of conditions this alternative would meet this criterion.
- OPERATIONAL RESILIENCY — Includes: 1) SWP operational flexibility to improve aquatic conditions and manage risks of additional future constraints (not counted as a criterion here as it is vague as it is redundant with seismic)

The Proposed Project/Action: score 0 out of 1

- Other than potentially dual operations of the north delta intakes and the existing south delta diversion, the Proposed Project/Action provides no operational flexibility.

The Proposed Project Alternative: Score 1 out of 1

- The following alternatives components increase SWP operational flexibility – SDWSC in Delta Water Storage (allows improved water quality management response time, control and water supply efficiency), distributed and intertiered delta intakes (allows water diversions at a number of different locations), operable gates of the Reconnected Delta Distributaries allows management of the location and volume of freshening flows to manage water quality and improve fish habitat. The reconnected distributaries also create substantial quantities of high quality fisheries habitat and fisheries food production.

Summary of the Application of DWR’s Alternative Screening Criteria to the Proposed Project/Action and the Project Alternatives

Judiciously applying DWR’s own (flawed and unsupported by project basis document) screening criteria against the Proposed Project/Action resulted in a score of 0 out of 6. The Project Alternatives scored 6 out of 6. The Project Alternative is a much better project to reasonably satisfy the purpose and needs of the project than the current Proposed Project/Action. DWR’s characterization of all Through Delta

Conveyance and other non-tunnel conveyance alternatives being unsuited to meet these screening criteria is demonstrated here to be false.

III. Alternatives Scoping Process.

a. Introduction.

As stated in previous comments here, DWR largely made up the alternatives screening criteria and inconsistently applied those criteria to come to their desired conclusion of tunnel conveyance only project alternatives – which are not true alternatives. The Corps must not rely upon these baseless and incorrect criteria. In the following subsections, the Project Basis documents previously discussed are analyzed to identify supported project screening criteria.

This section also takes the correct and supported screening criteria from these Project Basis documents and evaluates the Proposed Project/Action against them to disclose how poorly this project meets the true project needs and objectives.

b. Analysis of Executive Order N-10-19 for Alternatives Development Screening Criteria.

Since this Executive Order (EO) is DWR's claimed basis of justification for initiating the Delta Conveyance Project, it is important to examine the objectives of the order to ensure the project fulfills those objectives and is compliant with the mandatory criteria defined in it.

Following are selected quotes from the Executive Order which identify mandatory criteria for Water Resiliency Portfolio projects which the Delta Conveyance Project must utilize as project alternatives screening criteria:

- **Page 1, paragraph 2**, *"we face a range of existing water challenges including unsafe drinking water across the state, major flood risks that threaten public safety, severely depleted groundwater aquifers, agricultural communities coping with uncertain water supplies, and native fish populations threatened with extinction."*
 - **Page 1, paragraph 5**, *"future prosperity of our communities and the health of our environment depend on tackling pressing current water challenges while positioning California to meet broad water needs through the 21st century"*
 - **Page 1, paragraph 7**, *"... providing clean, dependable water supplies to communities, agriculture, and industry while restoring and maintaining the health of our watersheds is both necessary ... "*
 - **Page 1, paragraph 8**, *"achieving this goal requires a broad portfolio of collaborative strategies"*
- Emphasis added with underlining to identify EO objectives that must be included in the Delta Conveyance Project objectives in order for it to be consistent and compliant with the EO.

The Delta Conveyance Proposed Project/Action Does Not Accomplish the Required Objectives of the EO. Bold text in the following bullet points are objectives and issues to be addressed by projects in the Water Resiliency Portfolio required by the EO.

- **Unsafe Drinking Water:** Millions of Californian's get drinking water from the Delta, some through the SWP and others directly or from other non-SWP water sources. The WaterFix EIR/S showed that a tunnel project with North Delta intakes, such as the Delta Conveyance Proposed Project/Action, would degrade the water quality for non-SWP sourced Delta drinking water. Although the Proposed Project/Action when operated could improve drinking water quality for some selected Californian's that happen to live in SWP Water Contractor districts, it comes at the direct expense of the adverse drinking water quality impacts to many other Californian's water supplies that are also sourced from the Delta.
- **Major Flood Risks that Threaten Public Safety:** The Proposed Project/Action's stated purpose is to move SWP intakes to the north Delta so that SWP water quality is protected (this assertion by the project is incorrect as water quality is not protected as discussed in later comments in this document). Moving the intakes to protect only export water supplies is a tacit abandonment of the Delta by the State. This abandonment of the Delta by the State to assumed sea level rise leaves all of the residents, businesses, infrastructure (statewide electrical transmission lines, natural gas pipelines and wells, state highways, railroad lines, fiber optic lines, ports of Stockton and Sacramento, etc.) vulnerable to peak flow events from rain on snow and storm surge events. DWR's SWP abandonment of the Delta to future increased sea level rise created by the Delta Conveyance Project promotes and results in direct violation of the California Department of Water Resources responsibility as a Public Trust Resource management agency. The Proposed Project/Action fails to fulfill the EO objective to protect the public from flood risks.
- **Depleted Groundwater Aquifers:** Variability in annual SWP contract deliveries is responsible for groundwater depletion within the SWP service areas.

The depletion of groundwater resources as a result of variations in water supply quantities delivered in the Central Valley was discussed at length in the Bureau of Reclamation Remand EIS document. SWP Water Contractors and their customers treat average SWP water deliveries as a near certainty in their hardened water supply demand. Any year of less than average SWP water supply contract deliveries is treated by the SWP Water Contractors and their customers as an aberration to be met with a mad scramble for water trades and alternative water supplies. This results in critical groundwater overdrafts occurring within SWP Service Areas at a rate equal to or greater than other similar areas that are not within the SWP service area. The EO defines that hydrologic conditions in the future will make SWP water supply reliability even more variable and lower than today's conditions. The Delta Conveyance project however actually increases SWP Water Contractor reliance upon Delta water supplies which will become even more variable in the future. This increased reliance upon Delta water supplies and increased future water supply variability means the Delta Conveyance Project will predictably result in additional pressure and overdraft of the State's depleted groundwater aquifers. The Delta Conveyance Project is an additional threat to the depletion of groundwater aquifers and is in conflict with the EO requirement to reduce groundwater depletions. The SWP and CVP failed to develop, at water contractor expense or otherwise, the projects which were planned to capture surplus water to support the contractor desires. The delivery of infirm or interim supply with encouragement of water transfers and

profiting from sale of project water has resulted in permanent urban and agricultural demand which cannot be met without over drafting groundwater or taking of surface water which is not surplus to the present and future needs of the area from which it is taken.

- **Uncertain Agriculture Water Supplies:** The EO defines that hydrologic conditions in the future will make SWP water supply reliability even lower than today's conditions. The Delta Conveyance project increases SWP Water Contractor reliance upon Delta water supplies which will become even more variable in the future. This increased reliance upon Delta water supplies and increased future water supply variability means the Delta Conveyance Project predictably results in even greater uncertainty in Agricultural Water Supplies. In addition to water supply variability, the Delta Conveyance Project creates water transfer capacity that will greatly increase the economic conflict and disparity between municipal and agricultural water users. The water transfer capacity created by the Delta Conveyance Project will drive up the cost of agricultural water supplies as they are forced to compete against municipal water demands over a geographic range never previously experienced by the current excess transfer capacity constrained SWP system. The water transfer capacity created by the Delta Conveyance Project increases the uncertainty of agricultural water supplies and therefore is in direct conflict with this objective of the EO.

- **Native Fish Population Threatened with Extinction:** The Delta Conveyance Proposed Action does not protect or even reduce take of threatened and endangered native fish populations from SWP operations. The WaterFix EIR/S determined that there were no benefits to Delta Smelt or Longfin Smelt from north delta intakes and anadromous fish (salmon - all runs and sturgeon) were adversely impacted from north delta intakes. The Proposed Project/Action with its North Delta Intakes will almost certainly have the same adverse affects on these native species threatened with extinction - exactly the opposite of the objective and requirement in the EO.

- **Health of Our Environment:** The Delta Conveyance Project increases reliance upon Delta water supplies and will decrease the amount of water in and passing through the Delta which confer environmental benefits (improved water quality, flows, etc.) to the Delta. The Proposed Project/Action includes no features or functions designed to benefit the environment. With no benefits to the environment and known negative impacts to the environment, the Delta Conveyance Proposed Project/Action is in direct conflict with this requirement of the EO.

- **Provide Clean, Dependable Water Supplies to Communities, Agriculture, and Industry While Restoring and Maintaining the Health of Our Watersheds:** The EO requires protection and restoration of watershed health. The coequal objective of habitat restoration and water supplies as is still legally required by SB-X7. The Proposed Project/Action includes no components, provisions or features which are designed to accomplish or result in protecting or enhancing the health of the Delta watershed. The Proposed Project/Action fails to fulfill this EO mandate.

Broad Portfolio of Collaborative Strategies: The Proposed Action is a standalone project that does not have identified synergisms with other projects to meet this EO mandate nor is it comprehensive in addressing most of the requisite objectives of the EO.

• **EO Climate Change and Other Assumptions the Delta Conveyance Project and Other Water Resiliency Portfolio Projects Must Address:**

- *"shorter, more intense wet seasons that worsen flooding"*
- *"California continues to grow with our population projected to grow to 50 million"*

EO Assumptions Which Frame Delta Conveyance Project Criteria

Basic Assumptions the Project must address from the EO include:

- The assumption of shorter peak flow wet season hydrology in the future dictates that any project must anticipate this flow regime and incorporate design, engineering and operations consistent with this future hydrology. The implication is that the SWP must adapt to capture these wet season peak flows and anticipate significantly reduced operations in non-peak flow periods. Previously in other water diversion projects, this hydrology and operation has been referred to as a "Sip vs. Gulp" diversion operation. "Gulp" during peak flows when environmental impacts are reduced and "sip" or abstain from diversion operations during reduced and low flows when environmental impacts are much greater. Sip and Gulp SWP water diversion operation strategy requires downstream of delta water storage to store peak flow diverted water for use during periods of low or no diversion operations. The Delta Conveyance Proposed Project/Action has no feature which allows or facilitates improved capture or storage of wet period peak flows and fails to propose any operations to address changed future hydrologic patterns. Contradictory to the EO required assumption, the Delta Conveyance Proposed Action assumes increased operations in non-peak flow conditions by moving the SWP intakes to a new upstream location.
- The EO growth assumption (and Delta Conveyance Project Purpose) to "restore and protect the reliability of SWP water deliveries" identifies that the Delta Conveyance Project will support increased and long-term hardened demand water supplies from project facilitated population growth. The project supporting increased future population water supplies is a Growth Inducement impact the Delta conveyance Project EIR must disclose; determine the magnitude, location, timing and nature of growth induced; analyze; and mitigate those Growth Inducement impacts.

The Delta Conveyance Project incorrectly assumes the population growth identified in the EO must occur in SWP water contractor districts and that a Delta Conveyance Project must support it. Assumed population growth in Southern California in SWP Water Contractor districts is the driver for project capacity growth assumptions and design criteria for the future. This assumption of the project to support population growth within SWP service areas drives a commitment of energy, resources and budget where it does not necessary have to occur and is by definition wasteful and in conflict with the EO Water Resiliency Portfolio mandate to increase water supply security.

This erroneous Delta Conveyance Project assumption drives the construction of a large, complex and vulnerable water conveyance at great cost and environmental impact. The project must include as an alternative to the Delta Conveyance Project that anticipated future population growth would or should occur in areas at the origin or nearer to the water supply. Assuming people move to or future population growth occurs in areas that require less vulnerable and expensive infrastructure with less

environmental impacts is a much more reasonable, less expensive, less vulnerable, and less environmentally damaging project alternative than currently proposed by the Delta Conveyance Project.

EO Water Resilience Portfolio Requirements:

"IT IS HEREBY ORDERED THAT:"

2. *"Agencies shall first inventory and assess."* (Emphasis added)

f. *"Current planning to modernize conveyance through the Bay Delta with a new single tunnel project."*

3. *"This water resilience portfolio established by these agencies shall embody the following principles:* (Emphasis added)

a. *Prioritize multi-benefit approaches that meet multiple needs at once.*

b. *Utilize natural infrastructure such as forests and floodplains.*

c. *Embrace innovation and new technologies.*

d. *Encourage regional approaches among water users sharing watersheds.*

e. *Incorporate successful approaches from other parts of the world."*

EO Water Resilience Portfolio Requirement Implications for Delta Conveyance Criteria

- **2 and 2f above orders an inventory and assessment of current planning for modernizing conveyance through the Bay Delta with a single tunnel project.**

This order clearly does not authorize initiation of a project to plan or propose a Delta Conveyance project; it orders an inventory and assessment which is a report, not a CEQA project. 2a-h are orders for inventories and assessments. None of the others orders have been interpreted as an authorization for a project. What has been ordered as described in the EO is the equivalent of an Initial Study. The EO requires a study or a report not a project, so the Delta Conveyance Project has no legal basis for initiation. Without the legal basis for project initiation, any funds allocated to or expended by the Delta Conveyance Project are by definition "unauthorized" and illegal. The EO is also clear that the inventory and assessment must be done first which means it must occur before any project that might result from this inventory and assessment can be initiated regardless of other orders, policies or actions.

DWR must stop the current Delta Conveyance Project EIR and conduct the inventory and assessment as required by the EO.

- **The Delta Conveyance Proposed Project/Action Fails to Embody the Principles Required in 3 a-e.** 3 a-e require that any component of the Water Resiliency Portfolio, including modernizing Delta water conveyance, must embody these principles.

- o **The Delta Conveyance Proposed Project/Action Does Not Prioritize Multi-benefit Approaches That Meet Multiple Needs at Once.** The Proposed Project/Action includes only the benefit of increased export water supply for some selected Californian's that live in SWP Water Contractor districts. This single, limited and selected benefit for some Californian's comes at the expense of water supply reliability and other designated beneficial uses of water for delta residents, businesses and environment (water quality suitability for agriculture, fisheries, water supply). The Proposed Project/Action includes no provisions for other benefits such as protection or enhancement of Delta aquatic habitat or delta water supplies. In fact, the Delta Conveyance

Proposed Project/Action does the opposite of the multi-benefit approach by tacitly abandoning the delta to future sea level rise which dooms all of the other benefits and beneficial uses of water in the Delta.

o **The Delta Tunnel Conveyance Proposed Project/Action Fails to "Utilize Natural Infrastructure ... "** All of the components of the Delta Conveyance Proposed Project/Action are unnatural construction/engineering solutions and do not utilize or harmonize with any natural delta components, structures, features or functions. Improvement of Delta levee systems and continued use of the through Delta conveyance which has functioned for almost eighty years can continue to adequately serve both export and in-Delta needs.

o The Delta Conveyance Proposed Project/Action Fails to "Embrace Innovation and New Technologies". There is nothing new or innovative about the Delta Conveyance Proposed Project/Action tunnel for delta water conveyance. Isolated conveyance including peripheral canals has been studied for over 50 years. Delta tunnel water conveyance projects and alternatives have been studied and analyzed over the last 12+ years and in each scenario and iteration the projects failed to reduce impacts to threatened, endangered and listed aquatic species or to deliver incremental water supply or water supply reliability over the No Action/No Project condition. The Delta Conveyance Proposed Project/Action is one tunnel instead of the two previously proposed and with the river intakes at exactly the same locations as WaterFix and the BDCP before it. The Delta Conveyance Proposed Project/Action functions exactly the same as WaterFix so there is nothing new or innovative about 1 tunnel vs.2.

o **The Delta Conveyance Proposed Project/Action Fails to "Encourage Regional Approaches Among Water Users Sharing Watersheds."** The Delta Conveyance Project NOP does the opposite of this EO requirement by artificially and capriciously attempting to limit the geographic scope of project alternatives to the Delta. Increasing the reliability of SWP water supplies can be achieved by projects that address other potential weak points in the reliability of the SWP system. Projects to address SWP water supply reliability that are not in the Delta include, but are not limited to: Removing the giant slip fault in Lake Oroville, repairing the "green spot" leak on the face of Oroville Dam, seismic upgrades to the Banks Pumping Plant and California Aqueduct, repairing California Aqueduct leaks, increasing south of Delta water storage, etc. This NOP artificial geographic constraint on only the Delta thwarts the mandate for regional solutions. If Oroville Dam fails, either due to the slip fault or the green spot leak, it does not matter if delta water conveyance is modernized or not, there would be no water to export.

Similarly, if the Banks Pumping Plant or the California Aqueduct fail, it does not matter if the delta water conveyance is modernized, there would be no SWP conveyance for water south of the delta. The "inventory and assessment" required by the EO should evaluate the whole of the SWP to determine which parts are the most urgent and high risk to address for public safety and water supply reliability. Instead, the NOP jumps to the completely unsupported and predecisional conclusion that the greatest risk to SWP water supply reliability is conveyance in the delta. The capture of flood waters with diversions in the upper portions of watersheds with reservoirs and groundwater storage should not be precluded from alternative evaluation.

The predecisional components of the NOP (identified in NOP Comments below) reject the principle of cooperation or collaborative approach among users sharing watersheds. All of the aspects and objectives in the Proposed Project/Action are designed to benefit one group, SWP Water

Contractors, over other Delta watershed users, e.g. cities and municipalities, farmers, businesses, Reclamation Districts and other non-SWP Water Agencies.

- **The Delta Conveyance Proposed Project/Action Fails to "Incorporate Successful Approaches From Other Parts of the World."** There have been many tunnel projects around the US and world. Many tunnel projects in the US and around the world have experienced construction failures (underground obstructions, tunnel flooding, failed boring machines, boring operation-related levee failures, etc), schedule delays (years or even decades) and extreme cost over-runs (i.e. 5x of original \$ budgets). Common technical, construction, and engineering failures; adjacent infrastructure impacts; missed schedules and huge cost overruns are the hallmark definitions of failed projects and are project models to avoid, not follow, as the Proposed Project/Action does.

EO Analysis for Alternative Scoping Screening Criteria Summary

The EO does not authorize a Delta Conveyance Project; it only authorizes an inventory and assessment report. If the State, in violation of having a project authorization, continues to advance the Delta Conveyance Project, the alternatives development screening criteria must include all of the objectives requirements and principles required and identified by EO N-10-19. The current Delta Conveyance Proposed Project/Action only partially (and poorly) addresses one of the objectives identified in EO and fails to address all of the other requisite objectives and violates most of the principles and strategies required to be embodied by projects under the Water Supply Resiliency Portfolio as defined by the EO.

IV. Project Alternatives and Alternative Components.

a. Introduction.

In the spirit of open minded exploration and identification of project alternatives that reasonably meet the Project Objectives of the Delta Conveyance (and more importantly satisfy the mandates in EO N-10-19), the alternatives and alternative components set forth below merit objective consideration and evaluation in the EIS. The submittal does not reflect endorsement of all submitted alternatives as the result of objective evaluation should help guide such decision. Of the concepts listed below, only one aspect has been evaluated previously in any significant manner, the Through Delta Armored Levee Conveyance (and never in combination with other alternative components included below which make it satisfy all of the identified project purposes).

The agencies strongly support the improvement of the Delta levee systems and the continuation of the through Delta conveyance of water for export which maintains the "Delta common pool" for both export and in Delta use and the common interest in maintenance of Delta water supply and quality as required by Water Code Sections 12200-12205. One of the many significant deficiencies of the Proposed Project/Action is that it diverts water in the north delta, denying the multiple beneficial uses of water as it flows through the delta as under occur under current operations.

The following alternatives are much greater in scope and effectiveness in meeting the Water Resiliency Portfolio mandates than the Delta Conveyance Proposed Project/Action. The greater geographic scope of these alternatives is supported by the project basis document, Executive Order N-10-19, which requires consideration for regional solutions.

The only aspect of water supply resiliency the Proposed Project/Action addresses is the unquantifiable risk of levee failure in the Delta. A more comprehensive assessment of risks to SWP water supply reliability must address risks throughout the SWP system. If any link in the chain of SWP facilities is broken, from water origin to water destination, the whole system fails. Therefore the whole of the system must be included in the scope of the project to address water supply reliability. A number of SWP system risks present a higher risk of failure than the current through Delta SWP water conveyance. Consideration of a multilayered strategy to dramatically reduce through Delta SWP water conveyance risks that works with the natural Delta features and creates and enhances habitat values and water quality should be included within the project scoping. Following we identify project alternatives and alternative components that prospectively do just that.

Another distinct difference of these project alternatives presented below to the Proposed Project/Action is that they significantly reduce flood risks in the Delta and do not abandon the Delta to future sea level rise. The Proposed Project/Action does not reduce flood risks and does nothing to protect the Delta from sea level rise. The EIS must evaluate alternatives in which the Delta is not abandoned to flood to an assumed future sea level rise.

b. NOP Project Purpose and Objectives Comparison to Proposed Alternatives.

To put the alternatives consideration into perspective for the Corps in developing the alternatives screening criteria for the EIS, it is essential to examine the NOP Project Objectives as they are part of the basis for screening and evaluating alternatives. Here is an excerpt from the NOP regarding Project Purpose and Objectives.

"Here, as the CEQA lead agency, DWR's underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State's Water Resilience Portfolio.

The above stated purpose, in turn, gives rise to several project objectives. In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:

- To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events.
- To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta.
- To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements.
- To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations"

c. EO Water Resiliency Portfolio Mandates for Comparison to Proposed Alternatives.

To evaluate the suitability of project alternatives for the EIS, it is essential for the Corps to examine the mandates from EO N-10-19 as they are part of the project basis for developing alternatives screening and development criteria. We have previously analyzed and discussed these in our comments in previous sections. Rather than repeat them here, please review those pages as reference in the evaluation of the ability of these project alternatives to reasonably meet these alternatives screening and development criteria.

In the description and discussion of project alternatives to the Delta Conveyance Proposed Project/Action below, the alternatives proposed in these comments appear to meet most or all of the Delta Conveyance Project Purpose and Objectives and the EO mandates and fulfills them more reliably and reasonably than the Proposed Project/Action.

d. Summary Comparison of Proposed Alternative and Proposed Project/Action Against All Project Basis Document Supported Screening Criteria

Screening and evaluation criteria were identified through analysis of the Delta Conveyance NOP Project Purpose and Objectives and by mandates required for Water Resiliency Portfolio projects from EO N-10-19. In the table below, the components of the project alternative proposed in these comments are on each row colored in light green. The last row of light green is the total of the combined project alternative components. The next row below that in an olive color is the Proposed Project/Action. The vertical columns are alternatives screening criteria taken from the NOP Project Purpose and Objectives (olive color) and EO N-10-19 for the mandates of projects under the Water Resiliency Portfolio (light blue color).

Each Alternative component is evaluated based on its ability to reasonably meet each alternative evaluation and screening criteria. If an alternative component (or alternative in the case of the Proposed Project/Action) likely will satisfy the criteria, it is scored a **+1 and is color coded green**. If the alternative or component is uncertain or indeterminant from available information, the score is **0 and is color coded grey**. If an alternative or component does not address or reasonably satisfy a screening and evaluation criteria it is scored a **-1 and color coded red**.

You will see in the table that many of the alternatives components satisfy many (but not all – represented by white spaces) of the screening criteria. With this presentation it is easy to see which alternative components complement each other to meet the project objectives and EO mandates. If for any reason one of the alternatives components was determined to be infeasible, the proposed alternative would still be viable and more fully meet the project purpose and EO mandates than the Proposed Project/Action.

There are many benefits to combining these project alternative components into a single project alternative. First, in their combination, all but one criterion are met. Second, each of the alternative components satisfies each criterion in a different manner such that there is complimentary synergism in the effectiveness and reliability of the alternative as a whole in satisfying the criteria. Third, it allows the benefits of the alternative to be considered as a whole whereas the individual component may not be viable. A good example of increased overall project viability through the combination of alternatives components is the San Luis Grande south of the Delta water storage reservoir project alternative component. This south of Delta SWP water supply storage would do so much to add resiliency to the SWP system by allowing greater water diversions during periods of high flow and greater water supply reserves in the event of some SWP operations disruption in or above that location within the SWP. Considered as a standalone project, San Luis Grande failed its environmental review and permitting process due to impacts from the loss of wetland habitat. By combining this alternative component with the other alternative components into a single project alternative in the EIS, the impacts would be considered as a whole.

The wetland habitat loss from San Luis Grande would still occur with the reservoir footprint, but it would be more than offset by the increased wetland habitat quantity and quality created by the combined alternative component that reconnects the Delta Distributary Channels. The alternative components can be mixed and matched as needed to make the most viable project, but in general they are better together than they are individually.

The total score for the Project Alternative is summed in the last row with the corresponding score for each evaluation and screening criteria. The row below that is the scoring for the Proposed Project/Action. The total score for the Project Alternative is **233** and is **-11** for the Proposed Project/Action. The Proposed Project/Action performs poorly because the project proposed only obliquely addresses even the NOPs Project Objectives and largely ignored the mandates included in the Water Resiliency Portfolio Executive Order N-10-19.

Table 1. Comparison of Proposed Project and Project Alternative to NOP Objectives and EO N-10-19 Water Resiliency Portfolio Mandates

Proposed Alternative Components	Delta Conveyance NOP Objectives						EO N-10-19 Water Resiliency Portfolio Mandates														
	"Restore" SWP Water Supply & Protect Reliability	Consistent with State's Water Resilience Portfolio	Address Sea Level Rise	Address extreme weather	Reduce risk from seismic failure	Operational flexibility to improve aquatic conditions	Drinking Water Safety	Public Safety from Major Flood Risks	Depleted Groundwater	Addresses Uncertain Agriculture Water Supplies	Native Fish Populations	Health of Our Environment	Water Supplies to Communities, Agriculture, Restoring and Maintaining the Health of Watersheds	Broad Portfolio of Collaborative Strategies	Addresses Hydrologic Pattern Change for Shorter More Intense Wet Season	Supports Population Growth	Prioritize Multi-benefit	Use Natural Infrastructure	Embrace innovation	Approaches from Other Parts of the World	
Reconnect Delta Distributary Channels																					
Through Delta Conveyance East and Central Delta Distributed Intakes																					
Delta Water Intake Interties																					
Clifton Court Fish Screens																					
Carquinez Strait Structure																					
SDWSC in-Delta Storage																					
San Luis II or SL Grande																					
Increased Fast Response Levee Breach Resources																					
Siphon Failure Mitigation																					
<3% SWP Conveyance Loss																					
Banks Plant Seismic Upgrade																					
CA Aqueduct Seismic Upgrade																					
Lake Oroville Slip Fault Fix																					
Oroville Dam Leak Fix																					
SWP POD Desalination																					
Combined Alternative to Proposed Project	16	16	10	12	15	9	14	9	1	11	9	11	16	10	16	7	-1	16	9	14	13
Delta Conveyance Proposed Project	0	-1	0	-1	0	0	1	-1	-1	-1	-1	-1	0	-1	-1	-1	1	-1	-1	-1	0

Color Key	Relative Score
Fully Addresses Mandate	1
May or May Not Achieve	0
Does not Meet Mandate	-1

Total Score	
Combined Alternative to Proposed Project	233
Delta Conveyance Proposed Project	-11.5

Total Score

Table 1 Summary Comments: Every one of these project alternative components more fully meets the NOP project objectives and EO Water Resilience Portfolio Mandates more completely than the Proposed Project/Action. Together or in any combination, these project alternative components may potentially make a better and more reliable (and probably cheaper) project than the Proposed Project/Action. These project alternative components must be

evaluated in the EIS. Once a preliminary analysis is completed on each alternative component, the combination of those components that best meet the project needs can be analyzed as a full alternative in the EIS. Several different alternatives can be developed by mixing and matching different combinations of these alternatives components. Examination will reveal that most combinations of these will be the LEDPA in comparison to the Proposed Project/Action.

V. Project Alternatives and Alternative Components Description and Discussion.

Reconnect Delta Distributary Channels

This is an important project alternative component that has significant synergisms with other project alternative components. This alternative has never been evaluated in modeling or in an environmental analysis. It has merits and functions never considered before as a method to address Delta flow, habitat, water quality issues and SWP water supply reliability and resiliency.

First we will describe what a "Distributary" channel is and why they are important to restore. Tributaries are when flows come together, distributaries are when flows branch apart. The Delta was formed by sediment laden water slowing in velocity and dropping its sediment load. Channels become clogged with the dropped sediment and water flows branch off from the main stem channel to find new routes. These branching off flow channels are distributaries and they are the natural geomorphic function that form and define the Delta. Reconnecting the function of these channels is a "natural solution" to water quality and fish habitat problems of the delta. The EO requires that project utilize natural channels and solutions.

When the Delta formed, distributary channels (sloughs) were actively connected to the Sacramento River. Fish habitat and fish behavior were based on the flows that naturally occurred from these distributary channels. Over the years, almost all of the Distributary channels have had their flows cut off at their head end connection with the Sacramento River. Sutter, Steamboat, Georgiana and Three Mile sloughs are the only distributary channels left connected to the Sacramento River at their head end. By reconnecting these other historical distributary channels we restore more natural flows to the delta which in turn creates more habitat value and water supply efficiency and resiliency than the current through delta conveyance configuration.

Reconnecting northern delta distributary channels will allow better water quality from the Sacramento River to push and be drawn across the West, Central and East parts of the delta to the south and much more efficiently freshen water quality than the current and unnatural choked delta channel flow configuration. This means that likely less carriage water would be required to maintain water quality in large parts of the delta. The flows in these distributaries would function for habitat, water quality, carriage water and as water supply deliveries for the south delta SWP pumps.

The reconnected head ends of these tributaries would need to be fish screened and have operable gates (like the Delta Cross Channel). These alternatives are projects with lower cost and much smaller footprint than the Proposed Project/Action intake screens. Operable gates would be required to avoid redirected flood flows which the USACE would not allow in 404 permitting. The benefit of the operable gates of course is reduced flood risk as compared to the existing condition or the Proposed Project/Action so that is a clear win for the Delta and a satisfaction of this screening criteria from the Water Resiliency Portfolio mandate that the Proposed Project/Action does not address or satisfy. The fish screen would keep the Sacramento system fish in the main channel for reduced straying and

increased juvenile emigration survival. The flows are small so approach, sweeping velocity and duration of fish exposure criteria for fish screen compliance would easily be met which cannot be said for the Proposed Project/Action as those screens are great in length and therefore duration of exposure and approach velocities cannot be evaluated because the intake screen operations have not been disclosed for analysis in the EIS.

These reconnected tributary flows contribute to SWP water supply reliability in that in the event of a levee failure or under future sea level rise conditions, the salt water intrusion into the delta could be purged from the Delta more quickly and efficiently by controlling where and how much cross flow occurs through these reconnected distributaries to flush the saline water out of the delta. The Proposed Project/Action does nothing to protect the delta from saltwater intrusion or speed the flushing of salt water from the delta.

The flows through these currently dead end sloughs create substantial new and productive fish habitat and fish food generation. The habitat improvement benefits of these reconnections and activated habitat could provide justification for issuance of the ITPs the project would need and provide a basis for credit to offset other potential project impacts from the small, but required construction footprints. The habitat improvement and fish food generation make this project alternative component appear to be a clear win for Delta fish, habitat and water quality. It performs this function at the same time as increasing water supply reliability by providing a dynamic mechanism to control flows across sections of the delta that currently have little to no flows during large parts of the year.

Following are descriptions of the Distributary channel reconnection opportunities. Not all of these need to be selected in order for this alternative component to valuably contribute to the function of the project alternative.

- ***Fremont Weir to Tule Ditch in the Yolo Bypass*** - This flow would turn this slough into functioning habitat for fish food production. Flows (i.e. 100-200cfs) would come from the operation of the fish ladder that is already planned to be installed at Fremont Weir. The west bank of the Tule Ditch slough could be laid back to create shallow water habitat. The spoils from laying back the levee can be used to increase channel complexity creating habitat quality variations in water velocities and depths to create habitat values at a wide range of low and high flows. This channel is prime Sacramento splittail habitat (listed species) and would function for salmonid rearing and emigration habitat at low bypass flows.

About 20 linear miles of shallow water and riparian habitat could be created at low cost, low footprint and low disruption. Water quality at the Lisbon Weir diversion would be significantly improved. The positive flow (as opposed to the current negative flow) will push good water quality down into the Cache Slough and Barker Slough complex which will improve water quality at Solano County diversion at Barker Slough. A very small amount of water would freshen a large section of the intertidal wedge that occurs in the Cache Slough complex. This alternative component has significant fish habitat and food supply and water quality benefits.

- ***Sacramento Deep Water Channel (SDWSC) locks at the port*** - Re-engineer the locks to regulate flow and install fish screens between the port and the Sacramento River. The flows (100-200cfs) from the Sacramento River will improve water quality for the Sacramento Deep Water Ship Channel, Liberty

Island, and lower Cache Slough complex. This will improve water quality at the RD999 diversion off the SDWSC and help with water quality at Barker Slough for Solano County's diversion there. The lowest portion of the SDWSC and Liberty Island are considered prime delta smelt habitat so the water quality improvement in this geographic area is important to protecting this species which the Corps has jurisdictional responsibility. The positive flows (as opposed to the current negative flows) from the Fremont Weir and SDWSC will push out the large tidal wedge in the SDWSC, Liberty Island and Cache Slough complex that currently just sloshes back and forth resulting in water quality getting worse and worse in between infrequent flushing that occurs from Yolo Bypass operation. Improving water quality here is not only significantly beneficial to fish but should have far reaching water quality benefits into the Central and West Delta.

- **Railroad Cut** - Rather than reconnecting this tributary to the river directly, this might be pumped into from the Sacramento River by reversing the Morrison Creek discharge below Freeport and Morrison Creek being redirected into this canal. Flows would probably be limited to 100-200cfs. This would activate fish habitat and fish food production for a 10+ mile reach and improve water quality at Stone Lakes National Wildlife Refuge. This flow would improve water quality, habitat and food production in the Meadows by Locke and contribute flows to the North and South Forks of the Mokelumne. More flows and better water quality in the branches of the Mokelumne improve water quality in the east and central delta. Similar to the refreshing flows to the dead tidal wedge in the Cache Slough complex, this would improve water quality in an area much larger area than just this canal and the Meadows. This and the Snodgrass Slough reconnection should reduce or eliminate the Dissolve Oxygen (DO) crashes and toxic algal blooms that have been occurring in the Central Delta. The area of improved water quality and fish habitat condition is located in ESA designated critical fish habitat for several listed species (delta smelt, Longfin smelt, steelhead, winter- and spring-run Chinook salmon and sturgeon). DO crashes are a significant problem in the delta for fish and water quality. This alternative component is VERY important to solving critical problems in the Delta and deserves a full modeling evaluation to see how much of this problem this alternative component can solve.

- **Snodgrass Slough** - This would have a similar function and affect as the Railroad Cut reconnection. This would be directly connected to the Sacramento River and have a head control structure and fish screens. This reconnected channel could have a capacity of 200-500cfs.

- **Elk Slough** - Reconnection here would activate a dozen miles of very high quality fish habitat and food production for the delta and improve water quality at the RD999 diversion. If a gate is installed at the tail end of the slough at the confluence with Sutter Slough, flood risk for Merritt Island would be reduced (by approximately 60%) and RD999 (by around 20%). Reducing flood risk increases SWP water supply reliability and is part of the Corps mandate.

- **Delta Cross Channel (DCC)** - The gates could have boat passable fish screen added to allow extended seasonal operation of DCC which is a prime location for flows to keep the Central Delta water quality up. The screens would keep emigrating salmonids in the main Sacramento channel which has much higher survival rates.

- **Georgiana Slough** - Boat passable fish screens can be installed to keep Sacramento River emigrating juvenile salmonids out of the Central Delta where survival rates are very low. Flow rates through the

channel could be manipulated to more quickly clear saltwater intrusion from the delta in the event of a levee breach thus increasing SWP water supply reliability and system resiliency.

Through Delta Armored Levee Conveyance

This alternative component has been studied by Cal Fed and others so we will not go into great detail here other than to identify several learnings since the last time this project was evaluated and discuss the synergisms of this alternative component with other alternative components.

There have been several innovations of this alternative component since the last time this project was evaluated. These include:

- Levee construction of toe berms on the land side of the levees protect against potential levee liquefaction in the event of an earthquake that occurs when river stage elevations are high and levees are saturated with water.
- Operable cutoff gates at confluences with other tributaries that protect from saltwater intrusion in the event of a levee failure.

The combination of this alternative component with reconnection of Delta distributaries and with East and Central Delta Intakes makes the function of the Through Delta Armored Levee Conveyance alternative component much more robust and function differently and more resiliently than any previous analysis of this alternative component. Combination of this alternative component with improvement of existing delta levee systems to minimum adequate engineering standards and higher standards along the conveyance corridors, increased modernized levee monitoring and maintenance and fast response resources for levee breaches also improve the character, performance and reliability of this alternative component to levels never previously evaluated. Given these improvements and synergisms with other project alternative components, this alternative component deserves a serious and detailed evaluation.

South and West Delta Distributed Intakes

The current SWP through delta configuration pulls all of the water for the SWP from Clifton Court Forebay which is from Old River. This creates reverse flows on Old River which pull fish into the unscreened intake to Clifton Court. This alternative component proposes to add intakes in the south and west delta and interconnect existing intakes so that SWP intake flows can reduce the impact on fish and add capacity and flexibility for diversion during high flow periods.

These connections could be fish screened or not. The supplemental flow source configuration would allow flexible SWP operation to avoid ESA fish populations when present at different locations and avoid water quality violations while still maintaining some intake flows. Intakes at multiple locations make the SWP less vulnerable to water quality issues in the event of a delta levee breach. The Proposed Project/Action have no such alternative intake location for operational flexibility other than the proposed North Delta intakes.

An intake at the south end of Victoria Canal could provide screened flow into Clifton Court while allowing Old River flow to move downstream past a closed Clifton Court gate. Contra Costa Water District has a screened intake on Victoria Canal, a screened intake on Old River downstream of Clifton Court, an intake on Rock Slough, East contra Costa Water District Has an intake off of Indian Slough and there is an intake at Mallard Slough. Interconnection of these intakes with the Contra Costa Canal and pipelines and a connection to Clifton Court and or the enlarged Los Vaqueros Reservoir could address the export need without the expenditure of 10s of billions of dollars.

A number of locations and combinations are feasible and should be evaluated. The capacity of these distributed intakes could be limited in size in the range of a few hundred cfs and easily screened. The distributed intakes could improve water quality in areas of the delta with chronic water quality problems that currently impair designated critical fish habitat for several listed species. The distributed intakes also increase water supply reliability for the SWP in the event of an island flooding event. It also provides operational flexibility to avoid water quality violations and impacts to endangered fish from SWP operations.

Delta Water Diversion Intake Interties

Throughout the SWP, interties with other water systems have been considered a good strategy to reduce failure risks and mutually improve water supply reliability. This project alternative component as described above proposes to connect a number of south and west Delta municipal water intakes together with the SWP. This intake intertie creates more water supply reliability for the SWP and for the non-SWP water users from the Delta.

Carquinez Straight Tidal Flow and Storm Surge Management

This alternative component was originally proposed in the 1920s and examined again in a 1977 UC Davis California Water Resource Center paper, "The Sacramento-San Joaquin Delta the Evolution and Implementation of Water Policy", by W Turrentine Jackson and Alan M Patterson. Their assessment of a Carquinez Straight Flow Control structure was very positive and can be found starting at page 63 in the document. This paper is incorporated by reference into our comments. If the Delta Conveyance EIS Project has any problem finding this paper, please ask and we will send you a copy.

Without describing the facility in detail, think of this alternative component as an operable flow constrictor at the Carquinez Straight. Ships and fish pass without impediment, but peak tide or storm surge events are moderated in their ability to push salt water and water volume into the delta.

An additional component of flow constriction could be added as a design component of this structure to allow near or total temporary flow control to stop or minimize salt water intrusion into the delta in the event of a levee or series of levee failures. The total flow control duration would be limited to only such as long as for hydraulic equilibrium to be established at the facility – likely only days in duration or less.

This temporarily saltwater intrusion flow control would result in the island flood water volume being composed of only fresh water flows so that salt water is not drawn into the delta. Once hydraulic equilibrium was reestablished at the structure, the structure could be reopened so that normal flows and tidal exchanges could be allowed.

As they say, "you can't hold back the ocean forever", but in this case, the objective of this alternative component is only to temporarily reduce peak tides and storm surges or to temporarily prevent saltwater intrusion into the delta in the event of levee failure. DWR's Proposed Project/Action fails to provide any function or mechanism to protect the delta from sea level rise, peak storm events or levee failure. This alternative component achieves all of those goals. The function of this alternative component makes the Through Delta Armored Levee Conveyance alternative much more viable than any iteration of this option than has been previously considered.

Peak tides and storm surges compound the affects of sea level rise on flood risks, water quality problems and water supply reliability in the Delta. By this proposed facility taking the peaks off of storm and tidal surges it effectively reduces the combined effect of sea level rise that would otherwise occur and that the Proposed Project/Action completely fails to address. There are many potential design options for this facility - that is a set of engineering questions to resolve in preliminary (less than 5%) design that can be completed if this alternative concept is determined to have merit for development into a full alternative component. This alternative component is very important to evaluate as it is the only option identified so far which directly addresses and partially mitigates the impacts of sea level rise on the delta and on SWP water supply reliability.

The location of the Proposed Project/Action north delta intakes will not protect the SWP water supply water quality or reliability from the magnitude of sea level rise the project has assumed. We know this because the old salinity water monitoring station on Randall Island is less than a mile from one of the Proposed Project/Action intake locations. The salinity monitoring station was there because under historical flows, salt water quality problems could manifest themselves this far upstream in the Sacramento River in this intertidal zone. Modeling results of the north delta intakes under future sea level rise conditions will validate the failure of the proposed north delta intake locations to protect against sea level rise impacts on SWP water supply reliability and system resiliency. Given this reality, the Proposed Project/Action fails to address or satisfy the screening criteria for improved water supply reliability under increased future sea levels.

A Carquinez Straight Flow Control Structure would reduce salt water intrusion into the delta which improves Delta water quality which in turn protects SWP water supplies and increases SWP water operations resiliency. Reduced saltwater intrusion into the delta will likely result in reduced carriage water requirements to maintain water quality, so water supply efficiency may also be enhanced by this alternative component.

Water Storage Project Alternative Components

Increased water storage allows increase in water operations flexibility (i.e. greater reliance upon diversions during winter peak flows when the least environmental impact occurs), improved operational response to SWP operations-caused water quality violations and increased carriage water and water supply efficiency.

- **Sacramento Deep Water Ship Channel as in-Delta Water Storage** - If locks are installed at the bottom end of SDWSC north of the levee breach at Liberty Island, the channel can be adapted to also function as in-Delta water storage. The channel is 23 miles long and would have a storage freeboard of at least 5 feet with no impacts to the port (other than ships having to traverse the locks sometimes) or other infrastructure or habitat.

The purpose of the in-Delta storage is to provide a volume of water in the delta to quickly respond to water quality violations from SWP south delta operations. Depending on tidal conditions, water released from the bottom end of the SDWSC near Cache Slough would have beneficial flushing flow effects in just a few hours. The volume of water stored could be in the range of 3,000 Acre Feet. When operated it would freshen water quality for the Cache Slough complex and the Sacramento River from there to the San Joaquin confluence and downstream to the salinity interface. This volume of water would push salts back from the confluence of the Sacramento and San Joaquin Rivers which is where many SWP water quality violations originate.

The current SWP/CVP short term water quality problem response tool is to release water from Folsom Reservoir which takes about 24 hours to reach the delta. This water quality response mechanism is slow and inefficient in delivering water where it is needed as some Folsom released flows are dissipated into other channels that do not result in a focused flow of water to the problem area. This storage significantly increases SWP/CVP water quality management capability, responsiveness and effectiveness. Not treating Folsom like a on/off fire hose in response to delta water quality problems as the SWP/CVP operations currently do, improves SWP/CVP water supply efficiency and improves lower American River fish habitat quality.

The potential, but readily overcomable, downsides of this project alternative component are that the Port of Sacramento will not like the locks, the congressional authorization of the SDWSC does not include "water storage", and some perceived (although very thinly supported by the data) potential delta smelt habitat would be intermittently cut off from free fish movement. All of these potential issues are overcomable if the benefits of improved water quality and water supply efficiency from in-delta water storage are sufficient.

- **San Luis II or San Luis Grande** - When the San Luis Reservoir site was selected, an adjacent canyon was deemed to be an equally favorable construction site. Constructing a second San Luis Reservoir or joining it with the current reservoir (San Luis Grande) would allow greater SWP diversions and storage during the winter high flows when the diversions do the least environmental harm. An increased SWP water diversion during high flow periods reduces Delta diversion demands in summer which is when most SWP water quality violations and SWP environmental impacts occur. This project alternative component is to

expand or construct new water storage downstream of the Delta to facilitate diversion of water from the Delta during periods of high flows which would significantly reduce SWP Delta water diversion impacts as compared to the Existing and No Project/Action conditions. This project component was previously attempted as a standalone project, but was not approved as the No Project/Action alternative was determined to be the Least Environmentally Damaging Project Alternative (LEDPA) by the USACE due to wetlands-related plant species impacts. If this project component is combined with the project alternative component "Reconnect Historical North Delta Distributary Channels", the project would result in a net increase in the quantity and quality of wetland and aquatic habitat which would overcome the previous LEDPA failure of the San Luis Grande project.

Increased Levee Monitoring and Fast Response Resources for Levee Breaches

This alternative component is aimed at reducing flood risk and increasing SWP water supply reliability by reducing the risk of or severity of a levee breach. The first objective of this alternative component is to prevent levee failures through better monitoring and maintenance. There are at least 4 monitoring and assessment tools which are underutilized and not methodically implemented which can provide information to substantially reduce the risk of levee failure.

LIDAR and thermal remote sensing surveys of the delta levees should be conducted annually. LIDAR maps land surface elevations to an accuracy of just a centimeter at every square foot of surface so any changes in levee height due to subsidence or levee shape deformation from slumping or toe failure would be detected and remediated long before these early warning signs developed into levee failure events.

Thermal imaging detects surface temperatures. Detectable changes in temperature are caused by water saturation and moving water, even below the soil surface. This technology provides detection of seeps and boils at early stages so these risks to levee integrity can also be proactively addressed prior to levee failure. Side scan sonar surveys of the underwater parts of the levee can be used to detect and map levee toe failures and channel scour holes that could lead to levee failure if unaddressed. These levee integrity threats detected by the side scan sonar can again be proactively addressed long before an actual levee failure occurs. Ground penetrating radar can be used to inventory and assess levee construction integrity. Voids, saturations and flaws in materials used in original levee construction can be detected and mapped with this technology. Identified sections of weak or poorly constructed levees identified with ground penetrating radar can be replaced (i.e. set back levees) or repaired (i.e. slurry walls) prior to failure. Methodical use of these technologies to early detect potential problems with levees that could lead to levee failure and proactive use of that information to address these vulnerabilities will greatly reduce the risks of levee failures to flood impacts and SWP water supply reliability.

The Delta Conveyance Project should not claim these monitoring programs are already occurring, because they are not at the scale and frequency proposed here. The one or two LIDAR surveys of the Delta that have been conducted are useful as baselines to start comparisons to detect problems but this

tool is not being utilized to its full potential with regular and regimented monitoring. Similarly, ground penetrating radar has been used in some levee assessments, but it has not been applied to all delta levees nor have the current surveys been comprehensive, methodical or repeated as a monitoring tool. The same can be said of the level of use of thermal imaging and side scan sonar survey technologies.

The second objective of this alternative component is to change how levee breaches are addressed. Currently, once a levee is breached the island or tract is allowed to completely flood, come to equilibrium with the tributary and later the levee breach is repaired and the inundated land pumped out. In the current "sit back and watch until it stops" response to levee failures, all of the damage from the levee breach is done before repair or management actions are implemented. This results in the maximum salt water intrusion as all of the flow into the beached island or tract happens very quickly. All of the infrastructure and assets on the island or tract are flooded. Potentially lives are lost.

This alternative component is intended to provide resources and level of response preparation that allow a levee breach to be more immediately addressed to slow or stop the rate of water inundation. This alternative component is not expensive to implement compared to the cost of a levee failure that results in complete inundation. This alternative component includes: larger and more strategically placed rock stockpiles in helicopter and crane ready packages, dedicated heavy lift helicopters on standby with National Guard or contractor, crane barges on standby and strategically distributed in the delta for rapid response, and sinkable barges strategically distributed in the delta for rapid response. Scenarios and analysis should be conducted to determine the number and locations of these resources to be effective to respond to any hypothetical levee breach in 30 minutes or less. The objective is to stage these resources to seal or at least significantly slow levee breaches while more permanent fixes are constructed, etc. This alternative component results in increased water supply reliability for SWP by reducing frequency and severity of island flooding events and the reducing the frequency and magnitude of potential salt water intrusion events. The current Proposed Project/Action includes no aspect or provision for this mandated component of the Water Supply Resiliency Plan for water supply resiliency in the event of a levee failure or seismic event.

SWP Conveyance South of Delta Achieves Less than 3% System-Wide Leakage Loss

The California Aqueduct leaks perhaps as much or more than 15% of the water supply that flows through it. We are not aware of any published audited water loss analysis of the SWP or California Aqueduct. Water diverted into the SWP lost to conveyance leakage is water that causes environmental impacts to the delta that could be avoided and minimized by reducing SWP conveyance leakage losses. DWR promotes water conservation across the state in many programs, but has not (to our knowledge) disclosed what water savings they in turn have achieved from SWP leakage loss mitigation.

DWR's Leak Loss Detection Guidebook, "The California Department of Water Resources estimates that about 250,000 acre-feet of water leaks from municipal systems in California each year. DWR's experience in working with 60 local water agencies, whose water audits reveal leak detection projects to

be cost effective, indicates that leaking water can be controlled at a cost averaging less than \$50 per acre-foot, a cost usually less than what a water agency pays for the water." (<https://water.ca.gov/LegacyFiles/wateruseefficiency/publications/doc/%201992%20DWR%20Leak%20Detection%20Guidebook.pdf>) There are leak loss reports on SWP Contractor conveyance systems at <http://wuedata.water.ca.gov/>.

Finding and quantifying the conveyance losses in each reach of the California Aqueduct is technically feasible using well proven and affordable technology. Acoustic Doppler current profilers (https://en.wikipedia.org/wiki/Acoustic_Doppler_current_profiler) can be calibrated and periodically measure flows in the aqueduct at stations upstream and downstream of each diversion. Evaporative losses for each reach can easily be calculated using existing models. Reaches that exceed the target leakage loss tolerance can be prioritized for more intensive investigation to identify the leak locations and efforts initiated to recapture those conveyance water losses.

An example of the California Aqueduct leakage is demonstrated by a thermal image of a section of the aqueduct at mile point 9.9 south of the South Delta pumps (image available upon request although DWR should have a copy of the report and this image in its project archives). The only section of the canal in the image that is not leaking is the section at the lower left. The canal (in blue - cool temperatures) in most areas in the image transitions to larger areas of oranges and reds which identify the location, size and orientation of the leaks. The image is from a project for DWR in 1990. DWR believed the surveyed area to have 3 leaks. The survey identified those three large leaks as well as over 200 smaller ones. The current available technology to detect, locate and characterize aqueduct leaks is now vastly superior to this example.

Long-term leaks of the aqueduct carry soil away with the leak flow. These create voids under the aqueduct which are prone to catastrophic failure. Reduced leakage loss of the SWP aqueduct not only improves water supply efficiency and reduces environmental impacts of water supplies diverted from the Delta, but repair of leaks likely prevents potential catastrophic aqueduct structural failures which threaten SWP operational reliability. This alternative component reduces SWP water diversion environmental impacts on the delta and reduces risks to water supply reliability failures. The Proposed Project/Action includes no aspect or provision which addresses SWP water supply reliability south of the Delta.

Seismic Risk Mitigation in SWP Storage and Conveyance

There are many parts of the SWP system potentially vulnerable to seismic failure, not just the Delta component of SWP conveyance as the Proposed Project/Action targets. This project alternative component is much more comprehensive in its scope to address SWP water supply reliability and resilience from potential seismic or structural failure events.

- **Seismic Upgrade of Banks Pumping Plant and California Aqueduct** - This project alternative component addresses seismic risks to SWP conveyance and storage downstream of the Delta for water supply reliability and resiliency. The SWP was designed prior to and constructed in 1960 to the standards

of the day. Since 1960 our understanding of earthquake infrastructure design risks and resulting construction codes have greatly evolved and become much more stringent. Additionally, the sophistication of earthquake fault detection and seismic event modeling has also greatly increased in sophistication since 1960. Many of the fault lines in California have been discovered since 1960 and the earthquake magnitude risk of these faults is constantly being revised, mostly up, in terms of potential severity. As an example of California's adaptation to seismic risk, all of the highway bridges in California have been or are in the process of being upgraded to address our increased understanding of seismic risk and engineering standard requirements. Conspicuously absent from this infrastructure seismic upgrade, modernization and risk management are the SWP pumping plants and California Aqueduct conveyance.

The risk to SWP infrastructure reliability and resiliency from seismic events is not evenly distributed. There are several forms of energy released by an earthquake and geologic settings and proximity to faults play an important part in assessing infrastructure risk. The principle energy forms most discussed in seismic events are P and S waves. P waves travel through all materials, but are less destructive to infrastructure. S waves lose their energy over distance and do not transmit well through unconsolidated material or liquids such as occur in the delta. S waves are shear waves that typically cause most of the damage to infrastructure and which most severely occur on consolidated materials and bedrock such as the materials the California Aqueduct are constructed upon south of Tracy all the way down to the Tehachapi's. As an example of the difference in Sand P waves in different geologic settings, the Loma Prieta earthquake affects in the Delta were slow rolling P waves, not the jolting shear of S waves. In the Bay Area this same earthquake very badly damaged infrastructure based on consolidated materials and bedrock, mostly by the S seismic waves.

Delta levees are based on unconsolidated alluvium and liquids. In the event of an earthquake in the Coast Range Mountains which represent the closest potentially active faults to the Delta, the P waves would have less potential to affect levee stability. S wave seismic energy is dissipated by soft materials and distance so Delta levees would be less affected by this type of earthquake energy release. In contrast, the California Aqueduct is built upon hard consolidated and bedrock materials and is close in proximity to these faults so it is much more vulnerable to S wave seismic failure than the Delta levees. The California Aqueduct is even more vulnerable to seismic failure due to the construction that alternates from cuts across hills of solid bedrock to transition across soft fill construction between hills. The aqueduct construction alternating from hard to soft base material is where shear forces of S waves will be most manifested to cause lining and containment failures as these materials and base will move at different frequency and magnitude.

Up to date and best available science modeling of seismic risk of the Aqueduct will confirm these assertions. Up to date and best available science modeling of earthquake vulnerabilities of the California Aqueduct are part of this Proposed Project/Action alternative component. Once evaluated, the most vulnerable sections can be earthquake retrofitted just like almost all other existing infrastructure has already done in the State.

The Proposed Project/Action incorrectly and without supporting evidence of greater risk, focuses on the relatively lower potential risks to the Delta SWP components of conveyance for potential seismic failure.

This Proposed Project/Action constrained geographic scope fails to address the larger SWP water supply seismic vulnerabilities in the rest of the SWP.

This Proposed Project/Action alternative component has a much broader and weighted risk factor appropriate scope to address water supply reliability vulnerabilities of the California Aqueduct and the south Delta pumping plant. If the Aqueduct fails in an earthquake, it would not really matter to SWP reliability if the Delta levees did or did not fail at the same time, the result would still be a catastrophic SWP water supply failure. It is likely however, given geologic setting and proximity to the active faults, that it would be the Aqueduct and or pumping plant that would fail rather than delta levees.

Aspects of this alternative component can be determined after an inventory, risk assessment and preliminary engineering design fixes.

It does not make sense in the context of protecting SWP water supply reliability to ignore this SWP water supply reliability risk yet the Proposed Project/Action focuses on earthquake risks from through Delta conveyance and ignores other SWP infrastructure that is arguably at greater risk of failure from earthquakes.

- **Oroville Reservoir Slip Fault** - The largest volume documented slip fault in California (as of about 12 years ago or so) is located inside Oroville Reservoir. In a pers. comm. from a DWR Hydrogeologist, "If we had known about the slip fault before Oroville was constructed, it would never have been built". The Hydrogeologist said that if the slip fault let go and slid into Lake Oroville (picture in your mind half of a mountain sliding into the reservoir) the modeling they had done predicted a 60' tsunami that could potentially take out the Oroville dam. The modeling the Hydrogeologist referred to has not been publicly released, but was part of the Oroville relicensing submittal to FERC and presumably (although perhaps not given the inaction to address this problem) the Division of Safety of Dams. DWR is well aware of this potential failure point of the SWP, but to date as failed to take action to protect SWP water supply reliability or public safety from this risk. Not to diverge from this topic, but DWR was also aware at the time of Oroville FERC Relicensing of the risks of failure of the dam from use of the emergency spillway, but also failed to address those risks to SWP water supply reliability and public safety from the resulting flood risk. Our project alternative component addresses and is designed to mitigate this not insignificant risk water supply reliability risk. If Oroville Dam fails, so does the entire SWP. Since flood risk and dam failure are core to the Corps mission, this opportunity to reduce SWP risk that fits within the justified scope of this project should be of great interest.

Slip faults can be activated in at least three ways relevant to the Oroville Reservoir catastrophic failure risk. Precipitation can saturate the boundary layers of the slip fault and reduce coefficient of friction causing failure and catastrophic landslide into the reservoir. Slip faults can be activated to failure by saturated soils from reservoir levels that are drawn down too quickly to let the saturated soils drain. The risk here is that the heavy reservoir water saturated soils at the bottom of the slip fault pull the rest of the slip fault down with it. Slip faults can also be activated by seismic events. If an earthquake occurs when either of the first two failure scenarios are in play then this is a combinative effect and risk of failure, e.g. the slip fault is saturated from heavy rains and an earthquake occurs. Under this easily foreseeable and not unlikely scenario there would be no warning, just catastrophic failure. Given the magnitude of this risk to human life (150,000+), catastrophic flooding (the Sutter Buttes look like the

Hawaiian Islands in the Oroville Dam Failure Inundation Map) and complete shutdown of the SWP water supply system to 23 million Californians and millions of acres of irrigated agricultural land; THIS RISK TO THE SWP MUST BE ADDRESSED. The Proposed Project/Action fails to address any of these aspects of risk to SWP water supply reliability or flood risk to Californian's as the Water Resiliency Portfolio EO mandates.

Oroville Reservoir operations must be evaluated for their potential to contribute to the risk of triggering the slip fault. If any portion of the slip fault can potentially be saturated by any possible stage elevation of Oroville reservoir, then reservoir drawdown speed limits must be established and implemented in operations rules until the slip fault risk is mitigated. This prudent mitigation to SWP precipitated risk will have negative consequences on SWP water supply availability until this SWP flaw and risk are addressed. It is possible that the reoperation of the Oroville reservoir that would occur from the implementation of the Delta Conveyance could alter reservoir levels such that a risk of the slip fault occurrence that has not occurred under current operations could occur under the, not disclosed and based on the proposed EIS scope - unanalyzed, Delta Conveyance operations regime.

There other portions of the SWP system which already have reservoir drawdown speed limits, e.g. San Luis Reservoir. The drawdown speed limit is to avoid or minimize dam structural failure that was observed at San Luis Reservoir from dam slumping so this SWP risk mitigation is not without well established precedent. There are also SWP/CVP operating rules regarding how fast tributary flows can be drawn down to avoid damage to levees from slumping from drawing down flows too quickly. A risk analysis of the Oroville Slip Fault to failure from drawing down the reservoir too quickly has not, to our knowledge, been conducted. The Proposed Project/Action has not disclosed its operations and has indicated its intent to (in conflict with CEQA and NEPA law) not to do so in the EIR and EIS. The operations of the Proposed Project/Action that are implied by the project configuration and assumed changes in future hydrologic patterns would result in faster reservoir draw downs in the future which means the Proposed Project/Action would exacerbate the current SWP operations caused catastrophic failure risks to Oroville Dam and SWP water supply reliability.

If the Delta Conveyance Project wants the SWP water supply to be more resilient to climate change and earthquakes, the Project must fix or remove the slip fault in Lake Oroville.

- **Oroville Dam "Green Spot" Leak** - The leak in the face of Oroville Dam is readily visible in the summer and is symptomatic of uneven settling of the earthen dam from the incorrectly designed asymmetrical dam abutments.

Earthen dams are designed to settle. If the dam abutments are symmetrical then the settling is even and no horizontal stress is generated on the earthen dam fragile core structure. In the case of Oroville Dam, the asymmetrical abutments cause a horizontal shear force that fractures the dam as it settles. The green spot is an indicator of a leak that could lead to catastrophic failure, which would be much worse for the reliability of SWP water supplies south of the delta than a levee failure in the delta. Flushing of salt water intrusion from the Delta from a levee failure (reduced risk of failure and reduced time to flush salt water intrusion is a benefit of the Proposed Project/Action alternative) might take weeks or months whereas rebuilding and refilling Lake Oroville would take a decade if it was even technically feasible at all given the damage to the critical dam abutments and downstream infrastructure, i.e. the Feather

River Fish Barrier Dam, Oroville Power Plant, Thermalito Afterbay, Afterbay Power Plant and Afterbay outlet structure which would all be obliterated (along with the town of Oroville and 150,000+ people) in the event of an Oroville Dam failure.

Clifton Court Criteria Compliant Fish Screens

The Proposed Project/Action does not address ESA fish take from south delta pumps or offer any feature or function which benefits fish species or habitat as mandated by the Water Resiliency Portfolio Executive Order or the Corps fish regulatory authorities. The Proposed Project/Action fails to address necessary environmental and ESA impacts created by operations of the SWP. It is these impacts which are one of the greatest threats to SWP water supply reliability and the Proposed Project/Action missed it entirely in its scope and proposal. Recall in the BDCP WaterFix EIR/Ss that the north delta intakes were determined not to be beneficial to protection of fish even as compared to the existing unscreened (louvers are not screens) south delta intakes.

It is technically feasible and reasonable to include fish criteria compliant intake screens at Clifton Court Forebay. Fish criteria compliance intake screens in this alternative component would potentially support justification for Incidental Take Permits that would be required for the Delta Conveyance Project.

Here are the basic elements to this Clifton Court criteria compliant fish screen project alternative component: widen the Clifton Court operable gates, install trash racks outside the operable gates, install a course large fish exclusion screen between the trash racks and operable gates, construct a conveyance channel in Clifton Court Forebay from the operable gates to the western side of Clifton Court Forebay, install criteria compliant fish screens in the conveyance channel, reengineer the current fish salvage facilities, and (potentially) plumb the CVP intake into the fish free north side of Clifton Court via a short tunnel. Following is a more detailed description of each of these elements.

Widen the Clifton Court Forebay operable gates to the north from their existing location. The width of the new operable gates needs to be sufficient to create a channel cross section of about 15,000 square feet.

Dredge and reinforce channels as most economical and reliable from an engineering standpoint. As an example, dredge the approach and channel at the operable gates to a tidal working channel depth of 30' for a total operable gate width of 500'. The new gates should be set back into Clifton Court sufficiently to allow installation of trash racks and course large fish exclusion screens in front of them without reducing the existing channel cross section outside of Clifton Court. The Clifton Court Forebay Gates and tidal operations/storage can continue to function as they do under the existing conditions and No Action/Project so there are no operational impacts from this alternative component on tidal operations of Clifton Court Forebay.

Install trash racks outside Clifton Court Forebay outside of the widened Clifton Court operable gate. The trash racks will intercept debris coming in with the diversion water and serve as a behavioral deterrent to the fish to stay in the main channel as much as possible.

Behind the trash racks and just in front of the operable gates would be a course fish screen designed to keep out only larger "predator" size fish that have much higher swimming performance capability from entering Clifton Court Forebay. With the new 15,000 square foot cross section of the operable gates and surface area of the course fish screens, at full capacity CVP/SWP diversions the approach velocity at the course fish screens would be one foot per second. Predator sized fish would easily out swim this approach velocity, but smelt and juvenile salmonid would be pulled through and past the course large fish exclusion screen. There would be some predation at the trash racks and course fish screens but this can be managed and reduced with predator removal actions and fish traps. The level of predation at the trash racks and course fish screens would be the same as the predation rates that occur at the current SWP trash racks and fish louvers under the No Action. This course fish screen outside of Clifton Court Forebay is designed to pass smelt and juvenile salmonids without risk of impingement, e.g. 15 - 25mm wide screen inlets. This screen would significantly reduce the exposure of juvenile salmonids and delta smelt to predation as larger predators would be excluded from within Clifton Court Forebay where a large amount of current predation is documented to occur.

A conveyance channel would be created in Clifton Court Forebay by segmenting the northern and southern parts of the Forebay with a new sheet pile partition that would draw water from the Clifton Court Forebay operable gates channel directly toward the existing SWP intakes on the southwestern side of the Forebay. The conveyance channel would start at the east side of the Forebay at the north and south ends of the widened operable gates channel. The partition would then quickly (but maintaining orderly water flow vectors) narrow from 500' wide to a width of approximately 250' wide and deepen from the initial 30' channel depth at the operable gates to a conveyance channel depth of 60 feet deep. The rest of the length of the conveyance channel would be dredged to a 60 feet deep with the channel partitions reinforced as necessary for stability. The channel depth is to accommodate the large surface area of fish screens and to increase the channel cross section to reduce water velocities. The channel would speed the transit of the fish across the Forebay (as compared to the No Action use of the non-isolated Forebay) and keep them from straying out into the Forebay so that they would have a significantly reduced duration of exposure to predation. Fish predation studies of the current Forebay operations have shown that a large portion of the juvenile salmonid and delta smelt population that enter the Forebay do not make it to the salvage facilities due to predation. By excluding predator size fish from entering Clifton Court, not allowing the smelt and juvenile salmonid fish to stray into the larger part of the Forebay and by shortening the duration and distance of their transit across the Forebay prior to capture and salvage; predation rates on juvenile salmonids and delta smelt would be significantly reduced with the Clifton Court criteria compliant fish screen alternative as compared to the existing condition, No Action/No Project or in comparison to any of the other alternative which retain dual operations without south delta intake screens that are criteria compliant.

Install criteria compliant fish screens in the conveyance channel in Clifton Court Forebay. Orient the screens in the conveyance channel in a "deep V" (10 to 15 degree angle) across the Clifton Court Conveyance Channel with the bottom of the V in the middle of the new conveyance channel approximately 1/4 mile from the west side of Clifton Court Forebay. The fish screens would be oriented vertically on the sides of the V. The top of the V is on the east side of Clifton Court Forebay and is attached to the sides of the conveyance channel partitions where the channel comes to approximately 250 feet wide. Each side of the V fish screen would be approximately 6850 feet long with a depth of 60

feet for a total working surface area in their vertical orientation of 822,000 square feet. If greater surface area is desired, alternative designs where the screens are sloped in towards the middle of the conveyance channel at the bottom can be evaluated for cost, operational flexibility and fish protection performance. The deep V shape of the screen orientation in the conveyance channel creates a shallow angle of approach of water to the screens and creates a sufficient surface area to reduce approach velocities and to have the draw of the export pumps create sweeping velocity across the screens.

As an example, water approaching a screen at a 15 degree oblique angle has an approach velocity that is 3.5% of the sweeping velocity. With the conveyance channel at 250 foot wide and 60 feet deep, at maximum CVP/SWP diversion volumes of 15,000cfs the water column velocity in the conveyance channel would be one foot per second. With a water column velocity of 1 foot per second, a 15 degree angled V screen would result in a sweeping velocity of 0.965 feet per second and an approach velocity of 0.035 feet per second. These velocities more than satisfy fish screen operating criteria for smelt and salmonids.

The total surface area of vertically oriented deep V fish screen configuration is 822,000 square feet with the above assumptions. (As previously mentioned, sloped screen designs could have even larger surface areas if desired.) At the maximum combined CVP/SWP volume of 15,000 cfs the approach velocity to screens with this large surface area is just over 0.018 feet per second. 0.2 foot per second screen approach velocity is the compliance criteria for delta smelt so the fish screens as described would be only be 10% of the maximum approach velocity for smelt at the maximum CVP/SWP intake volume operations. If this screen configuration is considered over-designed with the 10% of the allowed approach velocity criteria and is excessively protective, and a more relaxed (but still compliant) approach velocity is deemed by the fisheries agencies to be adequately protective, the channel depth could be reduced along with the fish screen height and a narrower channel with a shorter length fish screen could be applied and still easily meet the fish screen criteria requirements. As an example a fish screen only 30 feet deep and half as long would still result in approach velocities that were half as fast as are delta smelt criteria compliant.

Let's compare this criterion compliant fish screen configuration at Clifton Court to the characteristics of the Proposed Project/Action north delta intakes. Assuming the same compliance of maximum approach velocities of the two different screens and constant maximum diversion operations, the fish exposure duration while passing the screens would be about the same. One of the problems with the north delta intakes is that they are located in an intertidal zone so some fish would be exposed to the same intake more than one time due to reverse flows that occur in these north delta diversion reaches. Because the north delta fish screen intakes cannot be continuously operated due to the twice daily slack tides and lack of compliant sweeping velocities, the other portion of the time the north delta intakes would have to be operated at a higher diversion rate to make up for lost time. In order to do higher volumes some of the time and still maintain the maximum approach velocity, the north delta intakes would have to have a larger total surface area than the south delta intake screens that can run at a constant fish criteria compliant rate. As a result, the total fish exposure to fish screens on the north delta intakes would be longer duration than the proposed Clifton Court criteria compliant fish screens. All of the northern central valley salmonid runs (e.g. Sacramento, American and Feather Rivers) have to pass the north delta intakes whereas only a small fraction of that population are exposed to south delta fish screens. Population exposure of vulnerable species life stages to the screens is dramatically different on

at least a factor of 10 or more for the north delta intake screens as compared to the Clifton Court criteria compliant fish screens.

As stated above, another advantage of the Clifton Court criteria compliant fish screens over the north delta intake fish screens is that the north delta fish screens cannot be operated at or near the slack tide periods as they would no longer have any sweeping velocity. This is another reason why the Delta Conveyance Project decision to not define or analyze final water operations in the EIS is a violation of NEPA as this type of intake fisheries impact assessment cannot be conducted without operations information. The north delta intake reliance on tributary flow velocities to create sweeping velocities mean that there are several hours twice a day that these intakes may not be operated and be in compliance with sweeping velocity criteria.

The Clifton Court criteria compliant fish screens are not vulnerable to tidal conditions as the export pumps themselves make the flow draw across the angled fish screens to create its own sweeping velocity and therefore they can be continuously operated.

The fish capture/salvage facility for the Clifton Court criteria compliant fish screen starts at the very bottom end of the fish screen deep V (western side). There is a separation of the "water intake" portion of the screens on the sides of the V for a "fish intake" opening (slot) at the very bottom end of the V that is 4" to 6" wide. A shade structure should be built from the bottom of the V out to at least 50 feet to the east up the V so the intake slot is in deep shade so that fish do not attempt to evade the fish intake. The fish salvage pumps draw water into the fish intake slot at an approach velocity of 3 feet per second. The higher approach velocity of the fish intake slot is so the fish are quickly drawn in and do not swim away.

The top 25 feet and the bottom 5 feet of the conveyance channel at the end of the water intake screen would have this fish intake slot. The top and bottom fish intake slots are to reflect the fish distribution in the water column. The juvenile salmonids and smelt will generally be concentrated in this top 25 feet of water column and the juvenile sturgeon at or near the bottom of the water column. With a 30 foot long total intake slot height, 6 inch width and 3 foot per second approach velocity, the fish salvage pumps would need to intake a maximum of 45 cubic feet per second to bring the fish into the fish collection facility. The current collection facility will need to be redesigned and enlarged to support fish/water separation of fish into transport tanks with this larger than current fish capture water flow. The same principles of the current fish salvage facility still apply, but will have improved handling of fish directly into holding tanks with reduced holding times prior to transport and active predator removal with nets (for the few that get through the large fish exclusion course fish screens). Other fish salvage facilities, handling, storage, transportation and release protocols can be developed and integrated with this Clifton Court criterion compliant fish screen project alternative component.

This uniformity of flow vectors in the conveyance channel along the entire length of the Clifton Court criteria compliant fish screen is another advantage of this fish screen configuration over the Proposed Project/Action north delta intake screens. The north delta intake screens are on hydraulically complex and dynamic conditions on or near bends in the river with changing flows, eddies, shifting thalweg, back currents/reverse flows, swirls, etc. This flow vector variability causes areas of the fish screens to perform poorly and they create predator refuges that increase the resulting take associated with the north delta intakes. Even worse, this elevated rate of predation from the north delta intakes predator refuges occur

if the intakes are being operated or not. The Project Alternative components of Clifton Court criteria compliant fish screens suffer none of these shortcomings.

None of the project features described in this Isolated Clifton Court Criteria Fish Screen alternative require new technology and all features described have built out project examples to rely upon for their engineering design, construction methods and for expectations regarding as-built real world performance characteristics. There is nothing speculative regarding the engineering design feasibility of this Proposed Project/Action alternative component.

Clifton Court criteria compliant fish screen described above would take place almost entirely on lands currently owned by the state so private lands confiscation associated with this alternative component would be minimal.

This alternative component with criteria fish screens in Clifton Court operations is complimented by combination with downstream storage, e.g. San Luis Reservoir II/San Luis Grande. The addition of downstream storage would allow additional SWP operational flexibility to divert water at times of the year in which the listed fish species would be least affected by SWP water operations.

DWR has in the past utilized a "Fisheries Facilities Technical Team" to review, refine and more fully develop fisheries-related engineering structure concepts into a fully formed and project-level project description that is suitable for full analysis in an EIR. This group is well qualified to adapt the preceding description as needed to optimize its function, performance and cost effectiveness. They can adapt the dimensions of the channels and cross sections to manipulate channel velocities under different tidal and operational scenarios. They can adapt screen size, depth, length, angles and configurations to optimize fish protection, costs, maintenance, etc. As the preceding description and analysis proves, building a criterion compliant fish screen in Clifton Court is technically feasible.

This criteria compliant Clifton Court Fish Screen is a win-win alternative. Fish are protected, water supply delivery capacity is restored, and delta water quality is protected - all above the No Action/No Project levels and all better than in the Proposed Project/Action alternative. In addition to more fully and reasonably meeting the purpose and need and objectives of the project, the Clifton Court criteria compliant fish screens have a number of significant advantages over the Proposed Project/Action.

The cost of the Clifton Court fish screens would be approximately the same construction costs as one of the proposed north delta intake screens. The Clifton Court fish screens do not require the conveyance tunnels so this major cost of the Proposed Project/Action does not occur in the Clifton Court Fish Screen project alternative component. The Clifton Court fish screen construction and staging can all be done on land that is already owned by DWR so there is little or no land condemnation required like the Proposed Project/Action new forebay. The footprint of the Clifton Court fish screens is much smaller and is all sub tidal habitat (not wetland) so the compensatory mitigation of converted habitat is minimal for this alternative compared to the Proposed Project/Action which would convert some acres of wetlands for the proposed new forebay.

From the USACE's mandatory 404 process guidelines, this alternative component would inevitably become their LEDPA as compared to the Proposed Project/Action due to less wetland and aquatic

habitat disturbance and wetland conversion. Continued pulling of water across the delta to the south delta intakes protects central and south delta water quality to exactly the same level as the No Project/No Action. This protection of water quality from future degradation as compared to the No Action means that this alternative does not adversely modify designated critical habitat for listed fish species like the Proposed Project/Action.

If the Clifton Court criteria compliant fish screen alternative component restoration of water supply delivery quantities is not considered adequate to reasonably meet the intent of the purpose and need and project objective of increased water supply reliability, it can be combined with other project components that would, by any judgment, make it reasonably meet this alternative screening and selection criteria.

The Clifton Court fish screen alternative component could also be combined with additional downstream storage as a different strategy on achieving additional water supply reliability. It could also be combined with additional levee armoring to reduce in-delta earthquake risks to conveyance reliability or include earthquake upgrades to the existing south of delta facilities and conveyance canals to improve water supply reliability.

Desalination at SWP Contractor Point of Delivery

As a part of SWP operations resiliency and water quality suitability for designated beneficial uses, a component of alternatives to be considered should include water treatment at the point of delivery to SWP contractors. This option allows users to balance their own water quality to beneficial uses and costs of water treatment for SWP water supplies. The on-site water treatment means they can improve not only SWP water supply quality, but also alternative and supplemental water supplies they are legally mandated to develop to reduce their reliance upon delta water supplies. This option also allows for water quality degradation that occurs due to evaporation during conveyance and downstream of delta storage to be rectified at the point of receipt by the water contractors. These could be either as part of a combined project alternative or as separate projects under the Water Resiliency Portfolio.

Alternatives Assessment Conclusions

These comments and assessments of the Proposed Project/Action and alternatives are thoughtfully and earnestly submitted. These comments thoroughly document the deficiencies of the Proposed Project/Action to meet the criteria from the project basis documents (NOP Project Purpose and Objectives as well as failure to satisfy mandates specified in the Water Resiliency Portfolio Executive Order N-1 0-19). Individual conclusions and assertions of the analysis of the proposed Project Alternatives and components are legitimately debatable and should be in the Delta Conveyance EIS Alternatives Scoping Report to be released to the public for review and comment.

However the details are potentially revised (a few points moved from the plus or minus columns to the

other column), viewed in its totality on **Table 1**, the superiority of the project alternative is overwhelmingly positive especially as compared to the lack of satisfaction of screening criteria represented by the Proposed Project/Action.

In conclusion, when considered together, these alternatives components result in:

- Restoration of more natural historical flow patterns in the delta;
- Activation and enhancement of over a thousand acres of aquatic habitat and fish food production;
- Restoration and protection of fish habitat quality in designated critical habitat for each of the listed species in the Delta;
- Increased rate of freshening flows across a large part of the delta which:
 - o Improve municipal water supply water quality, ag water supply quality and fish habitat water quality,
 - o Reduced frequency, severity and geographic extent of dissolved oxygen crashes and toxic algal blooms.
- Increased SWP operational reliability from climate change precipitation pattern, sea level rise, seismic events and levee failures; and,
- Increased SWP operational flexibility to avoid water quality violations and maintain water supply.

VI. EIS Preparation.

The BDCP and WaterFix projects are extremely closely related to the proposed Corps Delta Conveyance EIS Project. From the level of detail disclosed (lack thereof) in the NOP and Public Scoping Meetings, the Delta Conveyance Project has no material differences from these two DWR predecessor projects other than one tunnel or two. Given the close similarities of the proposed Delta Conveyance and the BDCP and WaterFix projects the EIR or EIS teams may draw heavily against those previous works. That said, the BDCP and WaterFix EIR/S included a long-list of deficiencies, internal inconsistencies, factual and analytical errors, flaws in logic and execution, data mishandling, conclusions that directly conflicted with presented supporting analysis and blatant omissions of mandatory information which the Delta Conveyance Project EIS must not repeat.

SWP Water Supply Contract Delta Conveyance Amendment water supply and water transfer deliveries through the Delta Conveyance are part of the scope of the impact analysis that must be included in the EIS, please see related comments below.

CDWA and SDWA invested significant time and limited resources in developing thoughtful, constructive and thorough comments on the BDCP and WaterFix EIR/S documents. The Corps Delta Conveyance EIS Project would serve themselves well to review and analyze these comments to develop the best available science methodologies and tools, appropriate data treatment (aggregation/disaggregation), direct and indirect effects analytical processes, rationale and methodical impact synthesis, consistent and defensible significance criteria, impact calls that are consistent with the supporting analysis, a full suite of reasonable and practicable mitigation measures and a thorough cumulative impacts analysis. To convey a sense of the level of deficiencies in the BDCP and WaterFix projects, in total, CDWA and SDWA submitted over 1,000 pages of detailed and substantive comments. Because of their direct relevance to the alternatives scoping and preparation of the Delta Conveyance EIS, CDWA and SDWA's previously submitted comments to DWR on the BDCP and WaterFix Public Scoping Comments and draft and final EIR/S which are public record and available to the Corps, are herein incorporated by reference as part of our scoping comments for the Delta Conveyance EIS project Scoping Comments.

Following are some specific areas of concern for the Delta Conveyance Project EIS preparation.

1) The Corps Incorrectly Omits Water Operations Impacts from the EIS Scope

“Future operations and maintenance of the diversions are outside the Corps control and responsibility” (<https://www.youtube.com/watch?v=3qmYYzWTJ3w&feature=youtu.be>) The Corps is incorrect in this assertion of limitation of EIS scope responsibility to not include future water operations of the facility the EIS document is intended to provide Federal Agency decision making support for pending permit applications. There are many water operations-related impacts the project would have over areas the Corps has regulatory jurisdiction and responsibilities over and other cooperating Federal Agencies have information needs regarding water operations-related impacts.

Some of these water operations-related impacts the EIS must evaluate include:

- Redirect flood risks which occur from project-related levee and channel modification, flow modifications, structures and embankments in floodplains which redirect flood flows in the event of a levee breach. Please see related comments.
- Dredge spoil disposal will occur during operations, not just initial construction. Operational dredge spoil disposal will occur from settling pond capture at the diversions and to clear sediment accumulation in front of the intake screens. The Proposed Action has failed to define the locations, frequencies, chemical and physical qualities, volumes and final fate of these operations-related dredge spoil disposals. Please see related comments.
- Sediment accumulation from water operations at the intakes could affect navigability or certainly will during dredging operations. Please see related comments.
- Erosion of water operations dredge disposal into waters of the US affect aquatic resources the Corps has responsibility for and affects wetlands quality and quantity through affects on water quality and sediment deposition. Please see related comments.
- Construction-related dewatering operations, undescribed or accounted for during construction (see related comments), will also continue to occur during ongoing water operations. Principally these would occur at the north delta pumping plant, but also other locations such as tunnel maintenance access points, drainage ditches around the impoundments to manage groundwater impacts and others. These on-going water operations discharges of waters to the US must be evaluated by the Corps EIS to fulfill their regulatory obligations under the Clean Water Act Section 401 and aquatic and wetland resources that would be affected by these discharges. Please see related comments.
- Water quality impacts downstream of the intakes (well documented to occur in preceding BDCP and WaterFix environmental impact assessments) affect designate critical fish habitat for ESA listed species which is required by FWS and NOAA Fisheries for Biological Assessment and Biological Opinion decision making. These water operations quality impacts also fall under the Corps EIS responsibilities through 50 CFR Parts 400-499 for Endangered Species Regulations for marine mammals, 50 CFR Part 600 on Essential Fish Habitat Regulations, 50 CFR Part 660 for ocean fisheries off west coast, 50 CFR Part 660.5 for Shared Ecosystem Component protection which specifically include *Osmeridae* smelts (Delta Smelt) which predominantly occur downstream of the Proposed Project/Action diversions which the Corps has declared they will not evaluate. Please see related comments.

2) Use of Best Available Science in EIS Analysis

NEPA requires use of best available science. The BDCP and WaterFix EIR/S eschewed use of some commonly used and accepted modeling and analytical tools to avoid disclosure and quantification of a number of key environmental impacts of those projects. The Corps Delta Conveyance Project EIS must not repeat these same deficiencies in the use of best available science.

These models and analyses which must be used to the NEPA best available science standard include:

- **CalSim 3** - This latest generation tool for analyzing for CVP/SWP system-wide mass balance flows has higher temporal resolution and accuracy than the previous outdated CalSim versions. This best available science model data is critical to the accuracy and completeness of all hydrologic and water quality impact analysis as CalSim feeds critical information to drive SWP operations models which are also required for impact analysis of the project. The BDCP and WaterFix EIR/S declined to use this best available science tool which must not be repeated by the Corps Delta Conveyance Project EIS.
- **Operations Models for the Delta Conveyance Project.** These operations models respond to CalSim input with their own respective operations that fulfill demands as defined in the CalSim3.

The respective SWP operations models define a set of operations which fulfill the CalSim water supply demands while the operations models comply with water flow and quality requirements. The CALSIM and operations models are run iteratively until a water operations solution is achieved which optimizes meeting water supply demand while (theoretically) complying with water quality and quantity operational and environmental legal requirements.

All SWP facility components have operations models including Oroville Reservoir, Thermalito Afterbay, Banks Pumping Plant, the California Aqueduct, San Luis Reservoir and all other SWP pumping plants and reservoirs. The BDCP and WaterFix projects never defined operations for their facilities for operation of water intakes, reregulating reservoirs, pumps, etc. so impact assessments of those operations were never conducted in those EIR/S. Without those facilities operations impact analyses in the EIS, the project cannot be permitted as impacts from them have not been disclosed, evaluated or mitigated.

Most critical and missing from the BDCP and WaterFix facilities operations models was the intertidal operations of the north delta intakes to comply with fisheries requirements for maximum approach velocity, minimum sweeping velocity and maximum duration of exposure of listed fish species to the proposed intake fish screens. Accurate modeling of 3D velocities at the fish screens requires high resolution bathymetry at the intake selected site and design characteristics of the intakes. These are all required for a project-level analysis of impacts which would be required to secure construction-related permits. The Delta Conveyance Project does not define exactly where water diversion structures would be placed so the required analysis of fish screen fish criteria compliance is not possible for this EIS which would make it deficient for potential consideration of Incidental Take Permits (ITPs).

- **Delta Salinity Water Quality Models** - DSM2 has a Salinity analysis module that the BDCP and WaterFix EIR/S analysis did not utilize to the level of best available science. The out of date and not utilized available bathymetry data utilized in the BDCP and WaterFix DSM2 modeling caused those analyses and impact evaluations to mischaracterize and under-estimate project impacts. The magnitude of the gap in the old bathymetry characterization vs. current reality and available data results in such a disparity that the self-cancelling error of the model utilized in a comparative analysis manner no longer functions usefully or defensibly. NEPA's best available

science requires that available updated bathymetry data be integrated into the data set to be used for analysis in the Delta Conveyance Project EIS.

The DSM2 salinity module has been used on other Delta water projects that included updated bathymetry data collection. Significant portions of the delta have updated bathymetry data collected and available from these recent projects. This data must be integrated with the rest of the available bathymetry data for the EIS. SDWA can provide information regarding sources for these more recent data sets. Current and accurate bathymetry data is essential to conducting the most accurate and representative salinity modeling for impacts analysis and development of proposed operations to avoid and minimize salinity impacts as well as identify and evaluate potential mitigations as NEPA best available science requires.

The Delta Conveyance Project EIR has already set the precedent that it will collect new field data to further the design and analysis for the project with its current and on-going program to collect additional geologic core samples along the proposed tunnel conveyance route. With DWR's precedent for new field data collection established for this project, the Delta Conveyance Project EIS must put equal emphasis, investment and time in collecting important supplemental information to support accurate environmental impacts analysis. Supplemental selected area bathymetry data must be collected as needed to compliment other available data to represent current Delta channel conditions to ensure that a useful and meaningful modeling analysis of salinity impacts is conducted by the Delta Conveyance Project EIS.

- **Dissolved Oxygen Water Quality Models** - DSM2 has a Dissolved Oxygen (DO) analysis module that the BDCP and WaterFix EIR/S did not utilize. Many other existing, generally accepted and suitable DO models are applicable to the DO impact analysis for the Delta Conveyance EIS. The Corps likely has direct experience with several that would be applicable to this project.

The BDCP and WaterFix EIR/S shamefully used no quantitative analysis on this critical project impact. Instead the BDCP and WaterFix EIR/S relied upon an unsupported, subjective, rationally inconsistent, qualitative assessment, professional judgment call for the only content addressing this pivotal impact.

All of the relevant information regarding reduced flows and water turnover as well as nutrient load increase combined with increased water temperatures was ignored in favor of finding of no significant impact from DO that was supported by no collaborating documentation or analysis. The Delta Conveyance Project does not have to use DSM2 for the DO analysis, but it cannot fail to do any quantitative analysis as its predecessor EIR/S projects have done.

- **Inappropriate Temporal Aggregation of Data for Analysis and Impact Calls** - The BDCP and WaterFix project EIR/S aggregated data to obscure peak events which were relevant to disclosing, analyzing and mitigating project impacts which the Corps EIS must avoid. Temporal aggregation of data sets hides the range of conditions and extremes of conditions and impact as relevant information is lost due to it being averaged into other dissimilar data. Rolling two week averaged data used for an impact analysis or evaluation of project compliance with water quality requirements hides peak events and impacts. As an example, data can have low values

most of the time but have extreme outliers (i.e. 4 plus standard deviation events) that are completely masked in the temporal averaging data treatment. In the case a rolling two week data averaging, if water temperatures are suitable for a fish to survive for 13 out of the 14 days but lethal levels on one day; on average the water temperature is fine and no impact is determined, but in reality all of the fish are still dead from that one day. The same goes for salt load in irrigation water and the effects on agricultural resources. On a 2 week average the amount of salt level of the water quality may be below that a crop can theoretically tolerate, but the one salty irrigation during that period killed the crop and poisoned the soil which is not disclosed by inappropriate data averaging and temporal aggregation. The Delta Conveyance Project EIS must not utilize temporally aggregated data sets for impact analysis or utilize significance criteria which rely upon temporally aggregated data sets.

3) The Delta Conveyance Project Extends the Operational Lifespan of the SWP - The No Action Assumption of the Delta Conveyance Project EIR includes a 10' increase in sea level. This sea level rise would effectively end the viability of the SWP water supply approximately by or around the year 2070. Therefore, the Corps Delta Conveyance Project must include as part of their direct, indirect and cumulative impacts assessments in the EIS, the on-going impacts and incremental impacts of continued operations of the SWP beyond the time period in which it would have been viable without the project (the No Action). The SWP Water Supply Contract Extension Amendment EIR was legally obligated to disclose, analyze and mitigate this impact, but omitted this impact from its impact scope by incorrectly assuming the contract extension as the No Project condition. With the Sea Level rise assumption of the Delta Conveyance EIR and EIS, the EIS may not avoid including assessment of these ongoing and incremental impacts of continued operations of the SWP. Please see related comments.

4) Delta Conveyance Project Water Transfer Impact Analysis - The SWP Water Supply Contract Delta Conveyance Amendment deferred its impact analysis of water transfers to the impact analysis to be conducted under the Delta Conveyance Project EIR and EIS. The impact analysis of water transfers requires a detailed analysis of available water transfer capacity opportunity created by the Delta Conveyance Project. In order to conduct this water transfer capacity analysis at a project-level of impact (and construction-related permitting), a detailed hourly set of operations of the water intake structures must be defined. This is a set of operations that the BDCP and WaterFix and Delta never defined, disclosed or analyzed. The hourly operations of these intakes are required to determine what flows can be diverted based of flow velocity variations that occur within the intertidal conditions at the intake specific intake locations (as yet to be) proposed. This analysis of potential intake diversion operations that comply with intake local conditions for fish criteria compliant operations against baseline SWP project operations demands determines what the potential excess capacity is for water transfers. The NOP and NOI do not define proposed operations or specific project-level locations for the intakes so this required level of analysis is not possible in this EIS.

Long-term water transfers result in hardening of base water supply demand and is growth inducing so use of the facilities excess water transfer capacity must be parsed into short-term vs. long-term transfer impact analyses. The specificity in the level of detail of project description and operations required to assess, disclose and mitigate for these project-level impacts is completely missing to date.

5) Wetland and Agricultural Resources - The BOCF and WaterFix EIR/S impact analysis ignored saltwater intrusion into the delta on agricultural water supply quality and shallow groundwater recharge salinity impacts to delta islands and wetlands. These analyses similarly ignore salt accumulation impacts from the project in SWP service areas and their effects on agricultural soils and wetlands. With the viable lifespan extension, the Delta Conveyance Project provides the SWP system with extension of viability beyond those currently feasible with Sea Level Rise, all subsequent salt accumulation and wetlands affects in the SWP Service Areas are impacts of the Delta Conveyance Project. The Delta Conveyance Project EIS should use (at a minimum) the methodology and impact analysis approach from the USBR Remand EIS to assess the project impacts on these agricultural resources. Wetlands are a core Corps responsibility and delta saltwater intrusion and export to SWP service areas affects on wetlands from Delta Conveyance operations must be evaluated in the EIS.

6) Growth Inducing Impacts - The growth assumption (and stated project objective to "restore water supplies" and "support population growth") indicates an objective of the project to provide increased long-term water supplies creating hardened demand from project induced population growth. Therefore the project must disclose the magnitude, location and nature of growth induced; and analyze and mitigate those Growth Inducement impacts. The BDCP and WaterFix EIR/S projects claimed the project would "create no new water" (which was false), so they did not conduct growth inducement-related impact analyses. The Delta Conveyance Project clearly states it will induce growth so all impacts related to this objective must be analyzed, disclosed and mitigated in the EIS.

Project Description is Only Programmatic-Level Detail

An EIS is a decision support document for agencies with decision making authority relevant to the project. Many permits required by the project will be evaluated and potentially issued based upon information in the EIS. The EIS impact analyses must include a full evaluation of detailed project operations consistent with those proposed to, and potentially approved by, agencies that may issue permits to the project based on the information in and findings of the EIS. DWR's proposal in the NOP to "not analyze final project operations" guarantees that not all project impacts can be quantified or mitigated in the EIS. Because DWR will not provide operations information for the EIS to analyze, it also guarantees that the basis upon which other agencies relied upon the EIS would be false and misleading.

The project description is deficient for Project-Level analysis sufficient for consideration of construction-related permits. DWR is spending considerable time, effort and \$s refining their Proposed Project with the objective to reduce the project surface footprint size. DWR has provided "ZERO" operational level detail regarding how the proposed facilities would be operated. DWR has even stated that what little operational-related impact analysis they intend to do in the EIR will not be the operations that they intend to operate the facilities to in the future. This DWR declaration is notice of intent by DWR to circumvent the impact analysis and mitigations required by NEPA and CEQA.

Given DWR's stated intent to violate CEQA by not analyzing operations of a facility it proposes to construct, it is equally likely that DWR would choose to analyze a proposed set of operations in the EIR that resulted in significantly less environmental impacts to reduce mitigation costs and increase water supply yield. In its statement, DWR has declared that the operations it evaluates in the EIR will not be

the operations they intend to implement with the project if it is approved. The USACE EIS must not accept this DWR project premise to falsify the operational affects of the project by analyzing ones it will not adhere to in the implementation of the project. The unanalyzed operational impacts would last for the life of the project which could literally last over a hundred or maybe a couple of hundred years. The USACE must reject this premise of overlooked operational impacts and reject the premise of illegal NEPA piece-mealing of project impacts.

DWR's plan for a deficient EIR from the beginning of the EIR process indicates that DWR should not be allowed to be the Certifying Agency of the EIR. USACE, as the Federal Lead Agency on the project, would be well within their scope of responsibility to request DWR, as the applicant, allow a more neutral and unbiased agency such as California Department of Fish and Wildlife (CDFW) to take the State Lead Agency role for the EIR. DWR is the Applicant, but has no permits to issue and has demonstrated themselves to be biased in their execution of responsibilities as State Lead Agency of the EIR. CDFW does potentially have permits to issue based on the EIR as a support document, so they would be a more logical EIR State Lead Agency anyway.

SWP Water Supply Delta Conveyance Amendment EIR Deferred Impact Analysis of Water Transfers to the Delta Conveyance Environmental Review

There are far ranging implications to USACE's responsibilities and No Action definition to DWR's inclusion of the Water Supply Extension and Delta Conveyance Amendments impact assessment to the Delta Conveyance project.

The environmental review of the Extension Amendment project incorrectly omitted the EIS component of the project ignoring the multiple clear federal nexus of the project. There are several federal nexus to the project which we have commented on in that process extensively and can provide to USACE upon request. The use of the Delta Conveyance for water transfers under the Extension Amendment is obviously a federal nexus. Also, the SWP is operated in coordination with the CVP through the Coordinated Operating Agreement (COA). Operational changes in SWP affect CVP and visa versa making them operationally inextricably connected and with interacting impacts on their operations and the environment. This too is obviously a federal nexus. The USACE (or other designated Federal Lead Agency) must conduct an EIS on the aspects of the contract amendment were contingent upon the existence of the Delta Conveyance and the impacts from the exercise of these options under the contract would be the result of the approval of the Delta Conveyance project.

The operations of the Water Supply Delta Conveyance Amendment have not been defined so it will be the responsibility of the EIS to determine excess capacity created by the Delta Conveyance and determine which portions of that available capacity will be utilized. Additionally, the impacts of the origin and destination of the water transfers must also be included in the EIS impact analysis scope.

Environmental Baseline and Alternatives

No Action Alternative

““No action” ... “would mean the proposed activity would not take place, and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

Where a choice of "no action" by the agency would result in predictable actions by others, this consequence of the "no action" alternative should be included in the analysis. For example, if denial of permission to build a railroad to a facility would lead to construction of a road and increased truck traffic, the EIS should analyze this consequence of the "no action" alternative.”

(https://www.fws.gov/r9esnepa/NEPA_Handbook/40_Asked_Questions.pdf, 3a)

The Delta Conveyance Project extends the operational lifespan of the SWP Facilities by adapting the project to be viable beyond the date in which the current facilities would become unviable under assumed No Action future sea level rise conditions. The No Project/Action Assumption for the Delta Conveyance includes a 10' increase in sea level. This sea level rise would effectively end the viability of the current (No Project) SWP water supply before or around approximately the year 2050. Therefore, the Delta Conveyance Project EIR impact analysis must include as part of their direct, indirect and cumulative impacts, the on-going impacts of continuing to operate the SWP beyond the time period in which it would have been viable without the project (the No Project). The SWP Water Supply Contract Extension Amendment EIR was legally obligated to disclose, analyze and mitigate this impact, but omitted this impact from its impact scope by incorrectly assuming the contract extension as the No Project condition.

Regardless of DWR's incorrect presumption of a water supply contract renewal being a No Project assumption, the sea level rise that is assumed under the No Project condition for the Delta Conveyance Project means the SWP will not be viable at a certain date in the No Action condition. Therefore any ongoing and incremental impacts of operations of the project beyond that date of No Action SWP viability are all impacts of the Delta Conveyance Project that must be disclosed, analyzed and mitigated in the EIR. These on-going incremental impacts include, but are not limited to: soil salt accumulation, land use changes, genetic introgression of fisheries biologically distinct units, population growth inducement, etc.

Just as a point of information for the Corps, seeing as there is a NEPA component to the Delta Conveyance. The SWP Water Supply Contract Extension Amendment EIR assumed that the No Project condition included contract renewals. There was no basis for this conclusion . The original impacts of the SWP were exempted from environmental impact analysis and mitigation due to the period in which the original project was implemented. DWR, without documented, logical or legal support, determined that the No Project would automatically renew the water supply contracts so there were no environmental impacts from continued water deliveries. If the Corps sees a federal nexus with the Contract Extension due to the Coordinated Operating Agreement with the CVP, then this will have to get sorted out.

Project Alternatives

Alternative components identified in this submittal are in an effort to identify potentially productive and mutually beneficial project alternatives which accomplish the purpose and objectives of the project and satisfy the mandates of the Executive Order. We believe these alternative components have sufficient merit for further analysis in the project EIR. Although many project alternatives have been evaluated to address other Delta projects that have overlapping and similar project objectives to the Delta Conveyance Project and the Water Resiliency Portfolio in the past, (i.e. CalFed, South Delta Improvement Program, Delta Risk Management Strategy (DRMS), Bay Delta Conservation Plan, California WaterFix, OCAP Biological Opinions, etc.), most of the Proposed Project/Action alternatives have never been evaluated and certainly never in the synergistic combination proposed in this comment section. Alternative solutions which do not include the very expensive and greatly damaging tunnel or other isolated Delta conveyance facilities should be objectively analyzed.

The project alternatives put forth in these comments do not constitute endorsement of these alternatives as there is the potential for adverse outcomes that are not necessarily foreseeable until a full EIR analyses has been conducted. The alternatives submitted in these comments are intended to be constructive in the search for project alternatives that meet the project objectives, satisfy the mandates of the Water Resiliency Portfolio Executive Order and protect and enhance the Delta. The Delta Reform Act Water Code section 85054 requires protection and enhancement of the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

The analysis provided in these comments on the Executive Order and the NOP Project Objectives provide a series of alternatives development screening criteria. A cumulative scoring assessment of the alternatives and the Proposed Project/Action is set forth in **Table 1. Comparison of Proposed Project/Action Alternative to NOP Objectives and EO N-10-19 Water Resiliency Portfolio Mandates.**

The Proposed Project/Action only satisfies 2 of the 21 screening criteria. The identified combined set of project alternatives meets 20 of the 21 screening criteria. The identified set of project alternatives fails to "Support Population Growth" so it does not satisfy one of the screening criteria. All but one of the other screening criteria are satisfied by the identified set of project alternatives multiple times (often in different and synergistic manners).

NEPA requires an equal level of project alternatives development and equal level of alternative impact analysis. "The degree of analysis devoted to each alternative in the EIS is to be substantially similar to that devoted to the "proposed action." Section 1502.14 is titled "Alternatives including the proposed action" to reflect such comparable treatment. Section 1502.14(b) specifically requires "substantial treatment" in the EIS of each alternative including the proposed action."

(https://www.fws.gov/r9esnepa/NEPA_Handbook/40_Asked_Questions.pdf, 5b) DWR has created a problem for the Corps in applying a significant level of effort in advancing the engineering design of their predecisional preferred alternative tunnel conveyance route. This additional data collection and analysis focused on this and only this route has been to the exclusion of developing comparable level detail on other potential conveyance routes and other project alternatives. DWR has applied significant effort in collecting subsurface soil samples for their preferred tunnel alignment, bathymetric surveys on their preferred intake locations and CESA (and presumably ESA) species on their preferred alignment

construction surface footprint areas. USACE, as the NEPA Lead Agency, must collect data of comparable level of detail to support comparable level of analysis on all alternatives to protect NEPA compliance integrity of the EIS.

Preferred Alternative

“Even though the agency's preferred alternative is identified by the EIS preparer in the EIS, the statement must be objectively prepared and not slanted to support the choice of the agency's preferred alternative over the other reasonable and feasible alternatives.”

(https://www.fws.gov/r9esnepa/NEPA_Handbook/40_Asked_Questions.pdf, 4c)

Least Environmentally Damaging Project Alternative

“Section 1505.2(b) requires that, in cases where an EIS has been prepared, the Record of Decision (ROD) must identify all alternatives that were considered, “. . . specifying the alternative or alternatives which were considered to be environmentally preferable.” The environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101.

Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.”

(https://www.fws.gov/r9esnepa/NEPA_Handbook/40_Asked_Questions.pdf, 6A)

EIS Preparation Comment Summary

The BDCP and WaterFix EIR/S documents included many deficiencies, errors, omissions, false science and contrived conclusions to avoid disclosing or mitigating significant impacts which must not be repeated in the Corps Delta Conveyance Project EIS. CDWA and SDWA submitted over a thousand pages of detailed comments on these documents chronicling the failures of these documents and their deficiencies. The BDCP and WaterFix EIR/S process was conducted from beginning to end with a predecisional process and procedural flaws. The Alternatives Scoping process was conducted with arbitrary, capricious, inconsistently applied screening criteria and unsupported evaluation rationale designed to foreclose potential project alternatives that otherwise in an unbiased process may have led to more favorable, lower impact project alternatives (i.e. NEPA LEDPA). The EIR screened out alternatives that were rationally viable based on criteria that were inconsistently applied. The EIR analysis included many fundamental deficiencies, errors in fact and analysis, false information synthesis, irrational and unsupported conclusions and impact calls, omitted impact analyses and impact mitigations, utilized professional opinions instead of use of available and accepted analytical tools, relied upon impact synthesis that was in direct contradiction to the supporting analysis; impact calls that were inconsistent, arbitrary and unsupported by the analysis or facts; and many significant impacts of the project which were not mitigated which were practical and feasible to mitigate. Again, the flawed predecisional process, analytical and disclosure deficiencies, lack of use of best available science and omitted science, unsupported impact calls, and unmitigated impacts must not be repeated in the Corps Delta Conveyance Project EIS.

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October 20, 2020

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Re: USACE SPK-2019-00899 Delta Conveyance Project
DJN Sr. Part One

Dear Mr. Simmons:

Our comments regarding the above are being submitted in multiple parts.

The complicity of the USACE in the predetermination of approval of the action to construct new SWP/CVP intakes on the Sacramento River with isolated conveyance tunnels is again confirmed by the NOI and effort to prematurely move forward with permitting of a particular alternative to the exclusion of others in advance of a record of decision on a NEPA compliant EIS.

The NOI provides:

“The USACE’s jurisdiction is limited to construction activities resulting in the discharge of dredge or fill material within waters of the U.S., work or structures within navigable waters, and modifications to the federal levees and navigation projects. The scope of the USACE NEPA review for operations of the new facilities is limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.”

“The future operation of the intakes after completion of construction would not be within control or responsibility of the Corps.”

The USACE jurisdiction is not so limited. Operation of large diversion facilities that can substantially alter water elevations and directions of flow in navigable channels clearly can affect navigation and are within the jurisdiction of the USACE. Such impacts clearly occur both upstream and downstream of the diversion facilities. The impact of dewatering wetlands through water transfers based on groundwater substitution and fallowing to supply water that is not truly surplus to the needs in the areas of origin and the impact of degradation of water quality which destroys the value of wetlands which are part of “waters of the United States must be included in the analysis. The federal obligation for maintenance of salinity control in the Delta is interrelated with the need for flows for navigation.

In the case of *Sierra Club v Morton* (1975) 400 F. Sup 610 the court confirmed that Section 10 of the Rivers and Harbors Act applied not only to obstruction caused by the construction of a structure itself but by the operation. At page 630 the court provided:

“The Supreme Court has defined ‘obstruction to the navigable capacity’ to mean to interfere with or diminish the navigable capacity of the waterway in question”

In addressing Delta export pumping and the proposed Peripheral Canal the court found operations which tend to lower water levels and cause reverse flows or decrease water velocities downstream to constitute obstruction to the navigable capacity. At page 632 the court concluded:

“Accordingly, the Court concludes that the operation of the Tracy and Delta Plants presently obstructs the navigable capacity of various navigable waters in the Delta. The Court further concludes that as presently proposed, the Peripheral will also result in an obstruction to navigable capacity of the Sacramento River. More specifically, the Court finds that, in the case of each of the three facilities, the obstruction is the result of the modification or alteration of the condition or capacity of the channel of navigable water of the United States and hence is governed by the third clause of Section 10.

The approval of discharge of fill in connection with construction of the project cannot be separated from approval of the project itself without in reality limiting the choice of reasonable alternatives as to routing, facilities and mitigation. The subject application by DWR inappropriately attempts to limit the scope of its project.

The DWR Modernizing Delta Conveyance Infrastructure Q&A paper issued as a part of Governor Newsom’s water plan clearly shows that it has been predetermined that construction of a tunnel will be included in any alternative. See Exhibit 30. The DCA report to the stakeholder committee on July 22, 2020 included the No Tunnel Screening Discussion slide attached as Exhibit 31. An artificial Filter 2 was apparently contrived to eliminate consideration of a reasonable range of no tunnel alternatives. Conservation, reclamation, desalination of brackish groundwater or salty surface water coupled with surface and groundwater conjunctive use and development in the areas of origin can reduce or eliminate the need for an additional isolated conveyance facility across the Delta. Such would be consistent with reduction of reliance on the delta, honor the priority for areas of origin including salinity control for the Delta and develop new supply. Floodwaters from the

eastside of the San Joaquin can be moved south through the Madera and Friant Kern canals for direct supply or groundwater storage rather than add to the flood flow of the San Joaquin River. The supply for the tunnel is greatly dependent on water transfers which simply transfer the economy from one area of the State to another. The USACE should not join in such abuse of process.

THE PREDETERMINATION OF ACTION TO CONSTRUCT AND OPERATE AN ISOLATED CONVEYANCE FACILITY WITH NEW INTAKES ON THE SACRAMENTO RIVER IS CLEAR

The Decision to Proceed with permitting an Isolated Conveyance, i.e., Now Tunnels and New Intakes On the Sacramento River, in Advance of the Analysis and Preparation of the DEIR/DEIS Destroyed the Impartiality for a Good Faith Effort at Full Disclosure and Analysis of Impacts, Alternatives and Mitigation.

NEPA requires full disclosure of the potential effects of major actions proposed by federal agencies and accompanying alternatives, impacts and possible mitigation. NEPA also requires that environmental concerns and impacts be considered during planning and decision making so that steps may be more easily taken to correct or mitigate the impacts of an action. Compliance with NEPA should result in more informed decisions and the opportunity to avoid or mitigate for potential environmental effects before an action is implemented. The NEPA process is intended to identify and evaluate alternatives in an impartial manner. (See Reclamation's NEPA Handbook dated February 2012.)

CEQA requires adequacy, completeness and a good faith effort at full disclosure. The EIR is to inform the decision makers and the public of the environmental impact of proposed actions. (See CEQA Guidelines sections 15002 and 15003.) The purposes include identifying ways to avoid or significantly reduce environmental damage and preventing significant, avoidable damage to the environment by requiring changes in projects through the use of feasible alternatives or mitigation measures.

NEPA POLICY AND PROCEDURAL REQUIREMENTS TO ASSURE OBJECTIVITY IN THE PREPARATION OF THE EIS HAVE BEEN AND ARE BEING CIRCUMVENTED.

The SWP and major State Water Contractors obviously want to construct the isolated conveyance facility and operate the SWP to maximize the export of water from the Delta.

The CVP (U.S. Bureau of Reclamation) although clearly in favor of construction of the isolated conveyance has not forthrightly sought authority to join in construction, but obviously plans to convey CVP water through such facility and seeks to protect the "ability of the SWP and CVP to deliver up to full contract amounts, . . ."

The SWP contractors and CVP contractors who are to receive the water exported from the Delta obviously are isolated conveyance and full delivery proponents.

The roles of regulating agencies and applicants, lead agencies and cooperating agencies has been mixed in a manner which circumvents the procedural mechanisms to assure NEPA required objectivity.

The SWP and SWP contractors seeking take permits from the U.S. Fish & Wildlife Services (USFWS) and National Marine Fisheries Service should be viewed as applicants and the Services as co-lead agencies. In such case, the EIS should be prepared directly by the Services or by a contractor selected by them or where appropriate under 40 CFR section 1501.6(b), a cooperating agency which has a similar interest. 40 CFR section 1506.5(c) in part provides:

“It is the intent of these regulations that the contractor be chosen solely by the lead agency, or by the lead agency in cooperation with cooperating agencies, or where appropriate by a cooperating agency to avoid any conflict of interest.” (Emphasis added.)

Allowing DWR, the USBR and their respective contractors to run the show and now to have the USACE complicit in the predetermination is not appropriate.

Although 40 CFR section 1506.2 directs cooperation to the fullest extent possible to reduce duplication between NEPA and state and local requirements, it does not suggest that compliance with requirements to avoid conflict of interest and assure objectivity can be avoided. Joint selection of common consultants in compliance with NEPA requirements and subsequent sole direction of the common consultants by USFWS and NMFS as to NEPA compliance would avoid duplication and could help avoid the conflict of interest deterioration of objectivity.

The impartiality and avoidance of conflicts whether financial or otherwise, of the consultants is critical to the objective analysis required by NEPA. Those who contract with the consultants and most important those who direct the consultants will have the greatest impact on objectivity.

40 CFR section 1506.5(c) specifies that a consulting firm involved in preparing an EIS must execute a disclosure statement setting forth any “financial or other interest in the outcome of the project.” Whether this was done and by whom is of interest however, even with such disclosure, direction of the consultants will greatly dictate the bounds of objectivity.

Objectivity to assure the need to “rigorously explore and objectively evaluate all reasonable alternatives” is made more critical by the revolving door of employees between federal and state agencies and export water contractors.

The USACE engagement of independent consultants is not clear.

THE PROJECT OBJECTIVES AND PURPOSE AND NEED UNLAWFULLY DISTORT AND CONSTRAIN THE ANALYSIS IN FAVOR OF EXPORTS AND AGAINST THE LEGAL MANDATES REQUIRING THAT EXPORTS BE LIMITED TO WATER WHICH IS TRULY SURPLUS TO THE PRESENT AND FUTURE NEEDS OF THE DELTA AND OTHER AREAS OF ORIGIN INCLUDING FISH AND WILDLIFE NEEDS

The promises and law restricting exports from the Delta are reflected in the representations and promises made at the inception of both the CVP and SWP.

A summary of the promises made on behalf of the United States to those in the areas of origin is contained in the 84th Congress, 2D Session House Document No. 416, Part One Authorizing Documents 1956 at Pages 797-799 as follows:

“My Dear Mr. Engle: In response to your request to Mr. Carr, we have assembled excerpts from various statements by Bureau and Department officials relating to the subject of diversion of water from the Sacramento Valley to the San Joaquin Valley through the operation of the Central Valley Project.

A factual review of available water supplies over a period of more than 40 years of record and the estimates of future water requirements made by State and Federal agencies makes it clear that there is no reason for concern about the problem at this time.

For your convenience, I have summarized policy statements that have been made by Bureau of Reclamation and Department of the Interior officials. These excerpts are in the following paragraphs:

On February 20, 1942, in announcing the capacity for the Delta-Mendota Canal, Commissioner John C. Page said, as a part of his Washington D.C., press release: “The capacity of 4,600 cubic feet per second was approved, with the understanding that the quantity in excess of basic requirements mainly for replacement at Mendota Pool, will not be used to serve new lands in the San Joaquin Valley if the water is necessary for development in the Sacramento Valley below Shasta Dam and in the counties of origin of such waters.”

On July 18, 1944, Regional Director Charles E. Carey wrote a letter to Mr. Harry Barnes, chairman of a committee of the Irrigation Districts Association of California. In that letter, speaking on the Bureau’s recognition and respect for State laws, he said:

“They [Bureau officials] are proud of the historic fact that the reclamation program includes as one of its basic tenets that the irrigation development in the West by the Federal Government under the Federal reclamation laws is carried forward in conformity with State water laws.”

On February 17, 1945, a more direct answer was made to the question of diversion of water in a letter by Acting Regional Director R. C. Calland, of the Bureau, to the Joint Committee on Rivers and Flood Control of the California State Legislature. The committee had asked the question, “What is your policy in connection with the amount of water that can be diverted from one watershed to another in proposed diversions?” In stating the Bureau’s policy, Mr. Calland quoted section 11460 of

the State water code, which is sometimes referred to as the county of origin act, and then he said:

“As viewed by the Bureau, it is the intent of the statute that no water shall be diverted from any watershed which is or will be needed for beneficial uses within that watershed. The Bureau of Reclamation, in its studies for water resources development in the Central Valley, consistently has given full recognition to the policy expressed in this statute by the legislature and the people. The Bureau has attempted to estimate in these studies, and will continue to do so in future studies, what the present and future needs of each watershed will be. The Bureau will not divert from any watershed any water which is needed to satisfy the existing or potential needs within that watershed. For example, no water will be diverted which will be needed for the full development of all of the irrigable lands within the watershed, nor would there be water needed for municipal and industrial purposes or future maintenance of fish and wildlife resources.”

On February 12, 1948, Acting Commissioner Wesley R. Nelson sent a letter to Representative Clarence F. Lea, in which he said:

“You asked whether section 10505 of the California Water Code, also sometimes referred to as the county of origin law, would be applicable to the Department of the Interior, Bureau of Reclamation. The answer to this question is: No, except insofar as the Bureau of Reclamation has taken or may take assignments of applications which have been filed for the appropriation of water under the California Statutes of 1927, chapter 286, in which assignments reservations have been made in favor of the county of origin.

The policy of the Department of the Interior, Bureau of Reclamation, is evidenced in its proposed report on a Comprehensive Plan for Water Resources Development—Central Valley Basin, Calif., wherein the Department of the Interior takes the position that “In addition to respecting all existing water rights, the Bureau has complied with California’s ‘county of origin’ legislation, which requires that water shall be reserved for the presently unirrigated lands of the areas in which the water originates, to the end that only surplus water will be exported elsewhere.”

On March 1, 1948, Regional Director Richard L. Boke wrote to Mr. A. L. Burkholder, secretary of the Live Oak Subordinate Grange No. 494, Live Oak, Calif., on the same subject, and said:

“I can agree fully with the statement in your letter that it would be grossly unjust to ‘take water from the watersheds of one region to supply another region until all present and all possible future needs of the first region have been fully determined and completely and adequately provided for.’ That is established Bureau of Reclamation policy and, I believe, it is consistent with the water laws of the State of California under which we must operate.”

On May 17, 1948, Assistant Secretary of the Interior William E. Warne wrote a letter to Representative Lea on the same subject, in which he said:

“The excess water made available by Shasta Reservoir would go first to such Sacramento Valley lands as now have no rights to water.”

Assistant Secretary Warne goes on to say, in the same letter:

“As you know, the Sacramento Valley water rights are protected by: (1) Reclamation law which recognizes State water law and rights thereunder; (2) the State’s counties of origin act, which is recognized by the Bureau in principle; and (3) the fact that Bureau filings on water are subject to State approval. I can assure you that the Bureau will determine the amounts of water required in the Sacramento Valley drainage basin to the best of its ability so that only surplus waters would be exported to the San Joaquin. We are proceeding toward a determination and settlement of Sacramento Valley waters which will fully protect the rights of present users; we are determining the water needs of the Sacramento Valley; and it will be the Bureau’s policy to export from that valley only such waters as are in excess of its needs.”

On October 12, 1948, Secretary of the Interior Krug substantiated former statements of policy in a speech given at Oroville, Calif. Secretary Krug said, with respect to diversion of water:

“Let me state, clearly and finally, the Interior Department is fully and completely committed to the policy that no water which is needed in the Sacramento Valley will be sent out of it.”

He added:

“There is no intent on the part of the Bureau of Reclamation ever to divert from the Sacramento Valley a single acre-foot of water which might be used in the valley now or later.”

The California Water Resources Development Bond Act provides in Water Code Section 12931 that the Sacramento-San Joaquin Delta shall be deemed to be within the watershed of the Sacramento River.

Exhibit 16 is a copy of the 1960 ballot argument in favor of the California Water Resources Development Bond Act which spawned the State Water Project (SWP). Of particular note are the following representations:

“No area will be deprived of water to meet the needs of another nor will any area be asked to pay for water delivered to another.”

“Under this Act the water rights of Northern California will remain securely protected.”

“A much needed drainage system and water supply will be provided in the San Joaquin Valley.”

Water Code section 85031(a) provides:

“(a) This division does not diminish, impair, or otherwise affect in any manner whatsoever any area of origin, watershed of origin, county of origin, or any other water rights protections, including, but not limited to, rights to water appropriated prior to December 19, 1914, provided under the law. This division does not limit or otherwise affect the application of Article 1.7 (commencing with Section 1215) of Chapter 1 of Part 2 of Division 2, Sections 10505, 10505.5, 11128, 11460, 11461, 11462, and 11463, and Sections 12200 to 12220, inclusive.” (Emphasis added.)

Water Code Sections 11460 et seq. and 12200 et seq. are particularly specific in defining the limitation on the export of water from the Delta by the SWP and CVP. Water Code Section 11460 et seq. were added by Statutes 1943, c. 370, p. 1896 around the time of commencement of the CVP. Water Code Section 12200 et seq. was added by Statutes 1959, c. 1766, p. 1766 around the time of commencement of the State Water Project.

The limitation of the projects to the export of only surplus water and the obligation of the projects to provide salinity control and assure an adequate water supply sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta is clear.

Water Code "12200 through 12205 are particularly specific as to the requirements to provide salinity control for the Delta and provide an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban and recreational development.

For ease of reference, the following Water Code sections are quoted with emphasis added:

'12200. Legislative findings and declaration

The Legislature hereby finds that the water problems of the Sacramento-San Joaquin Delta are unique within the State; the Sacramento and San Joaquin Rivers join at the Sacramento-San Joaquin Delta to discharge their fresh water flows into Suisun, San Pablo and San Francisco bays and thence into the Pacific Ocean; the merging of fresh water with saline bay waters and drainage waters and the withdrawal of fresh water for beneficial uses creates an acute problem of salinity intrusion into the vast network of channels and sloughs of the Delta; the State Water Resources Development system has as one of its objectives the transfer of waters from water-surplus areas in the Sacramento Valley and the north coastal area to water-deficient areas to the south and west of the Sacramento-San Joaquin Delta via the Delta; water surplus to the needs of the areas in which it originates is gathered in the Delta and thereby provides a common source of fresh water supply for water-deficient areas. It is, therefore, hereby declared that a general law cannot be made applicable to said Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good. (Added by Stats. 1959, c. 1766, p. 4247, '1.)

'12201. Necessity of maintenance of water supply

The Legislature finds that the maintenance of an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta area as set forth in Section 12220, Chapter 2, of this part, and to provide a common source of fresh water for export to areas of water deficiency is necessary to the peace, health, safety and welfare of the people of the State, except that delivery of such water shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code. (Added by Stats. 1959, c. 1766, p 4247, '1.)

'12202. Salinity control and adequate water supply; substitute water supply; delivery

Among the functions to be provided by the State Water Resources Development System, in coordination with the activities of the United States in providing salinity control for the Delta through operation of the Federal Central Valley Project, shall be the provision of salinity control and an adequate water supply for the users of water in the Sacramento-San Joaquin Delta. If it is determined to be in the public interest to provide a substitute water supply to the users in said Delta in lieu of that which would be provided as a result of salinity control no added financial burden shall be placed upon said Delta water users solely by virtue of such substitution. Delivery of said substitute water supply shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code. (Added by Stats. 1959, c. 1766, p 4247, '1.)

'12203. Diversion of waters from channels of delta

It is hereby declared to be the policy of the State that no person, corporation or public or private agency or the State or the United States should divert water from the channels of the Sacramento-San Joaquin Delta to which the users within said Delta are entitled. (Added by Stats. 1959, c. 1766, p 4249, '1.)

'12204. Exportation of water from delta

In determining the availability of water for export from the Sacramento-San Joaquin Delta no water shall be exported which is necessary to meet the requirements of Sections 12202 and 12203 of this chapter. (Added by Stats. 1959, c. 1766, p 4249, '1.)

'12205. Storage of water; integration of operation and management of release of water

It is the policy of the State that the operation and management of releases from storage into the Sacramento-San Joaquin Delta of water for use outside the area in

which such water originates shall be integrated to the maximum extent possible in order to permit the fulfillment of the objectives of this part. (Added by Stats. 1959, c. 1766, p 4249, '1.)@

'11460 provides:

11460. Prior right to watershed water

In the construction and operation by the department of any project under the provisions of this part a watershed or area wherein water originates, or an area immediately adjacent thereto which can conveniently be supplied with water therefrom, shall not be deprived by the department directly or indirectly of the prior right to all of the water reasonably required to adequately supply the beneficial needs of the watershed, area, or any of the inhabitants or property owners therein. *(Added by Stats. 1943, c. 370, p. 1896. Amended by Stats. 1957, c. 1932, p. 3410, '296.)@*

The December 1960 DWR Bulletin 76 (Exhibit 14) which includes a contemporaneous interpretation by DWR of Water code Section 12200 through 12205 provides at page 12:

“In 1959 the State Legislature directed that water shall not be diverted from the Delta for use elsewhere unless adequate supplies for the Delta are first provided. (Emphasis added.)

Similarly the DWR confirmed its interpretation of law in the contract between the State of California Department of Water Resources and the North Delta Water Agency for the Assurance of a Dependable Water Supply of Suitable Quality dated January 28, 1981, which provides:

“(d) The construction and operation of the FCVP and SWP at times have changed and will further change the regimen of rivers tributary to the Sacramento-San Joaquin Delta (Delta) and the regimen of the Delta channels from unregulated flow to regulated flow. This regulation at times improves the quality of water in the Delta and at times diminishes the quality from that which would exist in the absence of the FCVP and SWP. The regulation at times also alters the elevation of water in some Delta channels.”

“(f) The general welfare, as well as the rights and requirements of the water users in the Delta, require that there be maintained in the Delta an adequate supply of good quality water for agricultural, municipal and industrial uses.”

“(g) The law of the State of California requires protection of the areas within which water originates and the watersheds in which water is developed. The Delta is such an area and within such a watershed. Part 4.5 of Division 6 of the California Water Code affords a first priority to provision of salinity control and maintenance of an adequate water supply in the Delta for reasonable and beneficial uses of water and relegates to lesser priority all exports of water from the Delta to other areas for any purpose.” (Emphasis added.) (See Exhibit 17.)

United States vs. State Water Resources Control Board 182 Cal.App.3d82 (1986) at page 139 provides:

“In 1959, when the SWP was authorized, the Legislature enacted the Delta Protection Act. (§§ 12200-12220.) The Legislature recognized the unique water problems in the Delta, particularly ‘salinity intrusion,’ which mandates the need for such special legislation ‘for the protection, conservation, development, control and use of the waters in the Delta for the public good.’ (§ 12200.) The act prohibits project exports from the Delta of water necessary to provide water to which the Delta users are ‘entitled’ and water which is needed for salinity control and an adequate supply for Delta users. (§§ 12202, 12203, 12204.)

SWRCB D-1485 at page 9 provides:

“The Delta Protection Act accords first priority to satisfaction of vested rights and public interest needs for water in the Delta and relegates to lesser priority all exports of water from the Delta to other areas for any purpose.”

As related to the Peripheral Canal or Tunnels or any other isolated conveyance facility, the requirements of WC 12205 are particularly relevant.

“It is the policy of the State that the operation and management of releases from storage into the Sacramento-Joaquin Delta of water for use outside the area in which such water originates shall be integrated to the maximum extent possible to permit fulfillment of the objectives of this part.” The objectives include salinity control and an adequate water supply. Conveyance facilities which transport stored water to the export pumps with no outlets or releases to provide

salinity control and an adequate water supply in the Delta would not comply.

The export projects must additionally fully mitigate their respective impacts and meet the affirmative obligations to the Delta and other areas of origin including those related to flow. Failure to do so results in a shift of the cost of the project to someone else. The State Water Resources Development Bond Act was intended to preclude such a shift in costs. See also Goodman v. Riverside (1993) 140 Cal.App.3d 900 at 906 for the requirement that the costs of the entire project be paid by the contractors.

Water Code Section 11912 requires that the costs necessary for the preservation of fish and wildlife be charged to the contractors. The term “preservation” appears to be broader than mitigation and appears to create an affirmative obligation beyond mitigation.

Title 34 of Public Law 102-575 referred to as the Central Valley Project Improvement Act in Section 3406(b)(1) authorizes and directs the Secretary of Interior to enact and implement a program which makes all reasonable efforts to ensure by the year 2002 natural production of anadromous fish (including salmon, steelhead, striped bass, sturgeon and American shad) will be sustainable on a long term basis at levels not less than twice the average levels attained during the period of 1967-1991

The Delta Reform Act of 2009 includes provisions intended to provide additional protection for the Delta. Such provisions include Water Code §85054 which provides:

“§85054. Coequal goals

‘Coequal goals’ means the two goals of providing a more reliable water supply for California and protecting restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.”

Water Code §85021:

“§85021. Reduction of reliance on Delta for future water supply needs

The policy of the State of California is to reduce reliance on the Delta in meeting California’s future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water

recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts.”

The Delta and other areas of origin both upstream and downstream are part of California and also need a more reliable water supply. The modified purposes are clearly directed only at the ability of the SWP and CVP to export water from the Delta. Restoration and protection of Delta water quality and flows including flushing flows are part of a more reliable water supply for California. Non-degradation of water quality and the statutory obligations to provide enhancement of water quality and an adequate supply are also absent from the purposes.

The embedded isolated conveyance will clearly render water supply less reliable in all areas of the Delta downstream of the Sacramento River intakes and those areas along the current routes of Sacramento River flow to the export pumps. The common pool for the interior Delta will be eliminated along with the common interest in protecting the water quality. The isolated conveyance has no outlets and requirements to protect water quality in dry periods are always circumvented. For areas throughout the watershed, including those along the tributaries upstream of the Delta, curtailment of local water use, and water transfers to increase utilization of the highly expensive tunnels combined with the need for fish flows and high water consumption habitat to mitigate for the construction and operation of the tunnels will greatly add to unreliability.

The Delta Conveyance Project ignores the need to reduce reliance on exports of water from the Delta. The hydrology of the Delta watershed is inadequate to support even the past level of exports. Development within the watersheds of origin and the need to recapture water from SWP and CVP exports will increase. There is evidence that more water will be needed to mitigate for the SWP and CVP damage to fish including meeting the CVPIA anadromous fish restoration requirements of 2 times the average natural production for the years 1967 through 1991. Climate change is also expected to adversely affect water supply. The increasing threat of terrorism, the continuing threat of natural calamities, including earthquakes and the growing need for electricity all gravitate towards less reliance on exports from the Delta and instead concentration on developing local self-sufficiency. The deficit due to the failure to develop North Coast watersheds will not be overcome by efforts at self-sufficiency, however, increased efforts in urban communities can increase the amount of water available for agriculture and the environment.

The hydrology predating the construction of the CVP and SWP reflected that no surplus water would be available for export from the Sacramento-San Joaquin Watershed during a reoccurrence of the 1929-1934 drought.

Exhibit 12 is a copy of the hydrographs from page 116 of the Weber Foundation Studies titled “An Approach To A California Public Works Plan” submitted to the California Legislature on January 28, 1960. The highlights and margin notes are mine.

The 1928/29-1933/34 six year drought period reflected on Exhibit 12 shows the average yearly runoff is 17.631 million acre feet with local requirements of 25.690 million acre feet. There is a shortage during the drought period within the Delta Watershed of 8.049 million acre feet per

year without any exports. It is questionable whether the groundwater basins can be successfully mined to meet the shortage within the watershed let alone the export demands. A comparable review of the hydrograph for the North Coast area reflects that surplus water could have been developed without infringing on local requirements.

The limited hydrology was clearly recognized in the planning for the SWP which was to develop projects on the rivers in the North Coast watersheds sufficient to import to the Delta about 5,000,000 acre feet of water seasonally for transfer to areas of deficiency. (See Exhibit 14 December 1960 Bulletin 76, Report to the Legislature at page 13). Such areas of deficiency were expected to be both north and south of the Delta pumps. The projects in the North Coast watersheds were never constructed and the projects are woefully short of water.

In addition to the lack of precipitation in the Delta watershed to meet local and export needs are the environmental needs. Water is needed for mitigation of project impacts and the affirmative obligations for salinity control and fish restoration.

The original planning for the SWP and CVP appears to have underestimated the needs to protect fish both as to flow requirements and carryover storage required for temperature control. In 2009 after only two (2) dry years, the SWP and CVP violated the February outflow requirements claiming that meeting the outflow requirements would reduce storage below the point necessary to meet cold water requirements for salmon later in the year. Although the project operators lied and the real reason for the violation was the ongoing pumping of the unregulated flow to help fill San Luis Reservoir, the incident clearly shows the inability of the projects to provide surplus water for export in the 4th, 5th and 6th years of drought.

In May of 2013 the SWP and CVP again claimed a need to preserve cold water in storage for fish. They requested and were allowed by the SWRCB to reduce outflow so as to exceed the western and interior Delta agricultural water quality objectives to save such cold water in storage. They did not suggest and did not reduce export pumping which would have had the same effect as reducing outflow.

In 2014 the 3rd year of drought, the SWRCB issued curtailment notices to post 1914 water right holders in the areas of origin and reduced exports due to the lack of water.

Currently in what appears to be the 4th year of drought the SWRCB curtailed post 1914 and some pre 1914 water rights and reduced exports due to lack of water.

Six year droughts can be expected and even longer droughts are possible. The historic occurrence of multi-year droughts was examined in a DWR study of tree rings. Exhibit 13 is Table 3 from such study.

The State Water Project Delivery Reliability Report 2013 shows a long-term (10 year period) average Table A delivery as 2,266,000 acre feet per year; a long-term average (1921-2003) as 2,400,000 acre feet per year; a single dry year (1977) as 453,000 acre feet and a 6-year drought (1987-1992) as 1,055,000 acre feet per year. These figures can be contrasted to the Maximum

Possible SWP Table A Delivery of 4,172,000 acre feet per year. See Exhibit 15 excerpts from SWP Delivery Reliability Report 2013.

The failure of the SWP and CVP to carry out the plan for development of water projects to yield sufficient surplus water to meet the needs and obligations within the Delta and other areas of origin and the expectations of the export contractors is at the root of the crisis in the Delta.

Under CEQA the Purpose and Need cannot be artificially narrowed to limit objective consideration of reasonable alternatives. The lead agencies have done just that. They rely on the proposition that “a reasonable definition of underlying purpose and need” could be used to avoid the objective consideration and evaluation of alternatives that cannot achieve that basic goal. Their definition of purpose and need is not reasonable.

The requirements for NEPA are different. The DEIS/EIR must meet the requirements of 40 CFR section 1502.14 which provides:

“§1502.14 Alternatives including the proposed action.

This Section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (§1502.15) and the Environmental Consequences (§1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. In this section agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- (c) Include reasonable alternatives not within the jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency’s preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives.” (Emphasis added.)

Alternatives which requires that the SWP and CVP be operated to reduce reliance on the Delta and limit exports to water which is truly surplus to the present and future needs of the Delta and other areas of origin in accordance with current law are reasonable alternatives which must be rigorously and objectively evaluated. The Delta Conveyance Project clearly ignores the law establishing the priorities for meeting needs within the Delta and other areas of origin including

the needs of fish and wildlife. The expenditure of \$16 billion or more in a conveyance facility without a firm surplus water supply will clearly increase reliance on the Delta and damage rather than enhance the resources of the Delta.

The purpose statement for isolated conveyance has changed a number of times in apparent response to the demands of applicant export water contractors. These contractors, who are required to fund the objective and impartial review of the environmental impacts by the public regulatory agencies should not have been allowed to leverage changes in purpose so as to constrain the analysis towards their favored alternative.

Of particular note is the predetermination that **“The new conveyance facility would include a tunnel to convey water from the new intakes to the existing Banks Pumping Plant and potentially the federal Jones Pumping Plant in the south Delta”**.

Such a determination is being used to preclude a comprehensive review of significant impacts and consideration of the least damaging alternatives which necessarily would not involve the hugely damaging construction and operation of a tunnel.

Although obviously not intended by those controlling the preparation of the EIS/EIR, a range of reasonable alternatives must be considered including substantially reduced and at times no exports from the Delta and continuation of through Delta channel conveyance as required by California Water Code section 12205.

Export of water from the Delta which is not truly surplus to the needs of the Delta is counter-productive to improving the ecosystem. The constrained description of the Delta Conveyance Water Project is being used to preclude presentation of the environmental impacts and alternatives in a manner providing a clear basis for choice among options by the decision maker and the public as required by 40 CFR section 1502.14. The proposition that removal of natural flows into and through the Bay-Delta Estuary will improve the ecosystem is unique, bold and unsupportable.

Reliability of water supply for exports from the Delta must be junior to the needs and obligations requiring water in the Delta and other areas of origin including fish and wildlife needs. The modeling and analysis should provide a clear confirmation of the types and numbers of years when no water will be available for export and provide estimates of the amounts that might be available in other years. Care should be taken to model carryover storage requirements with due consideration of meeting temperature, flow and statutory requirements to determine the firm yield available for export.

Reliability of water supply for Northern California requires that water to meet the needs of and obligations to restore and enhance fish not be exported.

Both State and Federal laws seek to prevent degradation of water quality. Isolated conveyance will remove the higher quality Sacramento River water from the Delta pool thereby reducing the dilution of the poorer quality water returning to the Delta by way of the San Joaquin

River from SWP and CVP operations which deliver water to the west side of the San Joaquin Valley. The delivery of such water to the San Luis Unit was prohibited by the San Luis Act of 1960 unless there was a Valley Drain with an outlet to the ocean. (See Exhibit 18). The prohibition was circumvented. Even the promise that “A much needed drainage system and water supply will be provided in the San Joaquin Valley” included in ballot argument in favor of the California Water Resources Development Act (SWP) was not kept. (See Exhibit 16). The Purposes unreasonably seek to maintain and increase exports from the Delta to the west side of the San Joaquin Valley which degrade Delta water quality. The commitment to isolated conveyance aggravates such degradation.

The provision of salinity control and an adequate supply for the Delta was deemed to be of utmost importance and is a critical feature of a reliable supply for the Delta.

Salinity control for the Sacramento-San Joaquin Delta is a primary purpose for Shasta Dam.

Water Code Section 11207 provides:

“§11207. Primary purposes

Shasta Dam shall be constructed and used primarily for the following purposes:

- (a) Improvement of navigation on the Sacramento River to Red Bluff.
- (b) Increasing flood protection in the Sacramento River.
- (c) Salinity control in the Sacramento-San Joaquin Delta.
- (d) Storage and stabilization of the water supply of the Sacramento River for irrigation and domestic use. (*Added by Stats. 1943, c 370, p. 1896*) (Emphasis added.)

The Delta Protection Act of 1959 in WC 12200 specifically provides: “It is, therefore, hereby declared that a general law cannot be made applicable to said Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good.”

The degradation of water quality in the Delta adversely impacts agricultural, industrial, urban and recreational (including fish and wildlife) uses in the Delta and surrounding areas as well as areas served with exports from the Delta.

Salinity control and the adequacy of the quality of the water supply for the Delta is determined in great part by water quality objectives set by the SWRCB. Such objectives provide the minimum level deemed necessary to protect beneficial uses. Although the objectives are set for certain uses for certain periods, it is the composite of all objectives which the SWRCB determined would provide the protection for all beneficial uses. Such objectives have at times

been violated and it is critical to the rigorous and objective analysis of alternatives to incorporate with and without compliance conditions.

Federal law is specific as to the obligations for the CVP.

PL99-546 (HR3113) specifically provides:

“(b)(1) Unless the Secretary of the Interior determines that operation of the Central Valley project in conformity with State water quality standards for the San Francisco Bay/Sacramento-San Joaquin Delta and Estuary is not consistent with the congressional directives applicable to the project, the Secretary is authorized and directed to operate the project, in conjunction with the State of California water project, in conformity with such standards. Should the Secretary of the Interior so determine, then the Secretary shall promptly request the Attorney General to bring an action in the court of proper jurisdiction for the purposes of determining the applicability of such standards to the project.

(2) The Secretary is further directed to operate the Central Valley project, in conjunction with the State water project, so that water supplied at the intake of the Contra Costa Canal is of a quality equal to the water quality standards contained in the Water Right Decision 1485 of the State of California Water Resources Control Board, dated August 16, 1978, except under drought emergency water conditions pursuant to a declaration by the Governor of California. Nothing in the previous sentence shall authorize or require the relocation of the Contra Costa Canal intake.” (See Exhibit 19.)

Section (b)(1) does not allow for the Bureau of Reclamation to operate the CVP without conforming to the State water quality standards for the San Francisco Bay/Sacramento-San Joaquin Delta and Estuary even if the SWRCB is willing to look the other way. A determination by a court of law is required.

There are specific processes and procedures for changes to Water Quality Control Plans including review by the United States EPA, which are not being considered.

Section (b)(1) is thus applicable and requires USBR and USF&WS compliance unless the Secretary of Interior makes a determination that compliance is inconsistent with congressional directives applicable to the project and then the Attorney General is to be requested to bring a legal

action for a court determination of the applicability of the standards. There is no such court determination that would allow the CVP to operate without conforming to the standards.

Section (b)(2) provides an additional constraint with regard to the water quality at the intake to the Contra Costa Canal. Even if the standards were determined by the court to not be applicable to the CVP, then the D-1485 water quality standards would be applicable to the intake of the Contra Costa Canal except under drought emergency water conditions pursuant to a declaration by the Governor of California.

In 2004 Congress passed another law to ensure that Delta water quality standards and objectives would be met.

PL 108-361 (HR 2828) in pertinent part provides:

- (D) “Program to Meet Standards. -
 - (I) In General. - Prior to increasing export limits from the Delta for the purposes of conveying water to south-of-Delta Central Valley Project contractors or increasing deliveries through an intertie, the Secretary shall, not later than 1 year after the date of enactment of this Act, in consultation with the Governor, develop and initiate implementation of a project to meet all existing water quality standards and objectives for which the Central Valley Project has responsibility.” (See Exhibit 20.)

Increasing exports from the Delta which to the extent such are for serving south-of-Delta Central Valley Project contractors would be directly contrary to the direction of Congress which was to assure that all existing (October 25, 2004) water quality standards and objectives would first be met.

THERE IS CLEARLY AN EFFORT TO SUBSTITUTE DEVELOPMENT OF HABITAT FOR FLOW NEEDED TO PROVIDE ADEQUATE WATER FLOW AND QUALITY IN AND THROUGH THE DELTA

There is strong evidence indicating that fish need water flowing into and out of the Delta to the Bay. The timing and amounts are the subject of ongoing debate and evaluation.

The SWP and CVP affect flow into and out of the Delta primarily through diversions to storage and direct diversions from the tributaries and from locations in the Delta to areas outside the Delta. The reliability of water supply for fish at times directly conflicts with the reliability of the water supply for SWP and CVP deliveries for other purposes and in particular exports from the Delta. The priorities for providing such reliability are established by law.

Water Code Section 85086 of the Delta Reform Act of 2009 assigned to the SWRCB the task of determining instream flow needs and new flow criteria for the Delta ecosystem necessary to protect public trust resources. Such determinations have not yet been completed. Such flow criteria are important to the required rigorous exploration and objective evaluation of all reasonable alternatives required by 40 CFR 1502.14. The rush to decision in advance of critical evaluations is further evidence of predetermination and lack of a good faith effort at full disclosure and analysis of impacts.

Driving the need for ecosystem restoration is the need to address the dramatic decline in fish species and in particular those in danger of extinction. The exporters continue to advocate the proposition that habitat in the Delta and factors other than the amount flow into and through the Delta are the cause of the subject fish declines. The impacts of the SWP and CVP diversions to storage and diversions for export of water that is not truly surplus are discounted. The projects divert to storage and divert from the Delta the winter and spring natural flows that would otherwise flush the Delta and push back salinity from the bay. Export pumping reverses flows and entrains fish. Export of water released from storage by way of the tunnel depletes the amounts needed to meet senior requirements including fish and wildlife requirements.

The export of water from the proposed intakes on the Sacramento River where there are far greater numbers of fish will likely increase losses of fish, eggs and larvae due to entrainment and the impacts of screening. Unlike passage through the channels of the Delta passage through the tunnel does not allow for escape. Predators will surely occupy the proposed Sacramento River intakes, forebays and tunnel. The related impacts to fish and wildlife have not been adequately examined.

The correlation between SWP and CVP exports and the decline of the fisheries has been a concern for many years. In August of 1978 the State Water Resources Control Board rendered its Water Right Decision 1485. The Decision was the culmination of 82 days of evidentiary hearing initiated on November 15, 1976 and concluded on October 7, 1977. At that time the striped bass index was considered to be the indicator of ecosystem health for the Delta and Suisun Marsh. Striped bass were in effect the “canary in the coal mine”. As the years passed and striped bass populations plummeted, the water exporters claimed striped bass to be invasive species, predators on endangered species and a major cause of fish declines wrongfully attributed to the export of water. The canary died and the death was ignored to facilitate greater exports. As Exhibits 22-25 show, striped bass, steelhead, Delta smelt, fall-run Chinook salmon and winter-run Chinook salmon all co-existed at relatively high populations at lower export levels.

In 1978 the SWRCB concluded in D-1485 at page 13 that:

“To provide full mitigation of project impacts on all fishery species now would require the virtual shutting down of the project export pumps.” (See Exhibit 21.)

The SWRCB also concluded in D-1485 at page 14 that:

“Full protection of Suisun Marsh now could be accomplished only by requiring up to 2 million acre feet of fresh water outflow in dry and critical years in addition to that required to meet other standards.” (See Exhibit 21.)

Exports from the Delta were not curtailed and the additional 2 million acre feet of outflow was not provided for the marsh.

Exhibits 22-25 show that significant declines in fish populations commenced when annual exports reached 2 million acre feet. Increased development in the watersheds and the effects of climate change would indicate that additional water yield would have to be developed within the Delta watershed to provide a comparable level of fish protection for the future and maintain the 2 million acre feet of exports. Little or no export water in dry years and more in wet years would likely be necessary in any event.

An examination of the fish population graphs indicates that restoration of the ecosystem for fish is not correlated with Delta wetland habitat conditions in the 1850's or at all. The likely relationship is to water conditions, particularly flow.

The Delta was fully leveed and reclaimed by about 1930.

“By 1930 all but minor areas of the swampland had been leveed and were in production.” (See page 8 of December 1960 Bulletin 76 - Exhibit 14.) The USACE completed project levee construction on the San Joaquin River in the early 1960's. There are no significant changes in leveed areas or even riverine habitat in the Delta which appear to be the cause of the decline of the fisheries. In fact, there have been increases in Delta wetland habitat during the periods of apparent decline. Mildred Island flooded in 1983 and has not been reclaimed. Little Mandeville and Little Frank's Tract flooded in the 1980's and have not been reclaimed. Lower Liberty Island levees were not restored and the area has been in a tidal wetland condition since at least 2002.

The focus on conversion of Delta land to habitat as a substitute for water for fish is misplaced. Adequate analysis has not been done to determine if development of shallow wetland habitat is actually detrimental to salmon and other anadromous fish. In particular, stranding and predation from otters, egrets, herons, cormorants, gulls, white pelicans and the like needs further analysis. The limited study (Exhibit 26) showing a picture of larger salmon smolts raised for a time in a wetland versus smaller smolts raised in the channel is cited by tunnel proponents as the evidence that shallow seasonal wetland in the Delta would be a substitute for flow. The study monitored caged smolts in the channel where the fish must constantly swim against the current and compared those smolts to smolts in cages in shallow wetlands where there was little or no current. The experiment did not attempt to evaluate stranding or predation and it is doubtful that the smolts in the channel cages if uncaged would spend as much time swimming against the stronger currents rather than seeking

areas of the channel where the velocity is lower. The presentation of results by BDCP including the fat fish/skinny fish photo neglected to show the sizes of the fish from the cages in the channel upstream of the shallow habitat which reportedly were comparable to those in the wetlands. "During periods of low, clear water, fish growth rates in the river site above the floodplain were comparable to those in the floodplain". (Exhibit 26, pg. 1.)

Creation of Floodplain Habitat Is Not a Substitute for Flow

The available evidence and studies do not support such a substitution. The floodplain habitat which is suggested as potentially beneficial is that which is inundated by high flows for a limited period; involves a large area of water of a proper depth to help avoid predation; assumes avian predator populations are limited; is properly drained to avoid stranding and avoids increased water temperatures detrimental to salmonids.

The Jeff Opperman Final Report for Fellowship R/SF-4 referenced above containing the picture of the fat fish and skinny fish is often shown as support for the proposition that floodplain habitat can be substituted for flow (Exhibit 26.) The study does not put forth that conclusion but suggests "that juvenile Chinook benefit from access to floodplain habitats". (Page 2) It is important to recognize that the test fish were caged and thus predation from birds, fish and other animals was not an issue. Stranding was down-played but admittedly not tested. The test was conducted in and along the Cosumnes River. The skinny fish were in the river swimming against the current and because they were in cages couldn't move with the current or move to quiet and more productive water. The fat fish obviously saved their energy for growth and apparently benefitted from improved food availability. The report states "During high flows the river offers poor habitat and fish living in this type of habitat will tend to be displaced downstream." High flows and displacement downstream are likely not detrimental. It is generally accepted that the salmon do well in high flow years. The return of adults (escapement) is usually higher two and one-half years after a high flow year. It is recognized that ocean conditions also play a part and may in some cases reduce escapement nullifying the benefit of high flow. The difference in food availability in the high flow channel versus in the quiet water may not be significant in the test given the consumption of energy and lack of opportunity for the skinny fish to move to more favorable parts of the river. Displacement downstream into the cooler and more productive parts of the estuary is likely not bad for displaced salmon smolts.

Floodplain Habitat Not Accompanied by High Flow Does Not Appear to Result in Increased Chinook Salmon Ocean Survival and May Not Improve Survival of Sacramento River Juvenile Chinook Salmon Migrating to the Ocean

In the study titled "Floodplain Rearing of Juvenile Chinook Salmon: Evidence of enhanced growth and survival" by Sommer, et al. (2001), a copy of which is Exhibit 27, tests were conducted in the Yolo Bypass in 1998 and 1999. The study concluded that during such years salmon increased in size substantially faster in the seasonally inundated agricultural floodplain than in the river, suggesting better growth rates. The study, however, provides: "Survival indices for coded-wire-tagged groups were somewhat higher for those released in the floodplain than for those

released in the river, but the differences were not statistically significant. Growth, survival, feeding success, and prey availability were higher in 1998 than in 1999, a year in which flow was more moderate indicating that hydrology affects the quality of floodplain rearing habitat". (Exhibit 27, pg. 1.)

In the discussion the authors provide:

"Mean length increased faster in the Yolo Bypass during each study year, and CWT fish released in the Yolo Bypass were larger and had higher apparent growth rates than those released in the Sacramento River. It is possible that these observations are due to higher mortality rates of smaller individuals in the Yolo Bypass or of larger individuals in the Sacramento River; however we have no data or reasonable mechanism to support this argument."

"Elevated Yolo Bypass survival rates are also consistent with significantly faster migration rates in 1998, the likely result of which would be reduced exposure time to mortality risks in the delta, including predation and water diversions."

In the study "Habitat Use and Stranding Risk of Juvenile Chinook Salmon on a Seasonal Floodplain" by Sommer, et al. (2004), a copy of which is Exhibit 28, the authors build upon the above study with further testing in 2000 and present their analysis of ocean survival.

The author's abstract provides:

"Although juvenile Chinook salmon *Oncorhynchus tshawytscha* are known to use a variety of habitats, their use of seasonal floodplains, a highly variable and potentially risky habitat, has not been studied extensively. Particularly unclear is whether a seasonal floodplain is a net "source" or net "sink" for salmonid production. . . . Adult ocean recoveries of tagged hatchery fish indicate that seasonal floodplains support survival at least comparable with that of adjacent perennial river channels. These results indicate that floodplains appear to be a viable rearing habitat for Chinook salmon, making floodplain restoration an important tool for enhancing salmon production. (Emphasis added.)

The data provided for ocean survival is as follows:

Table 1. – Number of coded wire tags recovered in the ocean and commercial fisheries for Chinook salmon released in the Yolo Bypass and Sacramento River. The total number of tagged fish released in each location for each year is shown in parentheses. The

survival ration is calculated as the number of Yolo Bypass recoveries divided by the number of Sacramento River recoveries.

Release Group	1998 (53,000)	1999 (105,000)	2000 (55,000)
Yolo Bypass	75	136	27
Sacramento River	35	138	47
Survival Ratio	2.14	0.99	0.57

In 1998 Yolo Bypass looked like a benefit, in 1999 it was a push and in 2000 Yolo Bypass looked like a detriment.

It is assumed that shaded river aquatic habitat is desirable for special status fish. Attention is called to the BDCP Draft Chapter 8 which puts forth the need to control predators by removing structures which affect flow fields and provide shade. The focus appears to be on abandoned docks, pilings and the like, however, shaded river aquatic habitat can provide the same effect on flow and provide shade. The impact of shaded river aquatic habitat on special status fish is unclear.

There are a number of significant adverse impacts associated with so-called restoration of tidal floodplain habitat within the Delta which have not been objectively considered or mitigated.

In the Delta where the waters are tidal the proposed habitat restoration is not necessarily floodplain but rather is tidal wetlands which is inundated most if not all of the time.

Increased salinity intrusion could result from the increased tidal prism and/or creation of shortened pathways to the interior Delta and particularly to the large SWP and CVP intakes whether in the north Delta or south Delta.

Setting back, breaching, degrading and/or not restoring levees in the Delta has significant adverse impacts.

Increases in the tidal prism at locations similar to and including the area in and around the lower Yolo bypass not only induces greater salinity intrusion, but also results in advection adversely affecting the out migration of salmon smolts some of which are endangered.

The regularly or permanently inundated areas constitute increased habitat for predator species and increase ambush locations affecting the fish species of concern. The increase in water surface and wetland vegetation will greatly increase the evaporation and evapotranspiration of fresh water. In many cases there is an increased threat of flooding to surrounding areas due to increased fetch and wave action across the habitat area and increased seepage into adjoining levees and lands.

There is also the harm to and loss of agricultural land and production.

Exhibit 29-1 contains excerpts from the April 2011 report by Dave Vogel titled “Insights into the Problems, Progress, and Potential Solutions for Sacramento River Basin Anadromous Fish Restoration” prepared for the Northern California Water Association and Sacramento Valley Water Users contains the results of studies which include the Liberty Island Ecological Reserve area. (The entire study can be viewed on the Northern California Water Association website by clicking on “Fisheries”)

At pages 112 and 113 the report provides:

Subsequent, additional juvenile salmon telemetry studies were conducted by Natural Resource Scientists Inc. on behalf of the USFWS and CALFED in the north Delta (Vogel 2001, Vogel 2004). Triangulating radio-tagged fish locations in real time (Figure 61) clearly demonstrated how juvenile salmon move long distances with the tides and were advected into regions with very large tidal prisms, such as upstream into Cache Slough and into the flooded Prospect and Liberty Islands (Figure 62). During the studies, it was determined that some radio-tagged salmon were eaten by predatory fish in northern Cache Slough, near the levee breaches into flooded islands (discussed below).

At page 120 the report provides:

During recent years, there has been an emphasis to reclaim or create shallow, tidal wetlands to assist in re-creating the form and function of ecosystem processes in the Delta with the intent of benefitting native fish species (Simenstad *et al.* 1999). Among a variety of measures to create such wetlands, Delta island levees either have been breached purposefully or have remained unrepaired so the islands became flooded. A recent example is the flooding of Prospect Island which was implemented under the auspices of creating shallow water habitat to benefit native fish species such as anadromous fish (Christophel *et al.* 1999). Initial fish sampling of the habitat created in Prospect Island suggested the expected benefits may not have been realized due to an apparent dominance of non-native fish (Christophel *et al.* 1999). Importantly, a marked reduction of sediment load to the Delta in the past century (Shvidchenko *et al.* 2004) has implications in the long-term viability of natural conversion of deep water habitats on flooded Delta islands into shallow, tidal wetlands. The very low rates of sediment accretion on flooded Delta islands indicate it would take many years to convert the present-day habitats to intertidal elevations which has potentially serious implications for fish restoration (Nobriga and Chotkowski (2000) due to likely favorable conditions for non-salmonid fish species that can prey on juvenile salmon. Studies of the shallow water habitats at flooded Delta islands showed that striped bass and largemouth bass represented 88 percent of the individuals among 20 fish species sampled (Nobriga *et al.* 2003).

There have likely been significant adverse, unintended consequences of breaching levees in the Delta. There is a high probability that site-specific

conditions at the breaches have resulted in hazards for juvenile anadromous fish through the creation of favorable predator habitats. The breaches have changed the tidal prisms in the Delta and can change the degree in which juvenile fish are advected back and forth with the tides (Figure 61; previously discussed). Additionally, many of the breaches were narrow which have created deep scour holes favoring predatory fish. Sport anglers are often seen fishing at these sites during flood or ebb tides. Breaching the levees at Liberty Island is an example (Figure 72 and 73). Recent acoustic-tagging of striped bass in this vicinity confirmed a high presence of striped bass (Figure 74, D. Vogel, unpub. data.)

The increased loss of fresh water due to creation of tidal and wetland habitat is clear. Exhibit 29-2 is Table A-5 from DWR Bulletin 168, October 1978 which shows the annual Et values for various crops and for Riparian Vegetation and Water Surface. The Riparian Vegetation and Water Surface 67.5 inches can be compared to tomatoes 33.8 inches and alfalfa 46.0 inches. The increased fresh water loss is from 33.7 inches when compared to tomatoes and 21.5 when compared to alfalfa. The increased loss of fresh water is particularly significant in drier years.

The Division of Water Resources (predecessor to The Department of Water Resources) in the Sacramento - San Joaquin Water Supervisor's report for the year 1931 dated August 1932 and designated Bulletin 23 includes the results of studies of water consumption of tules and cat-tails. Exhibit 29-3 includes Tables 69, 74, 75 and 77 from such report. Annual consumptive use for open water surface is shown as 4.91 acre feet per acre, tules at 9.63 acre feet per acre, and alfalfa at 3.51 acre feet per acre. To examine the relatively high consumptive use for tules the U.S. Department of Agriculture undertook a continuation of the study of consumptive use for asparagus, tules and cat-tails. The tables show an average of 14.63 acre feet per acre for cat-tails and 13.48 acre feet per acre for tules. Results from cat-tails and tules grown in tanks at Camp 3, King Island for 1931 are shown in Table 77. The results for normal sized tules was 8.0 acre feet per acre.

Adverse impacts to Delta Water Quality Violate Anti-Degradation Policies and The Delta Reform Act and Are Avoidable by Elimination of Isolated Delta Conveyance

40 CFR 131.12 Antidegradation policy provides:

“(a) The State shall develop and adopt a statewide antidegradation policy and identify the methods for implementing such policy pursuant to this subpart. The antidegradation policy and implementation methods shall, at a minimum, be consistent with the following:

- (1) Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.
- (2) Where the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State's continuing planning process, that allowing lower water

quality is necessary to accommodate important economic or social development in the area in which the waters are located. In allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully. Further, the State shall assure that there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.

(3) Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

(4) In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with section 316 of the Act.

The Delta Reform Act provides as coequal goals providing a more reliable water supply for California, which of course includes the Delta, and doing so in a manner that protects and enhances the unique cultural, recreational, natural resource and agricultural values of the Delta.

The SWP and CVP have not met the SWRCB D-1641 standards and have not developed the planned for surplus water to meet such standards in future years including periods of drought. The Delta Conveyance Project will not only continue to result in the failure to meet such standards but will degrade water quality over existing and no action conditions. The antidegradation prohibition and Delta Reform Act will be violated. There is no evidence to support that the degradation is necessary to accommodate important economic or social development in the area in which the water is located. The project purpose is intended to further the exports from the Delta rather than accommodate economic or social development in the Delta where the waters are located.

There are significant adverse impacts to Delta Water Quality resulting from operation of isolated conveyance alternatives, from the habitat mitigation and from so-called restoration projects. There appears to be no good faith plan to consider alternatives or mitigation to avoid such impacts.

The resulting increase in salinity from tunnel operation will cause significant adverse impacts including those to urban water supplies, agricultural use and habitat. For agriculture in the central Delta this will cause salt accumulation in the soil during periods of drought aggravated by the lack of rain, and due to the soil and groundwater conditions increasing leaching fractions is not feasible. Elimination of exceedances of the WQCP objective will not eliminate the degradation and given the historic application of emergency authority to circumvent WQCP objectives during drought it is unlikely that even the objective would limit operation of any isolated conveyance during drought. Compliance with water quality objectives rather than avoidance of degradation assumes that the objectives avoid significant harm. There is no supporting analysis for such assumption. The analysis of effects ignores the adverse impact to water quality from conservation

measures due to increased salinity intrusion, from increases of the tidal prism, from shortening the path for salinity intrusion and from increased evaporative losses. Degradation is the result of the desire to increase exports and is inconsistent with the Delta Reform Act requirements to honor the statutory and water right priorities, enhance Delta agricultural and other resource values, reduce reliance on the Delta and make the Delta water supply more reliable.

Substantial increases in Boron, Methyl Mercury and Selenium in Delta water will also result from tunnel operation.

The SWP and CVP have deliberately exported water which could have helped increase the carryover storage necessary to meet Water Quality Objectives and provide cold water to protect salmon. An alternative to improve and more sensitively operate the through Delta conveyance coupled with reduction of the export of water which is not truly surplus to the needs of the Delta and other areas of origin including fish would avoid the need for conservation measures which increase methyl mercury. As set forth in previous comments, the assumed benefits from the proposed conservation measures some of which increase methyl mercury are not supportable.

Microcystis is already a significant health hazard in the Delta to recreational users and animals, and the Delta is a source of drinking water for export and local users. The toxic forms are “associated with liver cancer in humans and wildlife”, can “cause toxicity to phytoplankton, zooplankton, and fish and can affect feeding success or food quality for zooplankton and fish.” Isolated conveyance will remove substantial quantities of the good quality Sacramento River water from passing through the interior of the Delta to the export pumps. This will reduce velocities in some areas and increase residence time. Elimination of the flushing action and dilution from the cross-delta flow will increase residence time in many locations and increase the concentration of constituents, contributing to algal blooms. Water temperature and clarity increases could also result.

The USACE Scoping Limitations Will Not Provide Good Faith Consideration of Impacts, Alternatives and Mitigation Relating to Waterfowl Including Those of International Importance in The Pacific Flyway

The Delta is an important wintering ground for waterfowl of the Pacific Flyway including Sandhill Cranes. The proposed routing for the tunnel passes through the heart of the wintering grounds for such waterfowl. The thirteen years of construction activity and presence of electrical transmission lines will result in short and long term adverse impacts. Previously suggested avoidance and minimization measures and mitigation has not been demonstrated to be adequate. Land use in the Delta primary zone is highly restricted and much of the land is not suitable for vineyards and orchards. The lands are already available habitat. The mitigating effect of so-called compensation for the loss of foraging and nesting habitat has not been demonstrated. Preserving habitat that is already available does not provide no net loss.

The tunnel construction disturbance and electric transmission lines will adversely impact migrating waterfowl, including Sandhill Cranes during the winter and will adversely impact important wetland nesting areas for other waterfowl and a large number of other terrestrial species. There will also be continuous disturbance from operation and maintenance of the tunnel. The remoteness of these areas lends greatly to their value for habitat and recreational hunting.

The killing of Sandhill cranes and other birds due to the presence of electrical transmission lines in the existing wintering areas is not adequately offset by actions in other areas since the obligation for such avoidance of take is already an obligation of those operating the systems in such areas and such other areas are not comparably used by wildlife

Alternative tunnel and electrical transmission line locations away from the important waterfowl wintering and nesting areas in the Delta are the only reasonable alternatives. Due to the apparent predetermination such alternatives are not being adequately considered. Tunnel locations easterly of the Delta lowlands including location beneath the I-5 and 205 corridors should be given further consideration. Location along such corridors would greatly reduce the impacts to wildlife, the impacts of traffic on rural roads, the need for new electrical transmission line locations and could even provide the opportunity for other uses.

Improvement of conveyance through the existing Delta channels coupled with a limitation on exports to truly surplus water consistent with the mandates of law is an alternative which the USACE scoping appears to preclude from objective consideration.

THE SUBJECT PERMIT APPLICATION AND PROPOSED DELTA CONVEYANCE PROJECT DO NOT COMPLY WITH THE CLEAN WATER ACT GUIDELINES

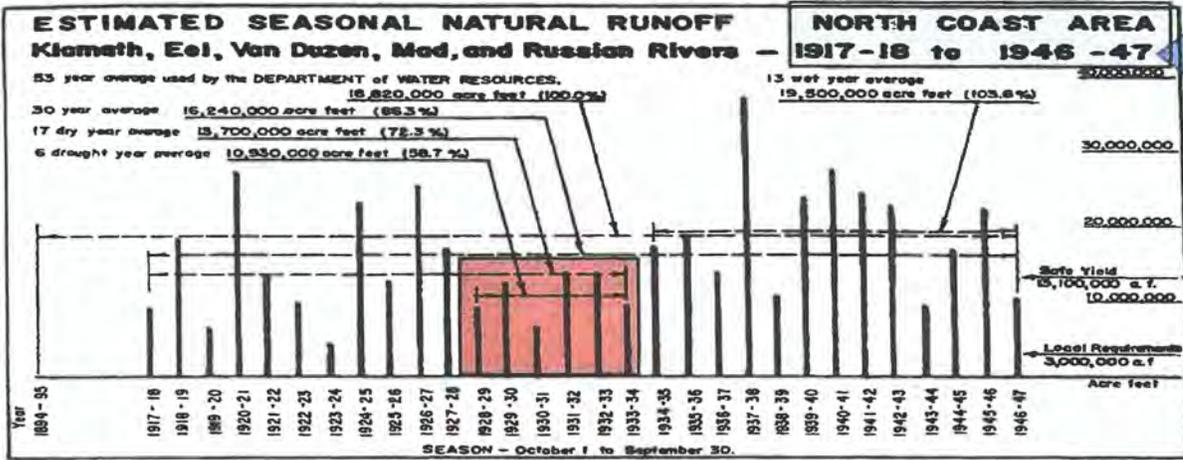
The Section 404 (b) (1) Guidelines contain four main elements: (1) the requirement to identify and analyze project alternatives, and select the alternative that avoids and minimizes impacts on jurisdictional waters to the maximum extent practicable, and is the least environmentally damaging alternative that achieves the overall project purpose; (2) the prohibition against projects that would result in significant degradation of water quality; (3) an analysis of the potential environmental impacts and implementation of measures that adequately mitigate unavoidable impacts; and (4) a public interest review that balances the benefits of the project against its potential impacts.

Very truly yours,

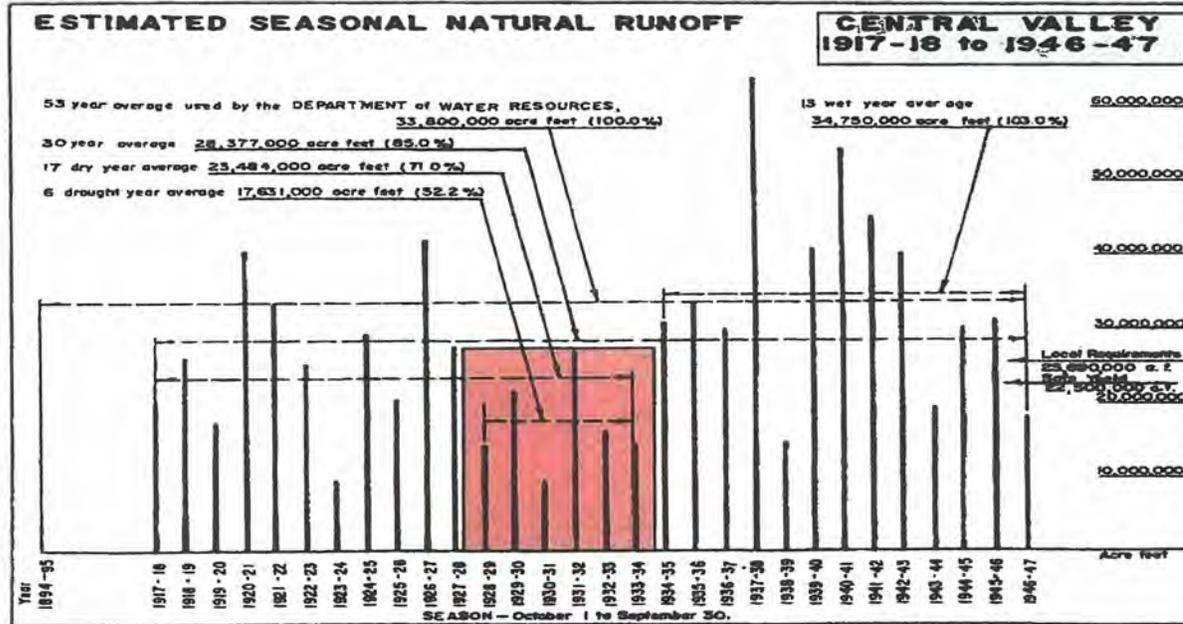


Dante John Nomellini, Sr.
Manager and Co-Counsel

WEBER FOUNDATION STUDIES



Surplus
7,930,000 AF/Y



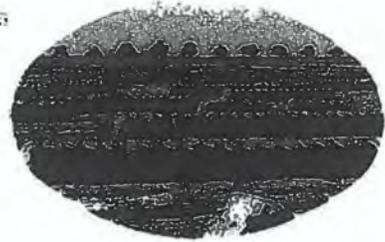
SHORTAGE
8,049,000 AF/Y

**Table 3. Sacramento River Multiyear Droughts
(reconstructed from tree rings prior to 1900)**

Period	Length (in years)	Average Runoff (MAF)
1579-82	4	12.4
1593-95	3	9.3
1618-20	3	13.2
1651-55	5	12.3
1719-24	6	12.6
1735-37	3	12.2
1755-61	6	13.3
1776-78	3	12.1
1793-95	3	10.7
1839-41	3	12.9
1843-46	4	12.3
1918-20 (actual)	3	12.0
1929-34 (actual)	6	9.8
1959-62 (actual)	4	13.0
1987-92 (actual)	6	10.0

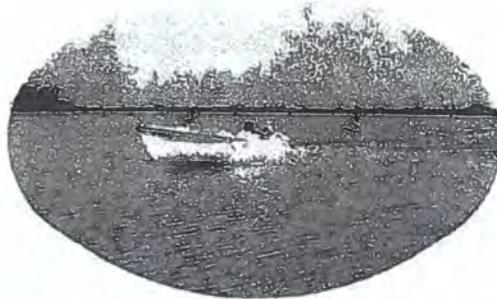
John A. Wang

Preliminary Edition



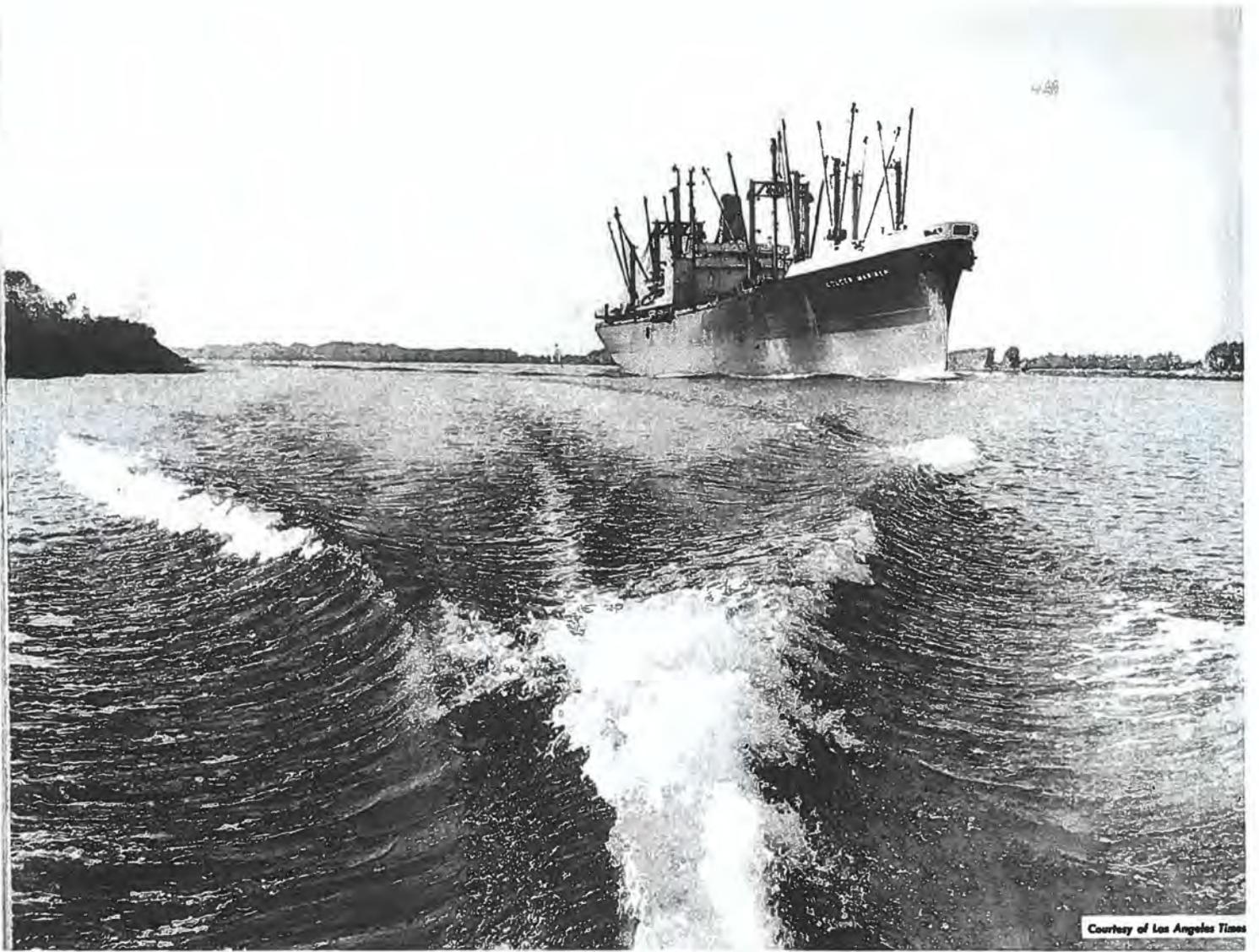
Bulletin No. 76

DELTA WATER FACILITIES



FRANK D. BROWN
Governor
State of California

HARRY D. JAMES
Director
Department of Water Resources



Courtesy of Los Angeles Times

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

STATEMENT OF CLARIFICATION

This preliminary edition presents a comparison of alternative solutions to the Delta problems. This bulletin shows that the Single Purpose Delta Water Project is the essential minimum project for successful operation of the State Water Facilities. This bulletin also presents, for local consideration, optional modifications of the Single Purpose Delta Water Project which would provide additional local benefits.

The evaluation of project accomplishments, benefit-cost ratios, and costs of project services, are intended only to indicate the relative merits of these solutions and should not be considered in terms of absolute values. Benefits related to recreation are evaluated for comparative purposes. Detailed recreation studies, presently in progress, will indicate specific recreation benefits.

Subsequent to local review and public hearings on this preliminary edition, a final edition will be prepared setting forth an adopted plan. The adopted plan will include, in addition to the essential minimum facilities, those justifiable optional modifications requested by local entities.

Bulletin No. 76

REPORT TO THE
CALIFORNIA STATE LEGISLATURE

ON THE

DELTA WATER FACILITIES

AS AN INTEGRAL FEATURE OF

THE STATE WATER RESOURCES DEVELOPMENT SYSTEM

John A. Wisco

EDMUND G. BROWN
Governor



HARVEY O. BANKS
Director

December, 1960

Letters

HARVEY O. BANKS
Director

STATE OF CALIFORNIA
Department of Water Resources
SACRAMENTO
December 30, 1960

Honorable Edward G. Brown, Governor
Members of the Legislature of the
State of California

Gentlemen:

I have the honor to transmit herewith a preliminary edition of Bulletin No. 76, "Delta Water Facilities". This bulletin summarizes the results of investigations conducted pursuant to the Abshire-Kelly Salinity Control Barrier Acts of 1955 and 1957, Chapter 1834, Statutes of 1955, and Chapter 2092, Statutes of 1957, as amended by Chapters 1765 and 2038, Statutes of 1959.

Bulletin No. 76 presents findings and conclusions regarding the feasibility of alternative plans for the Delta feature of the State Water Facilities included in the Burns-Porter Act approved by the electorate on November 8, 1960. The Delta water facilities would (1) provide adequate water supplies throughout the Delta, (2) transport water across the Delta without undue loss or deterioration in quality, (3) provide flood and seepage control to Delta islands, (4) provide improved vehicular transportation access, and (5) administer efforts on existing recreation development and enhance recreation growth. All of the alternative plans would accomplish the first two objectives, and two alternative plans would also accomplish the other objectives.

Further planning for Delta water facilities should include consideration of joint financing and construction by federal, state and local interests. Facilities for flood and seepage control, vehicular transportation and recreation would not have to be constructed unless local governmental agencies desire these works and are willing to share in certain costs thereof. There would be some conflicts of interest in operation of these facilities which must be resolved prior to a decision by local interests regarding the extent of local participation. To this end, it is recommended that a period of a few months be allowed for local review and resolution of differences, after which public hearings should be held by the California Water Commission and the department. Following the public hearings, a final edition of Bulletin No. 76, incorporating any necessary modifications, should be published.

Very truly yours,
Harvey O. Banks
HARVEY O. BANKS
Director

BOARD OF CONSULTING ENGINEERS
November 16, 1960

Mr. Harvey O. Banks, Director
Department of Water Resources
Sacramento, California

Dear Mr. Banks:

This Board of Consulting Engineers which was active in 1958 was reconvened in April, 1960 and has met from time to time with your staff. Thus we have followed the preparation of this report and have commented to you following each meeting.

The Delta Water Facilities constitute needed works vital to the transfer of northern water into and across the Delta to provide water for use in the Delta and for export to water deficient areas along the Coast, in the San Joaquin Valley and to Southern California, to be financed under the California Water Resources Development Bond Act. The Board is of the opinion that the gross future water requirements for municipal and industrial purposes in the Delta have been very liberally estimated.

The Board is of the opinion that the engineering studies, designs and estimates are adequate for the purpose of this planning report and we support the conclusions and recommendations embodied therein.

We believe that the Chiggs Island Barrier Project should not be authorized or constructed owing to its high cost of nearly \$200 million which substantially exceeds project benefits.

The Delta Water Project, including such economically desirable flood control, seepage control, transportation and recreational features as may be agreed upon by local Delta beneficiaries willing to share in costs, would meet all water requirements with maximum net project benefits, and should be constructed under the Bond Act.

Respectfully submitted,

H. F. Linnertain
H. F. Linnertain
Member

Ray K. Linsley
Ray K. Linsley
Member

Samuel S. Morris
Samuel S. Morris, Chairman

Preface

This bulletin summarizes the engineering and economic conclusions and recommendations concerning the feasibility of providing salinity control, water supply, flood and seepage control, transportation facilities, and recreation development for the Sacramento-San Joaquin Delta, and conserving and making the most beneficial use of a major portion of the water resources of the State. Alternative plans for accomplishing some or all of these objectives are presented and compared to indicate their relative merits and to guide the selection of facilities to be constructed.

Findings presented herein are the result of intensive studies conducted during a five-year period. Previous studies and cooperative investigations by various public and private agencies and individuals were utilized in development of the plans. The cooperation of these individuals and agencies is gratefully acknowledged.

Study procedures and analyses are summarized in six supporting office reports, which are available to interested agencies and individuals. The subjects and titles of these reports are:

- Salinity Incursion and Water Resources
- Delta Water Requirements
- Channel Hydraulics and Flood Channel Design
- Recreation
- Plans, Designs, and Cost Estimates
- Economic Aspects

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Salinity Control Studies

1879-1880, WM. HAM. HALL

Salinity incursion into the Delta, which was recorded in 1841 and 1871, was recognized by the early settlers as a potential problem to water supplies, and a salt water barrier was proposed in the 1860's. State Engineer Wm. Ham. Hall subsequently studied a barrier in conjunction with flood control and concluded that, while a physical barrier could be constructed, the costs would exceed the benefits.

1924-1928, WALKER YOUNG INVESTIGATION

A series of subnormal water supply years began in 1917 and various proposals for barriers were advanced during the early 1920's. In cooperation with the State of California and the Sacramento Valley Development Association, the U. S. Bureau of Reclamation, under the direction of Walker Young, extensively investigated four alternative barrier sites and concluded that it was "... physically feasible to construct a Salt Water Barrier at any one of the sites investigated ..." It was recognized that without a barrier, "... salinity conditions will become more acute unless mountain storage is provided to be released during periods of low river discharge ..." Economic analyses of barriers were not made by Mr. Young.

1929-1931, BULLETINS NOS. 27 AND 28

Following investigation of the physical feasibility of barriers, the State Division of Water Resources studied the phenomena of salinity incursion and the economics of barriers. In Bulletin No. 27, "Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay," it was concluded that "... invasion of salinity ... as far as the lower end of the ... Delta is a natural phenomenon which, in varying degree, has occurred each year as far back as historical records reveal." It was also concluded that the Delta could be protected from saline invasion and be assured of ample and dependable water supplies if mountain storage were utilized to provide a controlled rate of outflow from the Delta.

In Bulletin No. 28, "Economic Aspects of a Salt Water Barrier," it was concluded that it was not economically justifiable to construct a barrier. With conditions of upstream water use at that time, it was concluded that the most economical solution to salinity incursion and provision of adequate water supplies in the Delta could be achieved by constructing upstream storage and controlling rates of outflow during periods of insufficient natural outflow.

1953, ABSHIRE-KELLY SALINITY CONTROL BARRIER ACT

Shasta Reservoir on the Sacramento River was constructed and began operation in 1944 for salinity control and other purposes. Expanding water requirements in the Central Valley and San Francisco Bay area stimulated reconsideration of barrier plans for water conservation and related purposes. Seven alternative plans for barriers in the Bay and Delta system were investigated by a Board of Consultants and the State Division of Water Resources for the California Water Project Authority. The Board of Consultants concluded that barriers in the San Francisco Bay system would not be functionally feasible due to the uncertainty of the quality of water in a barrier pool. It was recommended by the Division of Water Resources that "Further consideration be given only to ... barriers ... at or upstream from the Chipps Island site" at the outlet of the Delta.

1955, ABSHIRE-KELLY SALINITY CONTROL BARRIER ACT

Additional legislation specified study of a system of works in the Delta, referred to as the Junction Point Barrier Plan, and the Chipps Island Barrier Plan. The principal purposes of these studies were to develop complete plans for water supply in the San Francisco Bay area and to provide salinity control and urgently needed flood protection in the Delta.

CHAPTER 1484

An act to provide for a study of the junction point barrier and appurtenant facilities, the Abshire-Kelly Salinity Control Barrier Act of 1955, relating to barriers for salinity and flood control purposes, declaring the urgency thereof, to take effect immediately.

(Approved by Governor June 27, 1955. Filed with Secretary of State June 24, 1955.)

The people of the State of California do enact as follows:

SECTION 1. There is hereby appropriated to the Water Project Authority the sum of one hundred thousand dollars (\$100,000), payable from the Flood Control Fund of 1946, to initiate the further investigation and study of the Junction Point Barrier and Chipps Island Barrier and appurtenant facilities, as such barriers and facilities are described in the report of the Water Project Authority to the Legislature entitled "Feasibility of Construction by the State of Barriers in the San Francisco Bay System," dated March, 1955, for the purposes of developing complete plans of the means of accomplishing delivery of fresh water to the San Francisco Bay area, including the Counties of Bolano, Sonoma, Napa, Marin, Contra Costa, Alameda, Santa Clara, San Benito, and San Mateo, and the City and County of San Francisco, providing urgently needed flood protection to agricultural lands in the Sacramento-San Joaquin Delta, conducting subsurface exploration work in the delta and designing facilities appurtenant to the cross-delta aqueduct, obtaining more complete information on the hydrology of the delta, and studying integration of the proposed project in the California Water Plan.

SEC. 2. The Water Project Authority may contract with such other public agencies, federal, state, or local, as it deems necessary for the rendition and affording of such services, facilities, studies, and reports to the Water Project Authority as will best assist it to carry out this act. The Water Project Authority may also employ, by contract or otherwise, such private consulting engineering and other technical services as it deems necessary for the rendition and affording of such services, facilities, studies, and reports as will best assist it to carry out this act.

SEC. 3. It is the intent of the Legislature that in conducting the study and investigation the Water Project Authority shall confer and exchange information with and shall seek the participation of the United States Navy, the United States Bureau of Reclamation, the United States Corps of Engineers and the local port districts to the extent possible.

SEC. 4. The Water Project Authority shall report to the Legislature the result of its study and investigation not later than March 30, 1957.

SEC. 5. This act shall be known and may be cited as the Abshire-Kelly Salinity Control Barrier Act of 1955.

SEC. 6. This act is an urgency measure necessary for the immediate preservation of the public peace, health or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting such necessity are:

The areas adjacent to the San Francisco Bay urgently need an adequate supply of fresh water for domestic and industrial use. It is essential to the public health, safety and welfare that a study of salinity control barriers as a means of securing such a supply of fresh water, be undertaken without delay.

A four-year investigation was contemplated, and an interim report, Bulletin No. 60, "Salinity Control Barrier Investigation", was published in March 1957, by the Department of Water Resources. This report outlined a water plan for the San Francisco Bay area, and recommended that the North Bay Aqueduct be authorized for construction. The North Bay Aqueduct was authorized by the Legislature in 1957. The report also compared the Biemond Plan, a system of works in the Delta, with the Chipps Island Barrier Plan, and recommended that further study be limited to the Biemond Plan.

1957, ABSHIRE-KELLY SALINITY CONTROL BARRIER ACT

The Legislature concurred in limiting further study to the Biemond Plan and stressed the need for improving the quality of water in the Delta and making the most beneficial use of the water resources of the State. A report on the further studies was scheduled for release by March 30, 1959.

CHAPTER 2092

An act relating to barriers for salinity and flood control purposes.

(Approved by Governor July 1, 1957. Filed with Secretary of State July 14, 1957.)

The people of the State of California do enact as follows:

SECTION 1. The Department of Water Resources may limit its studies of salinity control barriers to the Biemond Plan as described in Bulletin No. 60 of the Department of Water Resources entitled "Salinity Control Barrier Investigation," dated March, 1957, subject to such modifications thereof as the department may adopt, said studies being for the purpose of developing complete plans of the means of accomplishing delivery of fresh water to the Counties of Bolano, Sonoma, Napa

and Marin, providing urgently needed flood protection to agricultural lands in the Sacramento-San Joaquin Delta, accomplishing salinity control, improving the quality of water exported from the delta to the San Francisco Bay area, San Joaquin Valley, and southern portions of California, making the most beneficial use of the water resources of the State, and studying integration of the proposed project in The California Water Plan.

SEC. 2. The department may contract with such other public agencies, federal, state or local, as it deems necessary for the rendition and affording of such services, facilities, studies, and reports to the department as will best assist it to carry out this act.

SEC. 3. It is the intent of the Legislature that in conducting the study and investigation the department shall confer and exchange information with and shall seek the participation of the United States Navy, the United States Bureau of Reclamation, the United States Corps of Engineers, and the local port districts to the extent possible.

SEC. 4. The department shall submit a report to the Legislature stating the result of its study and investigation not later than March 30, 1959.

SEC. 5. This act shall be known and may be cited as the "Abshire-Kelly Salinity Control Barrier Act of 1957."

1959, ADDITIONAL LEGISLATION

The potential expansion of water requirements of the urban and industrial complex in the western Delta area, and greater upstream water use with resultant depletion of inflow to and outflow from the Delta, indicated need for more concentrated study of the water requirements and supplies of the Delta. Legislation was enacted in 1959 to undertake studies of the type and extent of future water requirements of lands which can be served from present channels in the western Delta, effects of upstream water uses on Delta supplies, plans for water service and costs thereof, and economic and financial feasibility of the plans. Additional legislation authorized studies of the most economical and efficient procedures of constructing levees for flood control.

CHAPTER 1766

An act providing for the investigation of water supplies and flood control issues for the Sacramento-San Joaquin Delta and making an appropriation therefor.

(Approved by Governor July 19, 1955. Filed with Secretary of State July 19, 1955.)

The people of the State of California do enact as follows:

SECTION 1. The Department of Water Resources shall investigate the water supplies for the Sacramento-San Joaquin Delta. The investigation shall include, among other things: (1) the type and extent of the future water requirements of lands which can be served from present channels in the western Delta; (2) the extent and nature of effects of upstream water developments on water supply available to such lands; (3) the development of plans for water service to such lands and estimates of costs thereof; and (4) economic and financial analyses of such plans. In carrying out the investigation, the department shall seek the co-operation and assistance of the counties and other local agencies and entities in the Sacramento-San Joaquin Delta and of the United States; may enter into contracts with such entities to assist it in carrying out the purposes of such investigation, and shall consult with and keep appropriate legislative committees informed of the progress of this work.

Sec. 2. There is appropriated from the California Water Fund to the Department of Water Resources the sum of two hundred thousand dollars (\$200,000) to be expended for the purposes of this act.

Sec. 3. Section 4.5 is added to the Alhambra-Kelly Salinity Control Barrier Act of 1957 (Chapter 2092, Statutes of 1957), to read:

Sec. 4.5. As a part of the studies being performed hereunder and to obtain such information as may be required to implement the plan included in the report referred to in Section 4, the department may conduct studies and investigations to determine the most economical and efficient type and methods and procedure of construction to provide an adequate levee system in the Delta.

Sec. 4. There is hereby appropriated to the Department of Water Resources from the California Water Fund the sum of two hundred thirty thousand dollars (\$230,000), of which one hundred eighty thousand dollars (\$180,000), may be expended for the studies and investigations authorized by Section 3 hereof, and fifty thousand dollars (\$50,000) may be expended for such remedial work as may be necessary in connection with levee work being performed as a part of the studies and investigations authorized by Section 3 hereof.

Intensive studies were made of the future economic growth of lands which can be served from channels in the western Delta. Particular attention was given to the future municipal and industrial water needs in the area and the future water supplies available in the Delta. Due to the expanded scope of the studies, the report was delayed.

CHAPTER 2038

An act to amend Section 4 of Chapter 2092, Statutes of 1957, relating to barriers for salinity and flood control purposes.

(Approved by Governor July 19, 1955. Filed with Secretary of State July 19, 1955.)

The people of the State of California do enact as follows:

SECTION 1. Section 4 of Chapter 2092, Statutes of 1957, is amended to read:

Sec. 4. The department shall submit a report to the Legislature stating the result of its study and investigation not later than January 2, 1961.

The unique character of the water supply problems of the Delta was recognized by the State Legislature when it amended the California Water Code in 1959 to include general policy regarding the Delta. This legislation calls for provision of salinity control and adequate water supplies in the Delta and states that water to which the users within the Delta are entitled should not be exported. The policy in this act is basic to the planning and operation of all works in the Delta or diversions therefrom.

CHAPTER 1766

An act to add Part 4.5 (commencing at Section 12200) to Division 6 of the Water Code, relating to delivery of surplus water into, and extractions thereof for exportation from, the Sacramento-San Joaquin Delta.

(Approved by Governor July 19, 1955. Filed with Secretary of State July 19, 1955.)

The people of the State of California do enact as follows:

SECTION 1. Part 4.5 (commencing at Section 12200) is added to Division 6 of the Water Code, to read:

PART 4.5. SACRAMENTO-SAN JOAQUIN DELTA

CHAPTER 1. GENERAL POLICY

12200. The Legislature hereby finds that the water problems of the Sacramento-San Joaquin Delta are unique within the State; the Sacramento and San Joaquin Rivers join at the Sacramento-San Joaquin Delta to discharge their fresh water flows into Suisun, San Pablo and San Francisco Bays and thence into the Pacific Ocean; the mingling of fresh water with saline bay waters and drainage waters and the withdrawal of fresh water for beneficial uses creates an acute problem of salinity intrusion into the vast network of channels

and sloughs of the Delta; the State Water Resources Development System has as one of its objectives the transfer of waters from water-surplus areas in the Sacramento Valley and the north coastal area to water-deficient areas to the south and west of the Sacramento-San Joaquin Delta via the Delta; water surplus to the needs of the areas in which it originates is gathered in the Delta and thereby provides a common source of fresh water supply for water-deficient areas. It is, therefore, hereby declared that a general law cannot be made applicable to said Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good.

12201. The Legislature finds that the maintenance of an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta area as set forth in Section 12200, Chapter 2, of this part, and to provide a common source of fresh water for export to areas of water deficiency is necessary to the peace, health, safety and welfare of the people of the State, except that delivery of such water shall be subject to the provisions of Section 10605 and Sections 11460 to 11468, inclusive, of this code.

12202. Among the functions to be provided by the State Water Resources Development System, in coordination with the activities of the United States in providing salinity control for the Delta through operation of the Federal Central Valley Project, shall be the provision of salinity control and an adequate water supply for the users of water in the Sacramento-San Joaquin Delta. If it is determined to be in the public interest to provide a substitute water supply to the users in said Delta in lieu of that which would be provided as a result of salinity control no added financial burden shall be placed upon said Delta water users solely by virtue of such substitution. Delivery of said substitute water supply shall be subject to the provisions of Section 10605 and Sections 11460 to 11468, inclusive, of this code.

12203. It is hereby declared to be the policy of the State that no person, corporation or public or private agency or the State or the United States should divert water from the channels of the Sacramento-San Joaquin Delta to which the users within said Delta are entitled.

12204. In determining the availability of water for export from the Sacramento-San Joaquin Delta no water shall be exported which is necessary to meet the requirements of Sections 12202 and 12203 of this chapter.

12205. It is the policy of the State that the operation and management of releases from storage into the Sacramento-San Joaquin Delta of water for use outside the area in which such water originates shall be integrated to the maximum extent possible in order to permit the fulfillment of the objectives of this part.

This legislation also described the area of the Delta to which the general policy applies. The boundary of the Delta, as described in Section 12220 of the Water Code, is indicated on the facing map. The area considered in the intensive studies of water requirements and supplies is described as the Western Delta Study Area.

The Delta—its geography and economy

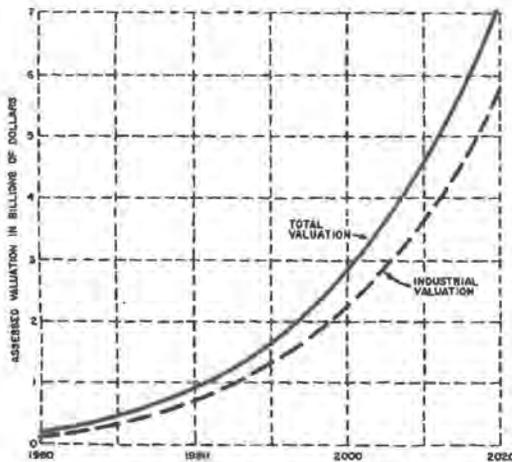


The Delta, located at the confluence of the Sacramento and San Joaquin Rivers system, is a unique feature of the California landscape. The Delta encompasses some 738,000 acres, interlaced with 700 miles of meandering waterways covering 50,000 acres. About 415,000 acres of land, referred to as Delta Lowlands, lie between elevations of 5 feet above and 20 feet below sea level. This area is composed of peat, organic sediments, and alluvium, and is protected from flood water and high tides by man-made levees. The extensive waterways afford opportunity for shipping and provide a wonderland for boating and water sports. These same waterways must safely discharge flood waters of the Central Valley.

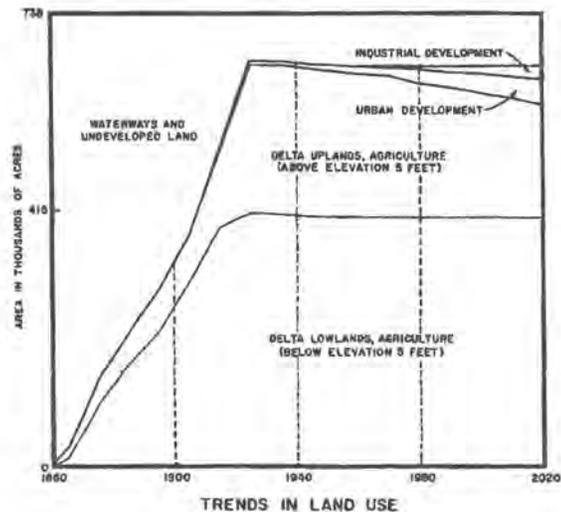
The fortunate combination of fertile soils, convenient water supplies, and shallow-draft shipping to central California markets led to development of an intensified agricultural economy in the Delta. Initial reclamation of the marshlands began slowly in the 1850's, but rapidly expanded after state assistance was provided by a swampland act in 1861. By 1930, all but minor areas of the swamplands had been leveed and were in production.

The Delta has historically been noted for its asparagus, potatoes, celery, and varied truck crops. Recently, greater emphasis has been placed on field corn, milo, grain, and hay, although the Delta still produces most of the nation's canned asparagus. The Delta's agricultural economy for many years was dependent upon repulsion of ocean salinity by fresh water outflow, which fluctuated widely, but during the past sixteen years has been protected largely by releases from upstream reservoirs of the Federal Central Valley Project during summer months.

Several towns and cities are located in the upland areas and an industrial complex is expanding in the western part of the Delta. Early industrial development centered around food and kindred products, steel production, fibreboard, lumber, and ship-building activity. Large water-using industries, such as steel, paper products, and chemicals, have developed in the western area where water, rail, and highway transportation, coupled with water supplies, has stimulated growth. The manufacturing employment in this area was about 10,000 people in 1960.



PROJECTED ASSESSED VALUATIONS WITHIN THE WESTERN DELTA STUDY AREA



A deep-draft ship channel serving commercial and military installations terminates at Stockton, and another is being constructed to Sacramento. Water-borne shipments in the Delta amounted to about 6,000,000 tons annually in recent years.

The Delta encompasses one of California's most important high quality natural gas fields. Since 1941 the field has produced about 300,000,000 cubic feet of methane gas for use in the San Francisco Bay area.

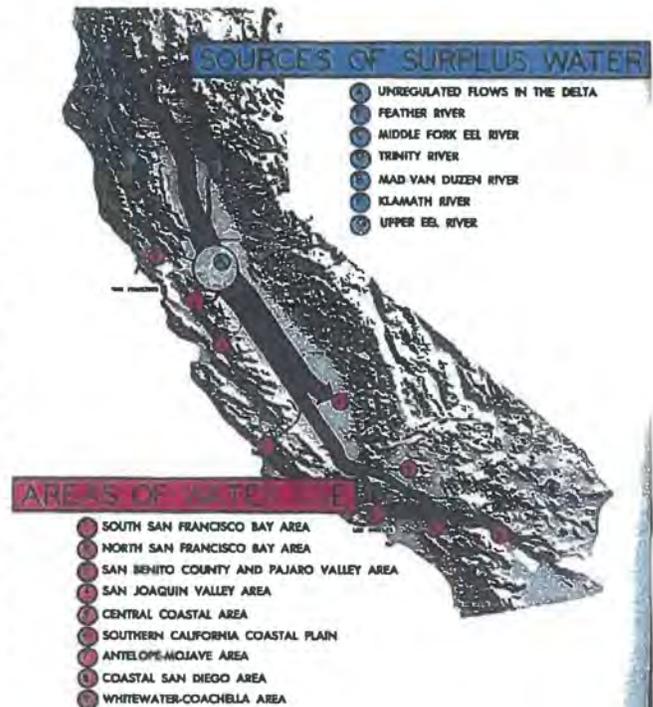
With the growing significance of recreation, the Delta has blossomed into a major recreation area at the doorsteps of metropolitan development in the San Francisco Bay area, Sacramento, and Stockton. In 1960, nearly 2,800,000 recreation-days were enjoyed in this boating wonderland.

The Delta — its role in California's water development

In 1959, the State Legislature enacted the California Water Resources Development Bond Act to finance construction of the State Water Resources Development System. The bond act was approved by the California electorate in November 1960. The State Water Facilities, the initial features of this system, will complement continuing local and federal water development programs and include the very necessary works in the Delta.

One of the principal objectives of the State Water Resources Development System is to conserve water in areas of surplus in the north and to transport water to areas of deficiency to the south and west. The Delta is important in achieving this objective, since it receives all of the surplus flows of Central Valley rivers draining to the ocean during winter and spring months and is the last location where water not needed in the Delta or upstream therefrom can conveniently be controlled and diverted to beneficial use. Surplus water from the northern portion of the Central Valley and north coastal rivers will be conveyed by the natural river system to the Delta, where it must be transferred through Delta channels to export pumping plants without undue loss or deterioration in quality. Aqueducts will convey the water from the Delta to off-stream storage and use in areas of deficiency to the south and west.

In addition to being an important link in the interbasin transfer of water, the Delta is a significant segment of California's economy, and its agricultural, municipal, and industrial water supply problems, and flood control and related problems, must be remedied. A multipurpose system of Delta water facilities, which will comprise one portion of the State Water Resources Development System, is the most economical means of transferring water and solving Delta problems.

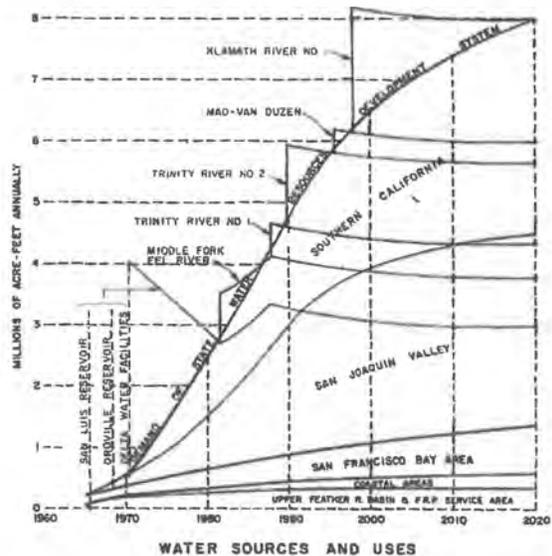




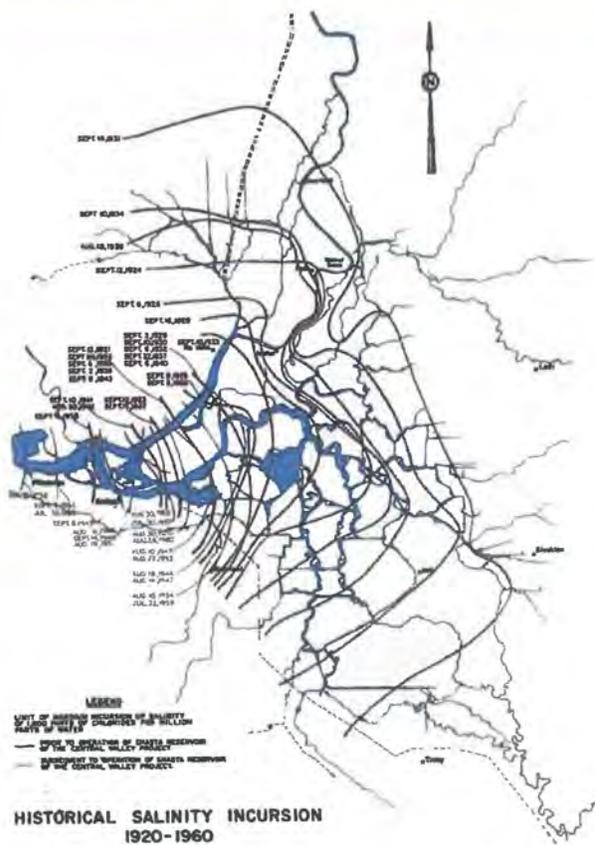
Tracy Pumping Plant

Full demands on the State Water Resources Development system can be met until about 1981 from surplus water in and tributary to the Delta with regulation by the proposed Oroville and San Luis Reservoirs. However, upstream depletions will reduce the available surplus supplies and water will have to be imported from north coastal sources after that year. It is anticipated that coordinated operation of the State Water Resources Development System and the Federal Central Valley Project will afford a limited increase in usable surplus Delta supplies beginning in 1981. As indicated in the chart, upstream depletions will continue to decrease the available surplus supplies.

The coordinated use of surplus water in and tributary to the Delta and of regulated or imported supplements to this supply, as required, is referred to as the Delta Pooling Concept. Under this concept of operation the State will ensure a continued supply of water adequate in quantity and quality to meet the needs of export water users. Advantage will be taken of surplus water available in the Delta, and as the demand for water increases and the available surplus supply is reduced by further upstream uses, the State will assume the responsibility of guaranteeing a firm supply of water, which will be accomplished by construction of additional storage facilities and import works. At the same time, the water needs of the Delta will be fully met.



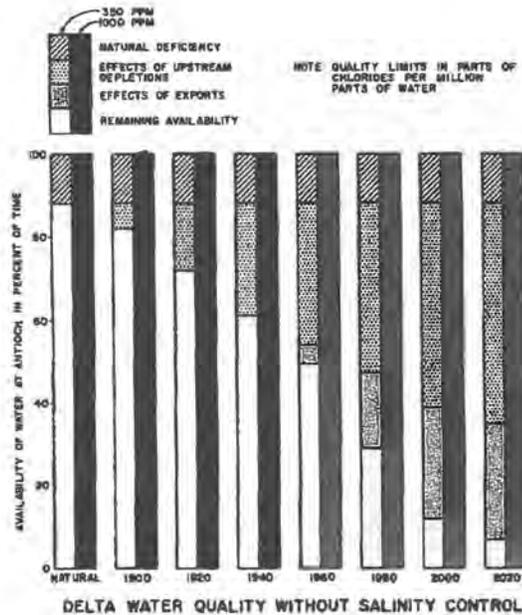
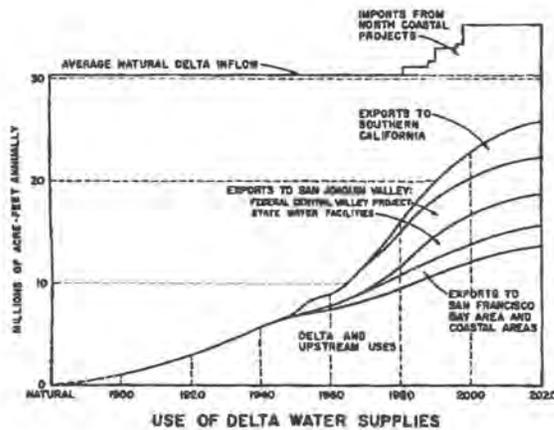
Delta Problems — salinity incursion and water supplies



Salinity incursion into the Delta results from the flooding and ebbing of ocean tides through the San Francisco Bay and Delta system during periods when the fresh water outflow from the Delta is insufficient to repel the saline water. The natural fresh water outflow from the Central Valley was historically inadequate to repel salinity during summer months of some years. The first known record of salinity encroachment into the Delta was reported by Cmdr. Ringgold, U. S. Navy, in August 1841, whose party found the water at the site of the present city of Antioch very brackish and unfit for drinking. Since that time, and particularly after the turn of the century, with expanding upstream water use salinity incursion has become an increasingly greater problem in Delta water supplies. The maximum recorded extent of salinity incursion happened in 1931, when ocean salts reached Stockton. Since 1944 extensive incursion has been repulsed much of the time by fresh water releases from Central Valley Project storage in Shasta and Folsom Reservoirs. Without such releases, saline water would have spread through about 90 percent of the Delta channels in 1955 and 1959. Although upstream uses might not have reached present levels in the absence of the Central Valley Project, salinity problems would still have been very serious during most years.

Further increase in water use in areas tributary to the Delta will worsen the salinity incursion problem and complicate the already complex water rights situation. To maintain and expand the economy of the Delta, it will be necessary to provide an adequate supply of good quality water and protect the lands from the effects of salinity incursion. In 1959 the State Legislature directed that water shall not be diverted from the Delta for use elsewhere unless adequate supplies for the Delta are first provided.

The natural availability of good quality water in the Delta is directly related to the amount of surplus water which flows to the ocean. The graph to the right indicates the historic and projected availability of water in the San Joaquin River at Antioch containing less than 350 and 1,000 parts chlorides per million parts water, under long-term average runoff and *without* specific releases for salinity control. It may be noted that even under natural conditions, before any significant upstream water developments, there was a deficiency of water supplies within the specified quality limits. It is anticipated that, without salinity control releases, upstream depletions by the year 2020 will have reduced the availability of water containing less than 1,000 ppm chlorides by about 60 percent, and that exports will have caused an additional 30 percent reduction.



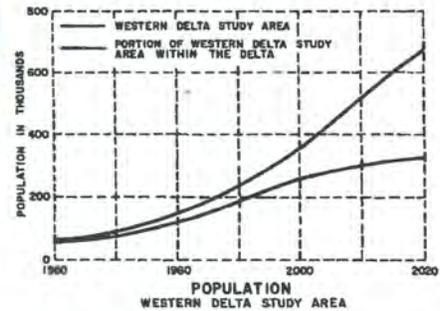
The magnitude of the past and anticipated future uses of water in areas tributary to the Delta, except the Tulare Lake Basin, is indicated in the diagram to the left. It may be noted that, while the present upstream use accounts for reduction of natural inflow to the Delta by almost 25 percent, upstream development during the next 60 years will deplete the inflow by an additional 20 percent. By that date about 22 percent of the natural water supply reaching the Delta will be exported to areas of deficiency by local, state, and federal projects. In addition, economical development of water supplies will necessitate importation of about 5,000,000 acre-feet of water seasonally to the Delta from north coastal streams for transfer to areas of deficiency.

Delta Problems — municipal water

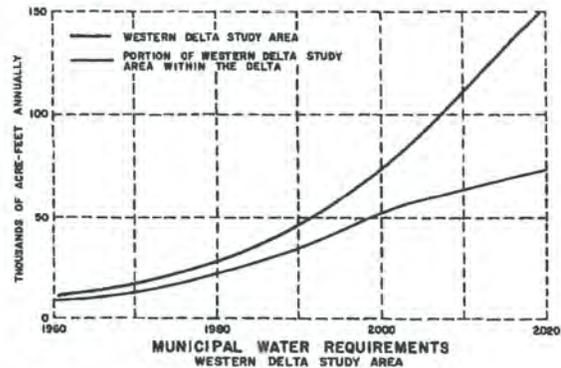
Municipalities in the surrounding upland areas of the Delta, except in the western portion, obtain their water supplies from surface or underground sources which are, or will be with further development, adequate to meet their needs. In the western Delta, the principal municipalities rely on supplies from the Contra Costa Canal which are diverted from Delta channels. The main problem relates to quality of the water. At the present time, the mineral quality of the supplies deteriorates during some summer and fall months below standards established by the U. S. Public Health Service. This results from incursion of ocean salts, combined with industrial wastes and poor quality return water from the Central Valley. Assurance of good quality supplies in adequate quantities to meet present requirements and anticipated future growth is one of the most pressing problems in the Delta.

Estimates of future municipal water requirements in the western Delta area were based on projected population and per capita use. Population projections were founded on national, state, and regional forecasts for moderately high economical conditions. Although these conditions result in forecasts which may exceed an anticipated "most probable" projection by about ten percent, it is believed that this approach will assure adequate consideration of Delta water requirements in plans for diversion of surplus water from the Delta.

Projected estimates of per capita water uses reflect anticipated increases due to greater emphasis on water-using appliances in homes, additional lawns and landscaping, and the general trend toward higher standards of living. An average municipal water use of about 140 gallons per capita per day at this time reflects the climatic and economic conditions of the area. It is anticipated that the average use in low density residential areas will increase to about 200 gallons per capita per day by 2020. The estimated total annual municipal water requirement in the western Delta area indicates about a fifteenfold increase by 2020.



Area	1960	1980	2000	2020
Western Delta Study Area	9.6	26.8	62.7	116.4
Contra Costa Co.	0.7	1.4	10.0	35.4
Solano Co.	0.0	0.0	0.4	2.3
Portion of Western Delta Study Area Within the Delta	8.6	22.6	52.0	71.4
Contra Costa Co.	0.0	0.0	0.4	2.3
Solano Co.	0.0	0.0	0.0	0.0

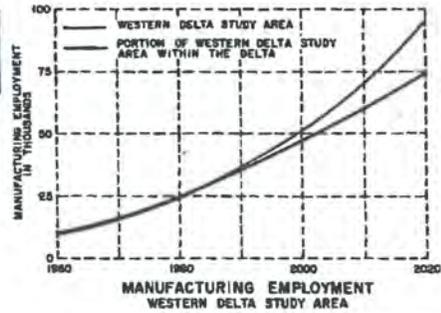


Delta Problems—industrial water

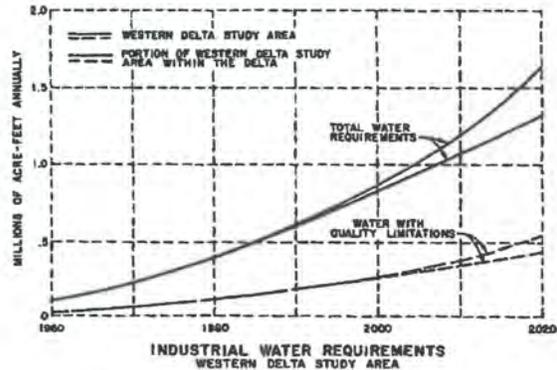
The problems of industrial water supply are similar to municipal supply problems in that they are concentrated in the western Delta area and center around quality aspects. Deterioration of water supplies by salinity incursion in 1959 caused curtailment of production in several plants and a production halt in one major industry. As additional upstream development and beneficial use of water takes place, the duration and degree of salinity incursion each year will become more extended. It will become increasingly necessary to provide adequate industrial water supplies in the western Delta area for maintenance and expansion of the present economy.

Estimates of future industrial growth were based on correlation of state and regional manufacturing employment with national projections. Projections to 1980 were based on detailed analyses of the several components of the industrial complex, while projections beyond that date reflect total manufacturing employment. A sevenfold increase in manufacturing employment in the western Delta area is anticipated by 2020. Increasing productivity per employee, due to automation and technical advancements, coupled with projected employment, indicates a thirtyfold increase in production by that date.

Estimates of future water supplies to enable the production increases were based on six manufacturing categories, and reflect a continuation of the trend of decreasing water use per unit of production. A fifteenfold increase in total industrial water requirements is indicated by 2020. The total requirement includes two types of industrial water. One type is for processing and recirculated cooling with quality limitations, and the second type is for general cooling where good quality water is not required because materials of construction in cooling equipment can satisfactorily withstand a wide range of quality conditions.



Area	1960	1980	2000	2020
Western Delta Study Area				
Total water requirements, Contra Costa Co.	106	396	790	1,370
Total water requirements, Solano Co.	1	7	67	387
Water with quality limitations, Contra Costa Co.	10	130	251	431
Water with quality limitations, Solano Co.	-	2	21	119
Portion of Western Delta Study Area Within the Delta				
Total water requirements, Contra Costa Co.	106	396	790	1,370
Total water requirements, Solano Co.	-	-	9	56
Water with quality limitations, Contra Costa Co.	10	110	221	413
Water with quality limitations, Solano Co.	-	-	3	19

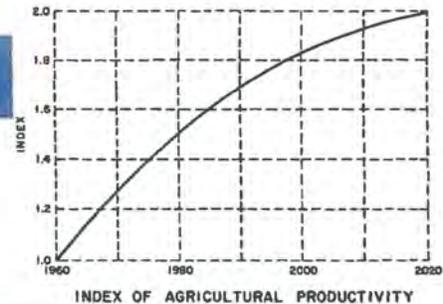


Delta Problems — agricultural water

For many years farmers in the Delta have been confronted with salinity incursion in Delta channels. Since 1944 they have enjoyed partial salinity protection and supplemental water due to releases from Shasta and Folsom Reservoirs. As additional water is utilized in areas tributary to the Delta, there will be further reductions in unregulated late spring runoff to the Delta, which will result in diminishing supplies in the western Delta and greater Delta-wide reliance on regulated fresh water outflow. About 40,000 acres in the western Delta are faced with water supplies of poor quality even if future export projects are not constructed. In the southern portion of the Delta the present water supplies during summer months consist mainly of very poor quality drainage water in the San Joaquin River. Operation of the proposed San Joaquin Valley waste conduit may reduce the amount of return drainage water available in the San Joaquin River. If this occurs, substitute water supplies would have to be provided.

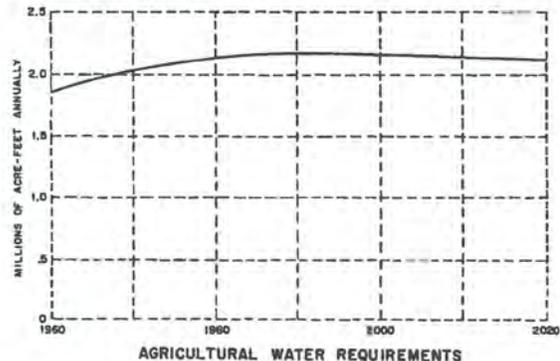
Although most of the suitable land in the Delta is now irrigated, limited additional development in the uplands is anticipated, and more intense use by double-cropping will be made of Delta lowlands. Estimates of expanding water requirements reflect correlations with statewide projections of the economic demand for farm produce. It is anticipated that about 10,000 acres of "new" land will be irrigated in the upland areas, but about 40,000 acres will be converted to urban uses by 2020.

Future water requirements were based on projected crop patterns and unit water requirements of the various crops. Some additional water may be required for leaching of lands surrounded by brackish water. Separate allowance for this purpose was provided in operation studies of plans which result in brackish water in western Delta channels.



Area	1960	1980	2000	2020
Alameda County	13	15	15	15
Contra Costa County	236	272	275	270
Sacramento County	294	339	342	336
San Joaquin County	838	967	977	958
Solano County	238	264	267	261
Yolo County	244	282	285	279
TOTAL	1,863	2,139	2,161	2,119

¹Including effective precipitation.



Delta Problems — water salvage

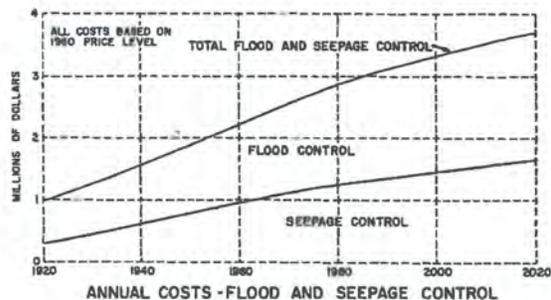
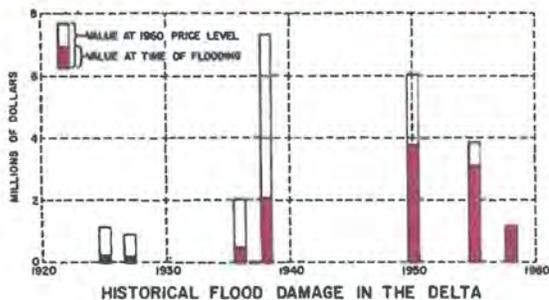
During winter months of most years, flood flows exceed Delta uses and flush ocean salts from the channel system. Surplus water can be diverted from the Delta under these conditions. During summer and early fall months, the inflow to the Delta is generally limited to regulated flow in the Sacramento River. This supply must meet all uses in the Delta and export therefrom, and prevent salinity incursion from unduly degrading the quality of water in the Delta. Due to the hydraulic characteristics of the complex channel system, the amount of outflow from the Delta necessary for quality control at the export pumping plants increases as the rates of export increase.



Water in the Sacramento River follows two basic routes to the export pumping plants. It flows from the vicinity of Walnut Grove through several generally parallel channels in a southerly direction across the central portion of the Delta, and also through channels in the western portion around Sherman Island and then upstream into the central area. The quantities transferred by the first route are *not sufficient* to supply the pumps and enroute Delta users during summer months, and water transferred around Sherman Island by the second route is mixed with and carries ocean salts into the Delta. Therefore, greater quantities of water will be necessary to reduce the salinity concentrations in the western Delta, unless a physical barrier is constructed or water is diverted directly southward across the Delta.



Delta Problems — flood and seepage control

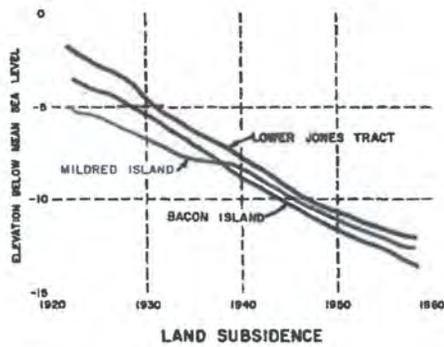


While the peat soils of the Delta are excellent for growing crops, they cause several difficult levee maintenance and farming problems. Levees along the channels have been constructed on the peat and periodically must be raised and widened as the organic foundation soils are consolidated. During the early stages of land reclamation, islands were frequently flooded by overtopping of the levees. However, under present conditions floods due to overtopping are infrequent in the central portion of the Delta, but numerous islands have been flooded when sections of the levees have suddenly failed. This apparent trend toward decreasing levee stability results from subsidence of the land surface and resultant greater forces on the levees. Despite increasing maintenance work on many existing levees, no significant improvement in protection is achieved.

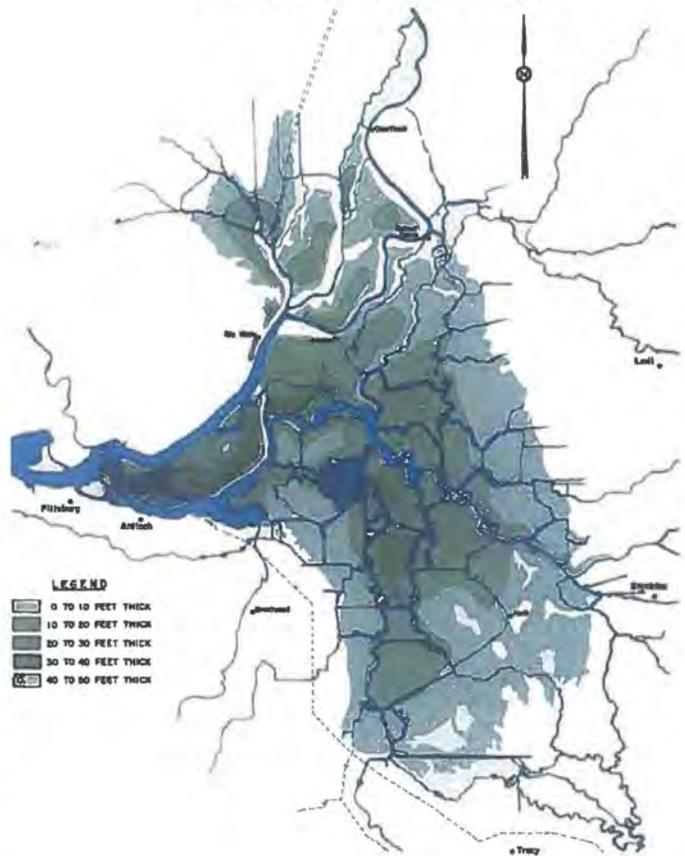
The land surface in areas of peat soils is subsiding at an average rate of about three inches per year. This is generally attributed to

oxidation of the peat fibers, wind erosion, compaction by farm equipment, and loss of water in the upper few feet. As a result of land subsidence, future levees in many areas will be 30 to 35 feet high. Work must be initiated soon to gradually increase the stability of the levees for these future conditions. In this connection, it must be recognized that flood protection for the Delta must include works in the Delta. Flood stages in the Delta result from inflow and high tides, frequently amplified by heavy winds on the ocean and Bay system. Although upstream flood control reservoirs will afford some relief, more stable levees are needed to safely resist the high tide and flood stages.

As the peat soils are lost by oxidation and erosion, the seepage problems are compounded. Differences in elevation between water levels in the channels and in the islands will increase, and the resistance by the peat to upward movement of water from



AREAS OF PEAT AND RELATED ORGANIC SEDIMENTS



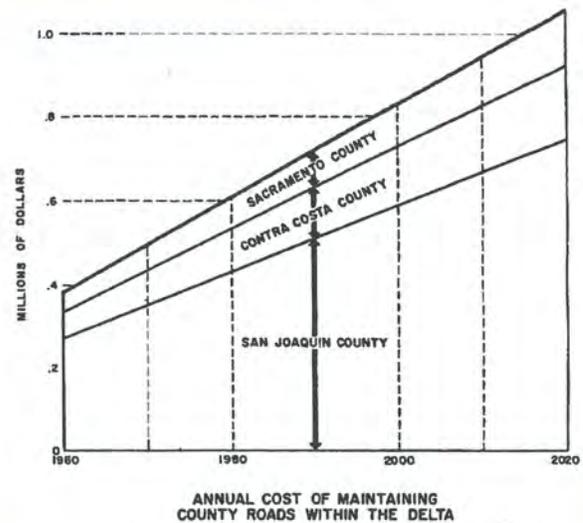
underlying sand aquifers will be reduced. Unless suitable methods of arresting the loss of peat are developed, farming in the Delta will cause continued subsidence. Experience has shown that this subsidence will continue to within about two to three feet above the bottom of the peat. Significant tracts of Delta land will become impractical to farm unless seepage is controlled and the danger of inundation is reduced.

The largest natural gas field in areal extent in the State of California is located in the Delta. The geological structure of this field is strikingly similar to the structure of the oil fields of Wilmington, California, but the gas pressures are dissimilar. Because of the similarity of geologic conditions, studies are being conducted to determine if deep-seated subsidence might occur as the gas is extracted. Estimates based on preliminary data indicate a maximum subsidence of two feet in the Rio Vista area, if all the gas is extracted from the field.

Delta Problems — vehicular transportation

The wooden barges and stern paddle wheelers long ago disappeared from the Delta scene, to be replaced by fast trucks, ocean-going freighters, and tugs towing steel barges. However, despite tremendous technological advances in transportation, the Delta, with its poor foundation soils and miles of open waterways, has hindered the development of a satisfactory highway system.

Vehicular transportation, even today, is confined mainly to the crowns of the levees which encircle the farmlands, and inter-island traffic is dependent to a large extent on ferries. Periodic levee reconstruction to compensate for consolidation and land subsidence results in delays and detours for the traveling public and farm-to-market com-

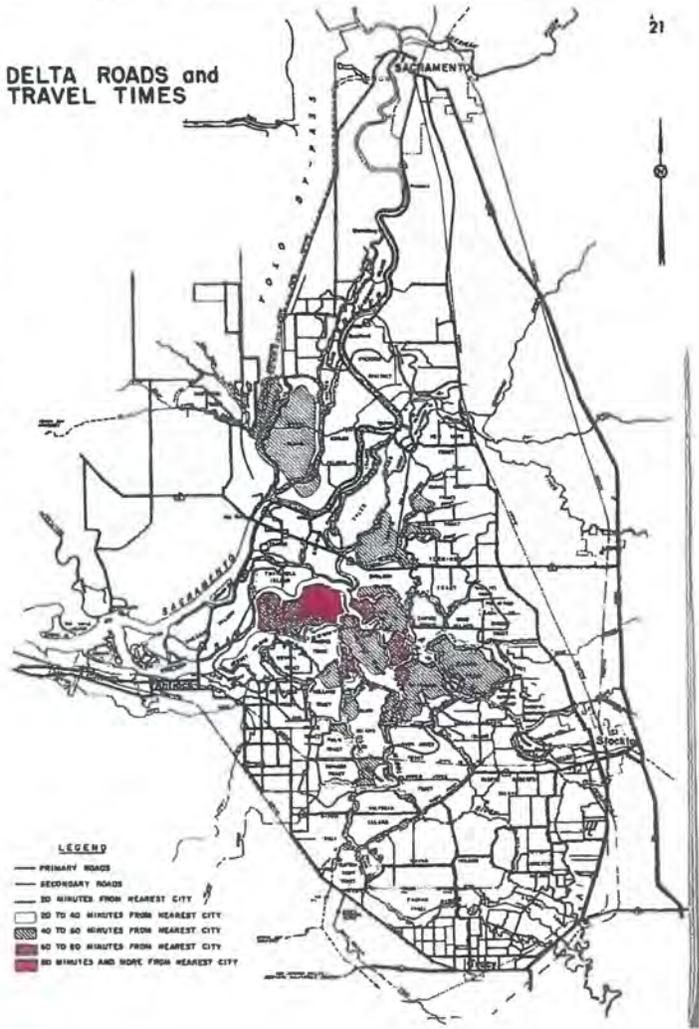
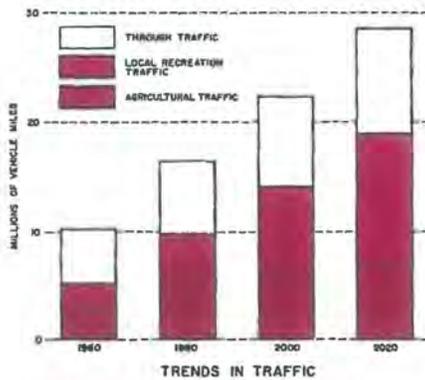


merce. In winter months much of the area is inaccessible because of muddy roads. There are 950 miles of paved roads in the area, but because of the unstable peat foundation, the costs of maintenance and operation are disproportionately high. For example, in San Joaquin County only 12 percent of the county's 1,780 miles of roads is in the Delta, but almost 30 percent of the county's annual costs of \$1,000,000 for highway facilities is expended in the Delta. Future costs will increase due to greater use of the road system.

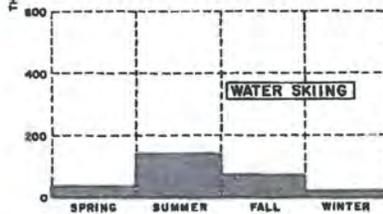
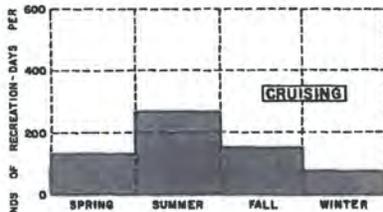
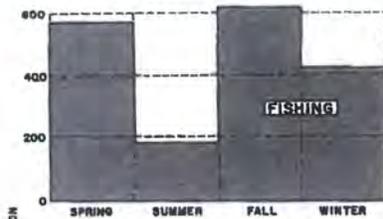
DELTA ROADS and TRAVEL TIMES

While it is true that today's Delta roads are greatly improved over those of the past, there still remains a serious lack of access to many remote locations of the Delta. Improvements are also needed in roads linked with the state and county highway networks. Travel times to principal cities of Stockton, Tracy, Sacramento, and Antioch are depicted on the map.

An expanded and improved system of roads would unquestionably make the Delta more attractive to the recreation industry. The new roadways also would benefit many local landowners who are presently at an economic disadvantage in shipment of their crops to markets. Increasing production in the Delta, due to anticipated double-cropping and improvements in farming practices, will increase the amount of agricultural road traffic.



Delta Problems — recreation



RECREATION PATTERNS
IN 1960



Courtesy of Los Angeles Times



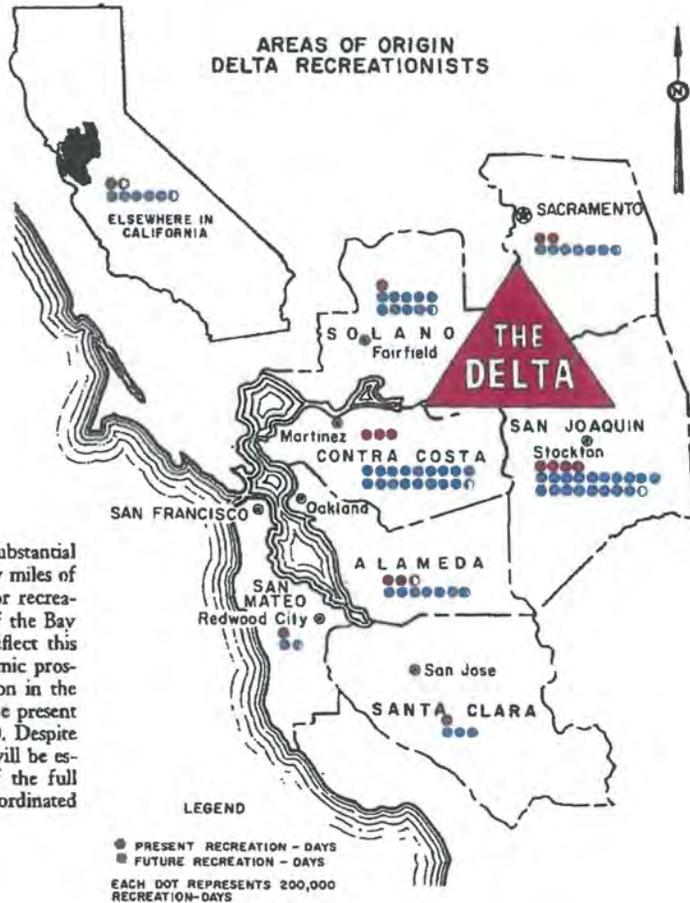
Courtesy of Los Angeles Times

The 50,000 acres of water surface and almost 1,000 miles of shore line in the Delta offer a vast and fascinating area with a great diversity of recreational opportunities. Fishing is the favorite pursuit and striped bass is the leading catch. Salmon, shad, black bass, catfish, and sturgeon are also important in the sportsman's bag. The maze of Delta channels is appealing to boatmen for cruising, and the many miles of calm water are ideal for water skiing and high-speed boating. While many of the channels are not extensively used, due mainly to difficulty of access and lack of service facilities, other areas have become congested and competition is developing between fishermen, boatmen, and skiers. Safety of the recreationists is becoming a significant problem and local law enforcement agencies are increasing their patrols. Levee erosion problems due to speeding boats also have developed in some localities. Picnicking and swimming are becoming more attractive as facilities are developed, and duck and pheasant hunting is very popular. There are now 123 private and public resorts which cater primarily to fishermen and boatmen in the Delta. In addition, many of these resorts are also developing facilities for picnicking and camping.



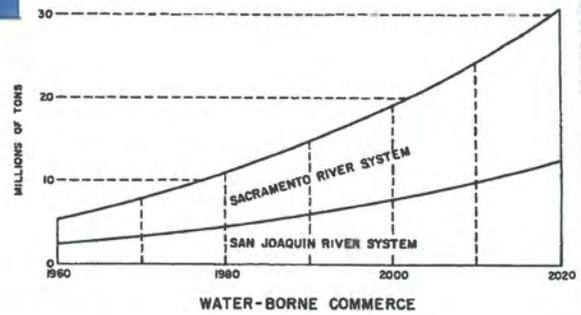
Courtesy of Hubert Miller

Although the Delta at the present time is a scene of substantial recreation use, there is ample room for expansion. Many miles of shore line and large areas of water are still available for recreational development. As the rapid population growth of the Bay area continues, recreation activity in the Delta will reflect this increase. Based on a future of continued general economic prosperity and population growth, the amount of recreation in the Delta will increase from 2,800,000 recreation-days at the present time to as many as 14,000,000 recreation-days by 2020. Despite the size of the Delta, proper local zoning and control will be essential for public safety and continued enjoyment. If the full recreation potential of the region is to be realized, coordinated planning by state and local agencies will be required.



Delta Problems — navigation

The Delta channels are extensively utilized by vessels ranging in size from rowboats to deep-draft commercial freighters and warships. The significance of navigation in the Delta has risen and fallen in the past, but in the last few decades it has been steadily increasing. The Corps of Engineers maintains many miles of channels in authorized navigation projects, the principal one in recent years being the Stockton Deep Water Channel. Construction is now underway on the Sacramento Deep Water Channel. Petroleum products carried by tugs and barges account for the majority of commercial shipping, but large amounts of farm produce are shipped by barges and deep-draft freighters.



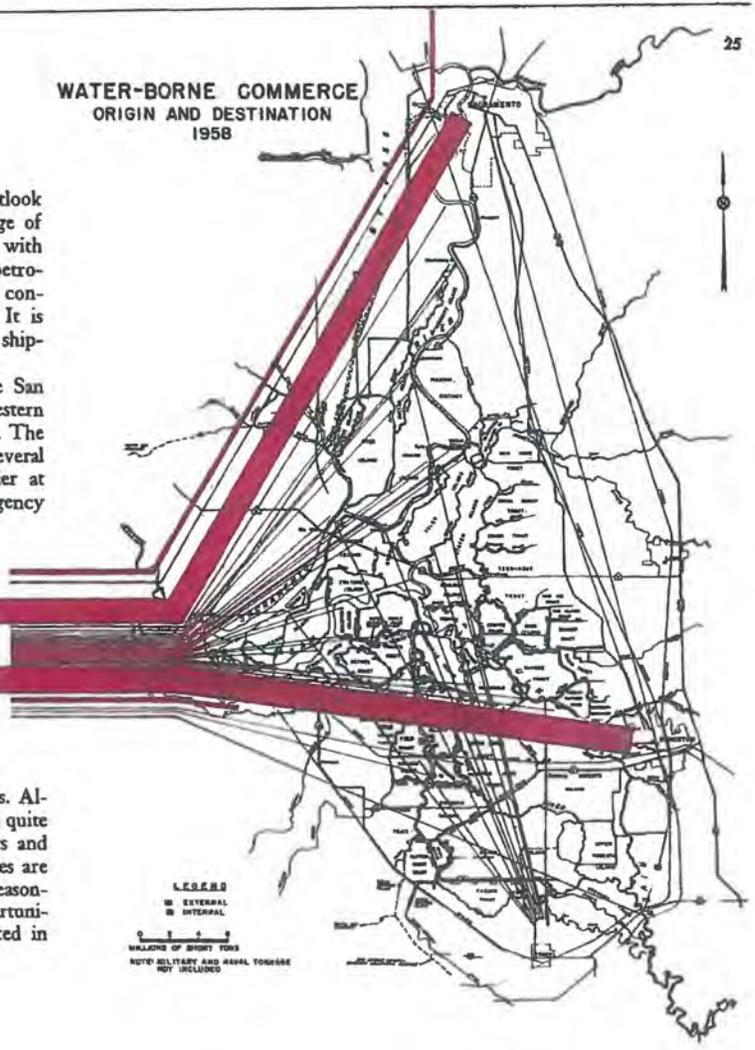
Courtesy of Robert Yelland

WATER-BORNE COMMERCE ORIGIN AND DESTINATION 1958

Projections of future commerce indicate an optimistic outlook for shipping in the Delta. It is anticipated that the tonnage of commercial shipping will increase about fivefold by 2020, with petroleum being the principal commodity. Projections of petroleum shipments were related to population projections and continuation of the trend toward more vehicles per capita. It is anticipated that the present relationship between petroleum shipments by water and by other means will continue.

In 1955 in conjunction with studies of barriers in the San Francisco Bay system, an opinion was requested of the Western Area Joint Panel on effects of barriers on national defense. The panel, which was composed of representatives of the several branches of the military service, concluded that a barrier at Chipps Island would be permissible, if it contained an emergency access for navigation.

The Delta channels are widely used for recreation boats. Although some areas are relatively unused, other areas become quite congested. Conflicting interests arise between water skiers and cruising parties and the fishermen. In some locations levees are subjected to severe erosion by boat-generated waves. All reasonable measures must be undertaken to preserve boating opportunities, and facilities to enhance recreation can be constructed in certain locations.



Planning and Design Concepts

Planning for solutions to the complex Delta problems necessitates full recognition of the interrelated effects on all phases of the Delta's economy. The best solution should reflect the greatest overall benefits and least detriments, realizing that both objectives cannot be completely achieved when basic interests differ. Economies of construction and operation generally may be effected by multi-use of facilities. Therefore, consideration must be given to multi-purpose development.

DELTA WATER SUPPLY

Water users in the Delta enjoy a naturally convenient source of supply in the numerous channels from which water is diverted by siphon or low-lift pumps. The supply problem in portions of the Delta stems from the poor quality of water, due to salinity incursion from the Bay and degradation by agricultural and industrial wastes. Adequate water supplies could be provided either by regulated releases of stored fresh water to repel salinity incursion and flush other wastes, or by constructing a physical barrier against salinity incursion and conveying unusable wastes beyond the barrier. A third alternative would involve a reduction of salinity control in the western Delta channel

and provision of substitute fresh water supplies to users who could not then divert from the channels containing brackish water. All three alternatives were evaluated, with particular attention to minimizing modifications to existing water supply systems.

The California Water Code specifies that one of the functions of the State Water Resources Development System is to provide salinity control and an adequate water supply in the Delta. If it is in the public interest to provide substitute supplies in lieu of salinity control, no added financial burden shall be placed on the local water users as a result of such substitution. The code also declares that water to which the Delta is entitled shall not be diverted. It is clearly established that supplying water for the Delta must be a primary and integral function of the State Water Facilities.

WATER SALVAGE

Unless physical works are constructed in the Delta, increasingly greater quantities of outflow will be required for quality control as more and more water is transferred across the Delta. However, most of the required outflow could be salvaged by constructing a physical barrier against salinity incursion, or by transferring the water more

directly across the Delta to prevent commingling with brackish water near the outlet of the Delta.

The quality of water available for export, as well as for use in the Delta, must be suitable for various purposes. Standards for mineral quality, adopted by the Department of Water Resources and incorporated in water service contracts, permit not more than 400 parts of total dissolved solids and 100 parts of chlorides per million parts of water.

FLOOD AND SEEPAGE CONTROL

Flood stages in the Delta result from a combination of high tides, amplified by heavy winds on the ocean and Bay system, and inflow to the Delta. Historic inundations have generally resulted from levee failures, rather than overtopping. As the land behind the levees continues to subside, the stability of the levees decreases.

Physical and economic factors dictate an extended construction period for improvement of levees on organic soils. To reduce the extent and cost of levee improvements, it is prudent to limit flood waters to principal improved flood channels. Additional flood control reservoirs on rivers entering the Delta are contemplated for construction in the near future. Therefore, it is recommended to design Delta flood channels for rates of flow anticipated after construction of systems in storage. Design of improved flood channels was predicated on additional

regulation of the Cosumnes, Mokelumne, Calaveras, Stanislaus, and Tuolumne Rivers. Although the "design" floods reaching the Delta after completion of these works may generally be expected to occur on an average of once every fifty years, the degree of frequency is not particularly meaningful in the tidal channels of the Delta, since protection is largely dependent on levee stability. It should be recognized that complete flood protection generally cannot be assured by construction of control works. Continued emphasis should be placed on flood plain zoning in the Delta for low value improvements uses as generally associated with farming.

Construction of principal flood channels and creation of interior channels would afford an opportunity to regulate water stages in the interior channels. Since the rate of seepage inflow to the islands directly related to the level of water in the surrounding channels, seepage could be reduced by lowering the water levels.

However, project operation might cause increased seepage problems in certain locations. Where these problems are evidenced by future operation, remedial measures would be necessary. Allowances for cost of such works were included in planning for areas of anticipated damage.

VEHICULAR TRANSPORTATION

Improvements in the road network of the Delta to enhance recreational opportunities and reduce costs of farm-to-market

travel, could conveniently and economically be incorporated in master levee construction for flood and seepage control. Construction of the master levees would involve a wide berm on the landward side of existing levees in most locations. This berm would provide a suitable base for a road. Parking areas off the roadway could also be constructed at many locations. Channel closures in the master levee system would eliminate the need for ferries in certain locations.

Where existing roads would be rendered unusable by construction and operation of the Delta water facilities, equivalent service would be provided. Road improvements which would enhance the existing system, such as better road surfacing or extensions to connect with nearby routes, could be incorporated, if local agencies desire these improvements and participate in the costs.

RECREATION

The Delta is extensively used for recreation at this time, yet its potential use is several times greater. Planning for any facilities in the Delta should seek to minimize adverse effects on recreation, consistent with sound economics, and to enhance the attractiveness and enjoyment of the Delta for further recreational development. It is recognized that flood and seepage control measures of other works which restrict the movement of boats and other recreational activity. While such effects could be reduced by providing small craft locks and

portage facilities, some inconvenience would remain. Where such conflicts occur, local choice will be necessary between flood and seepage control works or open channels for recreation. Additional recreation facilities and joint use of certain lands for recreation and other purposes should be planned to enhance the potential recreational development. Local desires, as evidenced by questionnaires and discussions with county recreation agencies, guided planning for recreation facilities.

NAVIGATION

Principal ship channels in the Delta serve deep-draft commercial and military shipping. Shallow-draft tug and barge traffic utilizes the ship channels and many other channels in the Delta. The effects of alternative plans on commercial navigation can be readily evaluated, and the nature and extent of compensating measures or benefits can be determined. Unfortunately, it is not possible to evaluate in comparable terms the effects of war-damaged facilities on national defense. However, consideration of alternative plans must include recognition of national defense aspects.

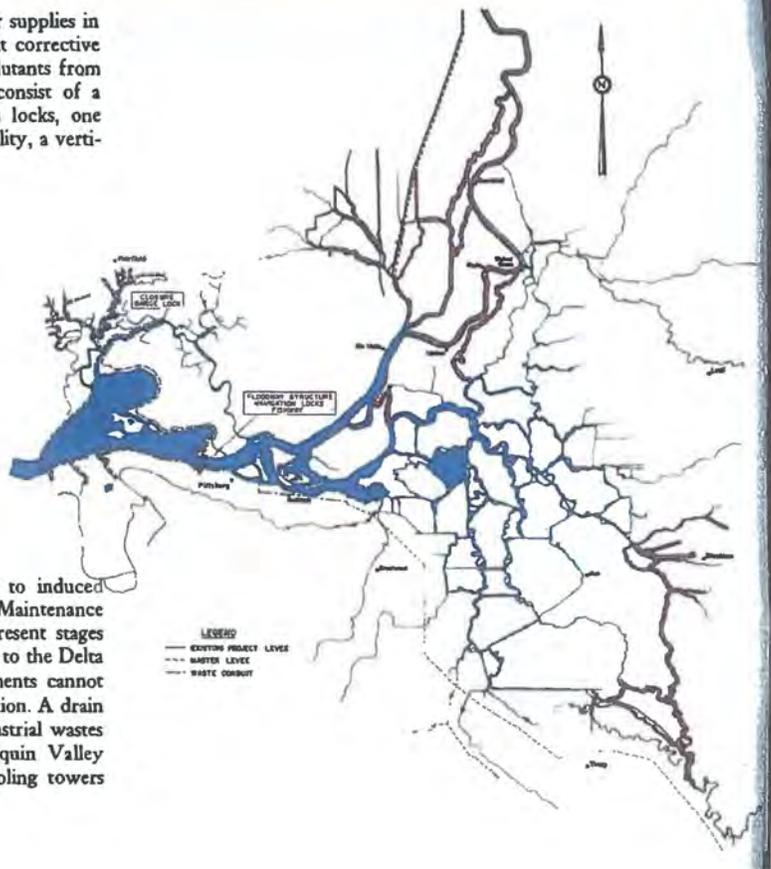
FISH

The Delta is a dominant factor in the habitat of several anadromous species of fish and the tendency of several additional sport fish. All reasonable measures must be taken to minimize the adverse effects of planned facilities on the fisheries in the Delta and, when possible, to provide for their enhancement.

Chippis Island Barrier Project—physical works

A barrier at Chippis Island would insure the water supplies in the Delta against salinity incursion from the Bay, but corrective features would be necessary to dispose of other pollutants from sources upstream. The principal structure would consist of a gated floodway section, two deep-draft navigation locks, one barge lock, one small craft lock, a tug assistance facility, a vertical baffle fishway, emergency navigation access, and appurtenant operating facilities. The floodway section would have a net area of openings equivalent to the existing channel in order to preclude interference with flood flows. The conventional navigation locks would allow a limited amount of denser saline water to enter the upstream pool, but this water would be removed from a sump by a salt-scavenging system of pipes and pumps. A barge lock would be located on Montezuma Slough near the new Grizzly Island bridge, about ten miles north of Chippis Island.

A barrier at the Chippis Island site would require a master levee system along principal channels in Suisun Bay to contain the high tidal stages, which would be higher than the present high stages. Additional dredging of navigation channels also would be necessary, due to induced lower low tidal stages downstream from the barrier. Maintenance of water levels in Delta channels at lower than present stages during summer months would require improvements to the Delta levees, but the nature and extent of the improvements cannot be accurately evaluated without the project in operation. A drain would be constructed to convey municipal and industrial wastes and agricultural drainage water from the San Joaquin Valley into tidal water downstream from the barrier. Cooling towers



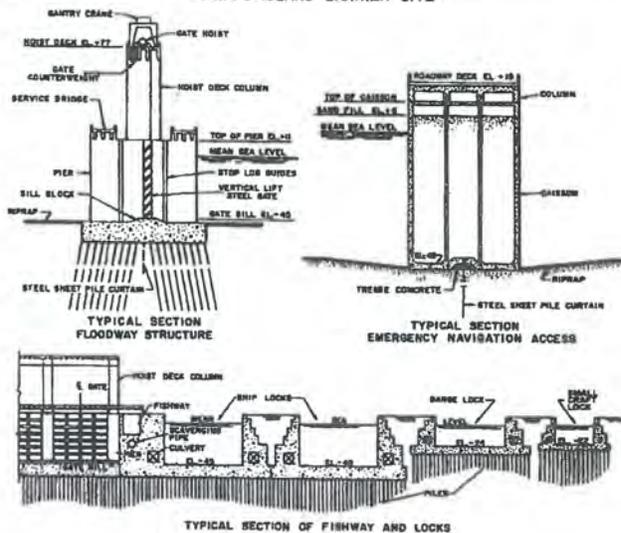
would be required for the two principal power plants which would discharge warm water into the barrier pool.

The type and design of the facilities described in this report incorporate results of preliminary designs and quantity estimates of the Corps of Engineers in current work on barriers in the San Francisco Bay system. Estimates of the capital cost of the facilities were based on construction costs prevailing in 1960, plus 15 percent for contingencies and 15 percent for engineering and overhead. The anticipated schedule of construction of the facilities is indicated in the tabulation of estimated capital costs.

SUMMARY OF ESTIMATED CAPITAL COSTS CHIPPS ISLAND BARRIER PROJECT	
Feature and date of construction	Capital cost
On Site Features	
Floodway structure (1964-70)	\$44,119,000
Locks (1964-70)	74,278,000
Salt-scavenging system (1968-70)	3,768,000
Emergency navigation access (1964-66)	6,092,000
South abutment and access facilities (1964-65)	723,000
Fishway (1969)	79,000
Buildings and miscellaneous (1966)	2,062,000
Montezuma Slough closure and barge lock (1968-70)	3,492,000
Subtotal, On Site Features	\$114,613,000
Off Site Features	
Waste disposal facilities (1967-70)	\$26,914,000
Extension San Joaquin Valley drain (1967-70)	17,356,000
Suisun Bay levee system (1964-73)	21,608,000
Shoreline facilities and dredging (1968-70)	1,481,000
Subtotal, Off Site Features	\$67,359,000
TOTAL CAPITAL COST, CHIPPS ISLAND BARRIER PROJECT	\$201,972,000



CHIPPS ISLAND BARRIER SITE



TYPICAL SECTION OF FISHWAY AND LOCKS

Chippis Island Barrier Project — operation

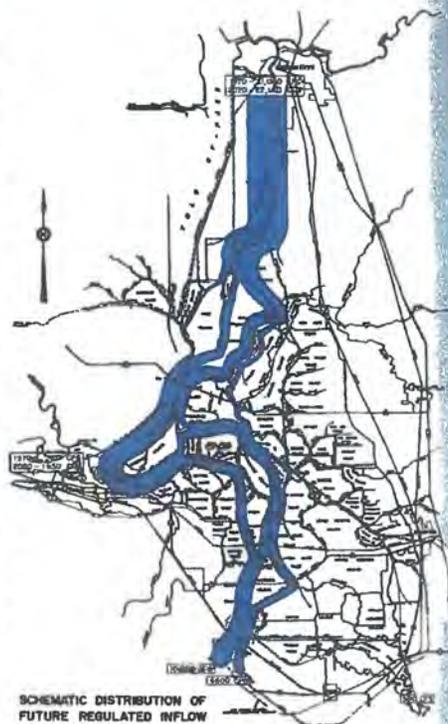
A barrier at Chipps Island would provide a definite separation between saline water in the Bay system and fresh water in the Delta channels, thereby preventing salinity incursion and assuring adequate water supplies in the Delta. However, there would be attendant operating problems, and the barrier and appurtenances would not provide flood control and related benefits to the Delta.

With the floodway gates closed, the inflow to the Delta to supply local uses and export pumping plants would be distributed in the channels as shown in the schematic diagram. Large quantities of water would be directed through channels in the western Delta to remove heat wastes and maintain satisfactory water quality conditions. Storage in the channels could be utilized to achieve a limited amount of regulation. However, navigation requirements would prevent controlling the water level lower than one foot below mean sea level, without additional dredging. Seepage and levee stability problems would limit the maximum level for sustained storage to about two feet above mean sea level. Economic analyses of various operating ranges indicate that a three-foot range in water levels for conservation of flood water would be most economical.

Electric analog model studies reveal that the barrier would increase the tidal ampli-

tudes downstream from the structure. An unusually large amplitude of 6.3 feet at Chipps Island under present conditions would be increased to about 12 feet by a barrier. Changes indicated on the electric analog model were generally confirmed by preliminary tests by the U. S. Corps of Engineers on a hydraulic model which indicated slightly smaller increases in tidal amplitudes and a slight decrease in the mean tide level. The lower low water would seriously affect navigation depths, and the higher high water would seriously affect levees along the downstream bays and municipal, industrial, and military installations along the shore lines. Remedial measures would be necessary.

Disposal of cooling water from power plants and other industries would cause an increase in temperature in the nearly quiescent barrier pool. This increase in temperature would reduce the efficiency of cooling equipment and adversely affect fish, and could cause significantly increased corrosion in equipment exposed to the warmer water. The monetary magnitude of these effects would be dependent upon the amount of heat energy dissipated in the pool by existing and future industries, and many other factors which cannot be fully evaluated at this time. Satisfactory conditions could probably be achieved by passing cool-



ing water from the principal power plants over cooling towers.

To maintain satisfactory water quality conditions in the barrier pool, it would be necessary to convey industrial and municipal wastes to tidal water. Drainage water from the San Joaquin Valley would also have to be discharged into tidal water.

Saline water entering the pool through the locks would be allowed to settle in a sump from which it would be pumped by a salt-scavenging system. Operation of locks would cause delays of about 35 minutes per transit for deep-draft vessels and 20 minutes for tugs and smaller vessels. Assistance would have to be provided to maneuver deep-draft ships through the locks. A tug and operating crew for this purpose would be necessary at all times.

National defense aspects dictate that an emergency navigation access be incorporated in the barrier. This access would consist of concrete bins filled with sand in a section of the barrier. In an emergency, the sand would be pumped out and the bins towed out of the channel.

Anadromous fish would be passed through a vertical baffle fishway, comprising a series of baffles with vertical slots extending to the bottom to provide passages for water and fish. The baffles would dissi-

pate the energy of the water and create a series of bays with a slightly lower water level in each adjacent downstream bay. The bays would provide resting areas for the fish after passing through short distances of high velocity water in the slots. During high tides downstream from the barrier, the fishway would be closed by a gate to prevent saline water from entering the pool.

During flood conditions the gates in the barrier floodway would be opened. Flood stages in the Delta would be essentially the same as under present conditions for comparable flood flows. Since master levees in the Delta are not incorporated in this plan, high flood water would occur in all the channels. Although the flood stages would not be changed, levee stability problems would increase. Tidal fluctuations presently keep the levees saturated a few feet above the mean tide elevation, but under barrier conditions the peat levees would dry out and crack when water levels would be drawn down to about one foot below sea level. Should a sudden flood occur the open barrier gates would permit tidal fluctuations throughout the Delta and sections of some dried-out levees might become unstable and fail as the water levels rapidly rise and fall. Remedial work would be required as problems develop. Allowances for cost of this as yet undefined work are not included in the cost estimate.



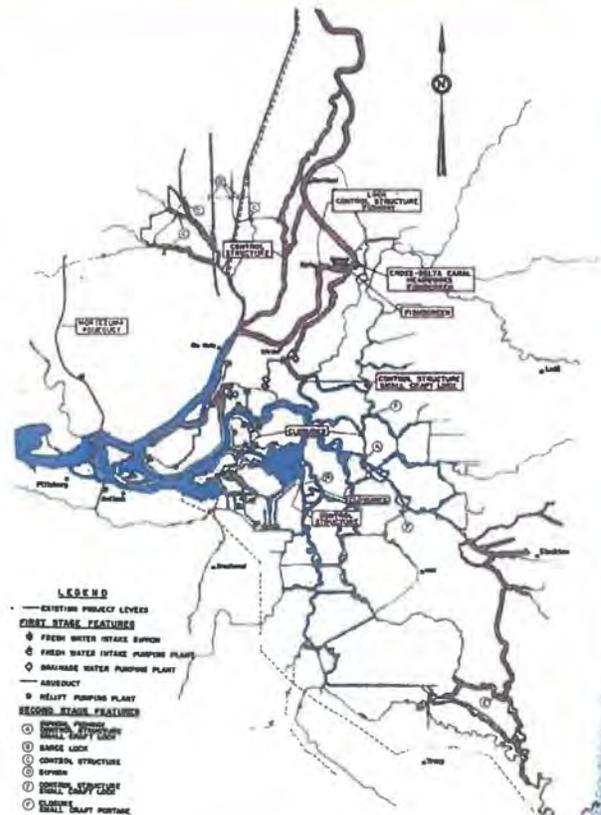
SCHEMATIC DISTRIBUTION OF DESIGN FLOOD FLOWS

Single Purpose Delta Water Project—physical works

This system of works would accomplish essentially the same results as a barrier at Chipps Island, that is, adequate water supplies for the Delta and for export therefrom, but would not necessitate costly remedial works. Good quality water supplies for the Delta and export pumps would be separated from saline water by control structures operated with a relatively small rate of fresh water outflow. Water would be supplied in the western Delta area through new supply facilities, and in the rest of the Delta existing irrigation and drainage works would continue in operation. There are no flood control features in this plan.

Control structures with gated openings for discharging flood flows would be located on channels of the Sacramento, Mokelumne, and San Joaquin Rivers. A barge lock and fishway would be incorporated in the Sacramento River control structure. Earth fill channel closures would be constructed at four locations. In 1980-82, additional gates would be constructed at the existing headworks of the Delta Cross Channel of the Central Valley Project. Small craft locks and portage facilities would be incorporated in certain control structures and channel closures. Vertical louver fish screens would be constructed at the head of Georgiana Slough and at the Delta Cross Channel near Walnut Grove, and rotary drum fish screens would be constructed at other diversions.

Water supply facilities would serve areas in the western Delta. The Montezuma Aqueduct would be constructed in about 1968-71 and in subsequent stages to serve water to potential industrial land and some agriculture in central southern Solano County, and to supplement supplies in Contra Costa County. Works would also be included to remedy detrimental effects of project operation, such as seepage alleviation along the Sacramento River channels and modifications to existing irrigation and drainage works made necessary by the project.

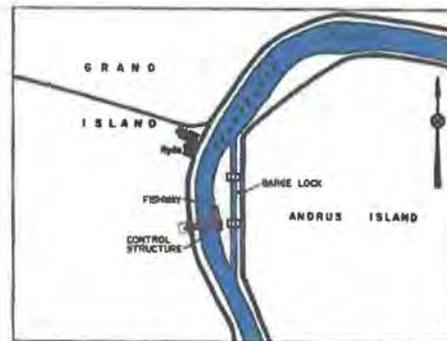


About 1,900 acres of land in the Delta, mostly small unreclaimed islands, would be used for disposal of excess dredged material. Many of these areas would be available and desirable for development as recreation areas.

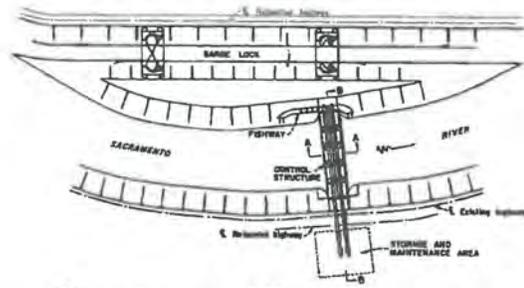
Additional water could be salvaged by completely separating good quality cross-Delta flows from tidal water, and thereby reducing the amount of fresh water outflow needed for salinity repulsion. These second stage features would include a siphon under the San Joaquin River, additional channel closures, control structures and appurtenances, and water supply facilities. These works may be indefinitely deferred, depending on their need.

Estimates of the capital costs reflect 1960 construction costs, plus 15 percent for contingencies and 15 percent for engineering and overhead. The anticipated construction schedule is indicated in the following tabulation:

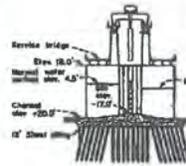
SUMMARY OF ESTIMATED CAPITAL COSTS SINGLE PURPOSE DELTA WATER PROJECT	
Feature and date of construction	Capital cost
Steamboat Slough control structure (1968-70)	\$2,943,000
Miner Slough closure (1970)	108,000
Ryde control structure, barge lock, and fishway (1968-71)	5,653,000
Holland Cut control structure (1973-75)	2,761,000
Mokelumne River control structure and small craft lock (1973-75)	1,951,000
Cross-Delta Canal headworks (1980-82)	1,223,000
Fish screens: Cross-Delta Canal and Georgiana Slough (1968-70)	3,500,000
Closures: Potato Slough, Old River, and Middle River (1974-76)	404,000
Fishermen Cut closures (2) (1964)	133,000
Agricultural water facilities (1963-65)	4,300,000
Municipal and industrial water facilities (1968-71, 1980, 1995, 2010)	13,972,000
Channel dredging (1974-78)	7,114,000
Bank protection (1976-78)	1,880,000
Seepage alleviation facilities (1971)	593,000
TOTAL CAPITAL COST, FIRST STAGE FEATURES	\$46,555,000
TOTAL CAPITAL COST, SECOND STAGE FEATURES	\$23,765,000



RYDE STRUCTURE SITE



PLAN
CONTROL STRUCTURE, FISHWAY AND LOCK



SECTION A-A
CONTROL STRUCTURE



SECTION B-B
CONTROL STRUCTURE AND FISHWAY

Single Purpose Delta Water Project—operation

A Single Purpose Delta Water Project would salvage water otherwise wasted to Suisun Bay for salinity control, and would provide water supplies for the Delta and for export and use in areas of deficiency. The project would allow salinity to encroach somewhat farther into the Delta than under present operations; however, the area affected by this controlled incursion would be supplied water by new facilities. Certain aspects of operation described in the following paragraphs would also apply to other variations of the Delta Water Project.

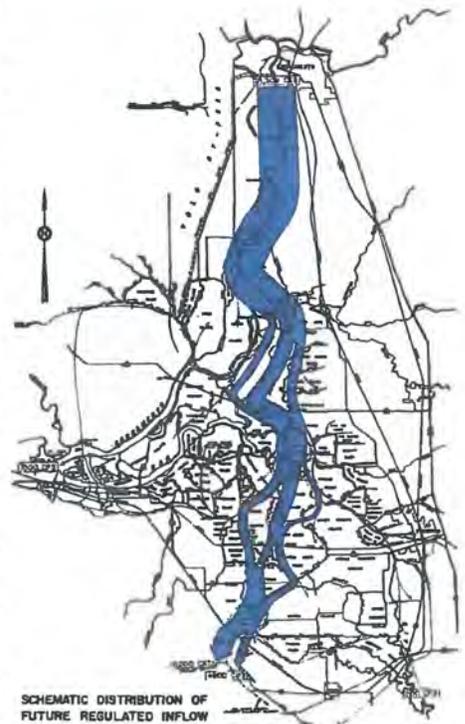
Control structures on the Sacramento River system would divert water southward toward the center of the Delta. Control structures and closures on channels east of Franks Tract would cause the water to flow toward the export pumping plants in channels in the center of the Delta. With this type of operation, it would be necessary to prevent brackish saline water from mixing with fresh water in the center of the Delta. This control could be accomplished by providing fresh water outflow in the Sacramento and San Joaquin Rivers.

The salinity control line, with control to a mean concentration of 1,000 parts of chlorides per million parts of water (1,000 ppm), would be maintained in the San Joaquin River near the mouth of False River,

about 7 miles upstream from Antioch and in the Sacramento River at Decker Island, about 1½ miles below Threemile Slough. Salinity control at these locations could be accomplished by maintaining an outflow from the Delta of 1,000 second-feet, of which about 60 percent would be released through the San Joaquin River and the remainder through the Sacramento River.

Good quality water from the cross-Delta flows would be available in existing channels throughout 90 percent of the Delta lowlands. Water would be provided to all agricultural lands downstream of the line of *maximum* salinity encroachment of 500 ppm of chlorides. The mean concentration of chlorides would be about 250 ppm at locations on this line. Research studies by the University of California indicate that seepage of any brackish water from the channels into the Delta islands can be controlled below the plant root zone by application of good quality water on the surface. The supplies diverted from the cross-Delta flows would normally contain between 20 and 80 ppm of chlorides.

Water would also be provided to municipalities and for certain industrial uses in the western Delta area. Most of the required industrial cooling water could be supplied from the adjacent channels. The Contra



Costa Canal could serve the projected industrial requirements in its service area until about 1970, and significant industrial development in southeastern Solano County is not anticipated before 1980. The Montezuma Aqueduct would be constructed to convey supplemental water from the proposed North Bay Aqueduct and would be linked to the Contra Costa Canal near Pittsburg in 1980. The capacity of the Contra Costa Canal would then be utilized primarily between the Delta and the connection with the Montezuma Aqueduct. The estimated quality of the water would be very good, with a chloride content generally ranging between 15 and 80 ppm, total dissolved solids ranging between 125 and 300 ppm, and with total hardness of between 40 and 160 ppm.

Existing irrigation water supply facilities throughout most of the Delta would not be affected by operation of the export pumps, but the average water level in the southern portion of the Delta would be lowered slightly. Irrigation facilities affected thereby would be modified under the project.

Small increases in tidal amplitudes of about 1.5 feet would occur at the Sacramento River and Steamboat Slough control structure sites, but the mean water level would not significantly change. The effects would be very minor at Rio Vista.

The average water level upstream from the control structures would be gradually raised to a maximum of about 2.5 feet under full project operation in about 30 years. The increase would occur during summer months, and any resultant increased seepage from the channels would be fully consumed by crops on adjoining lands without damage.

During flood periods, the control structures would be opened and flood stages throughout the Delta would be similar to those under present conditions. Flood stages on the Sacramento River would be slightly higher for longer periods due to closing of Miner Slough. This effect would tend to increase seepage conditions during a critical crop planting time, and might necessitate installation of seepage alleviation works. Such works would also alleviate existing seepage problems.

The future value of water and quality considerations might justify construction of the second stage features to permit further reduction in the fresh water outflow from the Delta. The outflow could be reduced to the amount of unavoidable losses, or about 750 second-feet. The value of the additionally salvaged water would probably not justify construction of these works before 1990.



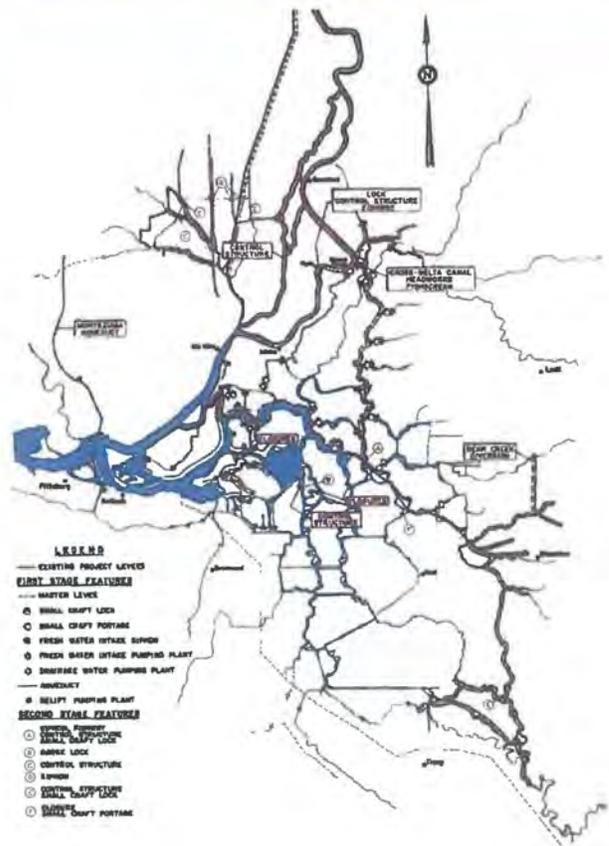
Typical Alternative Delta Water Project — physical works

Several additional features can be added to the basic Single Purpose Delta Water Project to provide varying degrees of local benefits, in addition to adequate water supplies. These additional features would be for flood and seepage control, transportation, and recreation. While the economics of construction and operation factors would dictate grouping certain islands within encircling master levee systems, flood protection for any one or more of several groups of islands could be undertaken.

The Typical Alternative Delta Water Project, one of several alternative plans, would include flood protection for the islands in the north central portion of the Delta around Isleton, and for the northeastern islands in the vicinity of Lodi. Fourteen channel closures would be required in addition to those incorporated in the Single Purpose Delta Water Project. Minor modifications and additions would be made in the irrigation water supply and drainage facilities. Rotary drum fish screens would be incorporated where required in all water supply works, and a vertical louver screen would be constructed at the headworks of the Cross-Delta Canal at Walnut Grove. Bear Creek would be diverted into the Calaveras River.

The master levee system would include existing levees of the Sacramento River Flood Control Project. Other existing levees would be improved by constructing a berm on the landward side, and by raising the levee crown where necessary to increase the freeboard. Public roads would be relocated from levee crowns to the berms. A service and maintenance road would be placed on the crown of the levees.

Small craft locks would be constructed at certain channel closures. At locations where rapid transits of boats under 25 feet long would be necessary, a tank elevator boat portage would be installed.

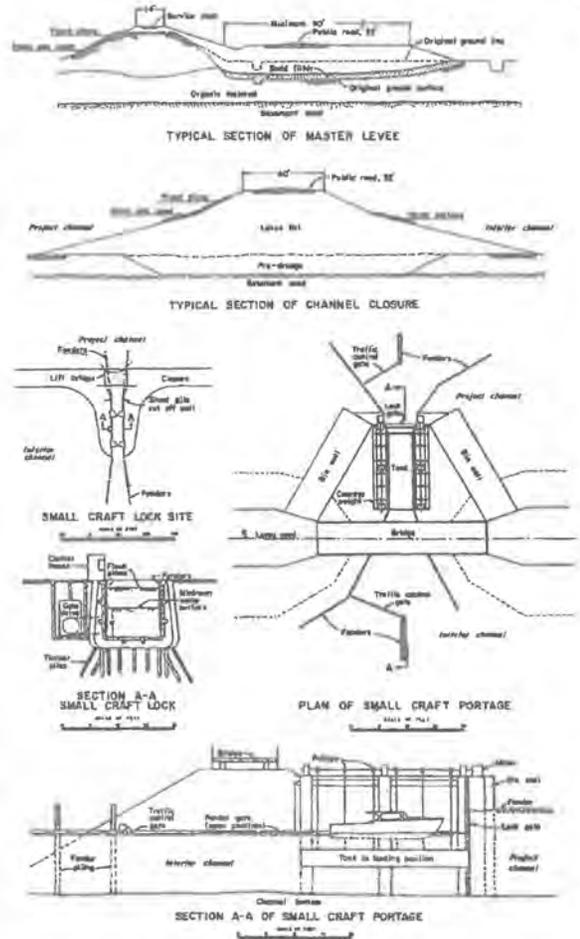


About 1,900 acres of Delta land would be filled with excess dredged material, and most of this land would be available for recreational development. The additional gates on the Cross-Delta Canal headworks and the extensions of the adjacent highway and railroad bridges would be constructed with about 16 feet of clearance above the present average water level to improve small craft access between the Sacramento River and channels of the Mokelumne River system.

The second stage features of this project would be similar to those contemplated for the Single Purpose Delta Water Project.

Estimates of capital cost were based on 1960 construction costs plus 15 percent for contingencies and 15 percent for engineering and overhead.

SUMMARY OF ESTIMATED CAPITAL COSTS TYPICAL ALTERNATIVE DELTA WATER PROJECT	
Feature and date of construction	Capital cost
Seasbosc Slough control structure (1968-70)	\$2,945,000
Miner Slough closure (1970)	108,000
Ryde control structure, barge lock, and fishway (1967-70)	5,653,000
Holland Cut control structure (1973-75)	2,761,000
Cross-Delta Canal headworks (1973-77)	1,998,000
Cross-Delta Canal fish screen (1968-70)	3,500,000
Old River and Middle River closures (1975)	258,000
Fishermans Cut closures (2) (1964)	133,000
Agricultural water facilities (1963-65)	4,282,000
Municipal and industrial water facilities (1968-71, 1980, 1995, 2010)	13,952,000
Channel dredging (1974-78)	7,274,000
Master levee system (small craft locks and portages, irrigation and drainage works)	
Isleton island-group (1964-80)	12,610,000
Lodi island-group (1964-81)	11,439,000
Bear Creek diversion (1967-70)	670,000
TOTAL CAPITAL COST, FIRST STAGE FEATURES	\$67,531,000
TOTAL CAPITAL COST, SECOND STAGE FEATURES	\$23,635,000



Typical Alternative Delta Water Project — operation

Operation of the Typical Alternative Delta Water Project would be basically the same as with the Single Purpose Delta Water Project. Good quality water would be transferred directly across the Delta and degradation in water quality from salinity incursion would be prevented by limited releases of fresh water with the same degree of control as under the Single Purpose Delta Water Project. Water supplies for the Delta would be distributed from the cross-Delta flows.

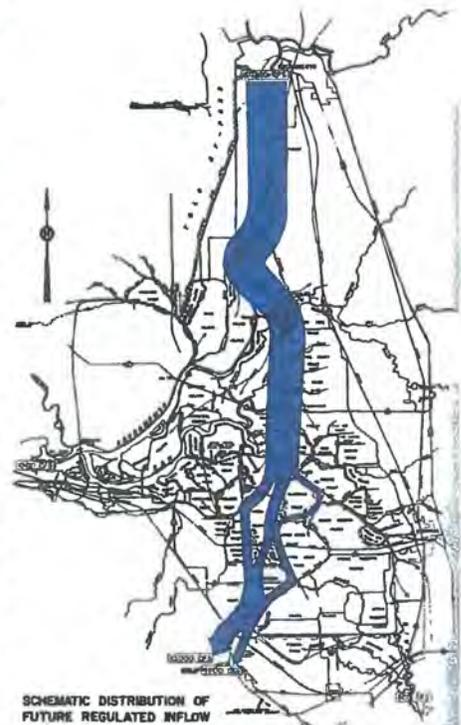
Irrigation water for the Isleton island-group and the Lodi island-group would be diverted through siphons from the Cross-Delta Canal into interior channels. Existing diversion works out of the Cross-Delta Canal, which would be rebuilt during construction of the master levees, and diversion works out of the interior channels would continue in operation. Drainage pumping plants at channel closures would have capacity to remove all water pumped from the islands into the interior channels. Under all alternative plans for the Delta Water Project, the irrigation and drainage works would be managed by local districts. Adjustments in costs of operation and maintenance would be made with the districts to reflect

costs allocated to interests other than the local districts. Water supply facilities serving several districts or agencies would be operated by the State or by an appropriate master district or agency.

Flood flows would be contained in principal project channels in those portions of the Delta protected by the master levee system, and levees along interior channels would no longer be subject to high flood stages. Levees on interior channels would not need to be as high as for present conditions, and could be allowed to settle. Experience has shown that Delta levees reach a state of equilibrium if they are allowed to settle a limited amount. Thus much of the periodic reconstruction of the interior levees would no longer be necessary. Bank erosion problems due to flood flows also would be eliminated on interior levees.

Storm runoff from upland areas surrounding the Delta would be pumped into flood channels, except in the case of Bear Creek which would be diverted into flood channels.

Water levels in the interior channels could be lowered to achieve reductions in the amount of seepage into the islands. In



practically all channels the level could be five feet lower than the present average level, or about three feet below sea level, without causing maneuvering problems for small craft. Any resultant shallow depths in specific locations could be increased by dredging.

Small craft locks and portage facilities would be operated without cost to the boating public as the costs would be allocated to beneficiaries of the master levee system. The locks would be operated in a standard manner with pumps for filling and draining. The boat portages would be tank elevators with a gate at one end. The tank would be lowered below the hull of the boat, and the boat would then move between guides over the tank. The counter-weighted tank would then be raised to the higher water level and the gate opened to permit the boat to move out under its own power. The time for operation after positioning of the boat over the tank would be less than one minute. The boat would be in the water at all times and there would be no contact with the bottom of the hull.

The operation and maintenance of public roads located on the berm of the master

levees would be less costly than for existing roads, which must be periodically reconstructed due to levee settlement and levee rebuilding. Maintenance of the public roads would be by local agencies. Closures in the master levee system of this plan would eliminate the need for continued operation of four ferries.

Reduction of the water surface area under tidal influence would cause limited increases in tidal amplitudes in the Delta, but no significant changes in the average water levels. Such changes on the Sacramento River and Steamboat Slough would be similar to those under the Single Purpose Delta Water Project, and amplitude changes in the San Joaquin River in the heart of the Delta would be less than one foot. However, dredging would be necessary in some navigable channels.

Small islands in bends and side channels, which would be reclaimed and raised by filling, would be available for recreational development after the areas are no longer needed for disposal areas. It is contemplated that arrangements would be made with local governmental agencies for recreational development of the lands, either by direct means or by leasing to concessionaires.



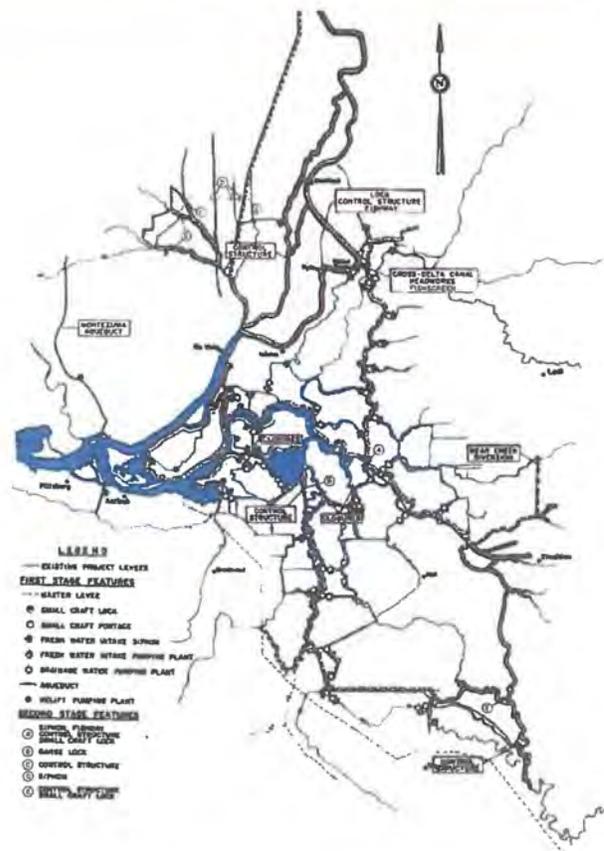
Comprehensive Delta Water Project—physical works

The Comprehensive Delta Water Project would salvage water otherwise needed for salinity control and provide water for the Delta. In addition, the project would provide flood and seepage control, transportation, and recreation benefits for most of the Delta. New master levees would encompass five principal groups of islands and Sherman Island. Works for water supply and drainage in the Delta would include those of the Typical Alternative Delta Water Project, with some modifications, plus other works to serve the newly formed island-groups. Additional small craft facilities would also be constructed.

Flood waters of the San Joaquin River would be divided between the main channel and an improved chain of distributary channels to the west, the two branches coming together in the western Delta. Improved channels of the Lower San Joaquin River Tributaries Flood Control Project would be incorporated.

The master levee along Piper Slough east of Bethel Island would be constructed on old levees on Franks Tract to minimize interference with existing developments on the Bethel Island levee.

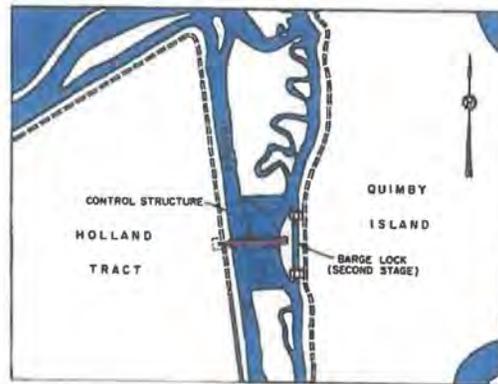
The additional interior channels created by the project in northeastern Contra Costa County would contain good quality water, and would serve as a fresh water distribution system for the adjacent islands. Intensive small craft traffic in the vicinity of Bethel Island would necessitate the construction of four small craft portage facilities in adjacent channels and one small craft lock at Sand Mound Slough.



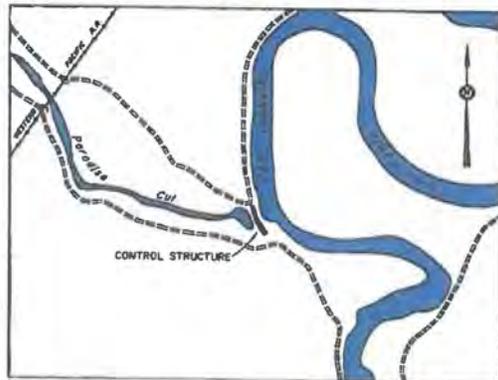
The second stage features of the Comprehensive Delta Water Project would be similar to those in other variations of the Delta Water Project.

Estimates of the capital costs reflect 1960 construction costs, plus 15 percent for contingencies and 15 percent for engineering and overhead.

SUMMARY OF ESTIMATED CAPITAL COSTS COMPREHENSIVE DELTA WATER PROJECT	
Feature and date of construction	Capital cost
Steamboat Slough control structure (1968-70)	\$2,943,000
Minor Slough closure (1970)	108,000
Ryde control structure, barge lock and fishway (1967-70)	5,633,000
Holland Cut control structure (1973-75)	2,761,000
Cross-Delta Canal headworks (1975-77)	1,998,000
Cross-Delta Canal fish screen (1968-70)	3,500,000
Old River and Middle River closures (1975)	258,000
Fishermans Cut closures (2) (1964)	133,000
Agricultural water facilities (1963-65)	2,520,000
Municipal and industrial water facilities (1968-71, 1980, 1995, 2010)	13,972,000
Channel dredging (1968-78)	8,950,000
Master levee system (small craft locks and portages, irrigation and drainage works)	
Isleton island-group (1964-80)	12,610,000
Lodi island-group (1964-81)	11,439,000
Holt island-group (1964-80)	13,810,000
Tracy island-group (1968-74)	4,722,000
Brentwood island-group (1964-79)	9,802,000
Sherman Island (1964-79)	2,030,000
Paradise Cut control structure (1969-71)	121,000
Bear Creek diversion (1967-70)	670,000
Kellogg Creek diversion (1971)	79,000
TOTAL CAPITAL COST, FIRST STAGE FEATURES	\$98,059,000
TOTAL CAPITAL COST, SECOND STAGE FEATURES	\$21,560,000



HOLLAND CUT STRUCTURE SITE



PARADISE CUT STRUCTURE SITE

Comprehensive Delta Water Project - operation

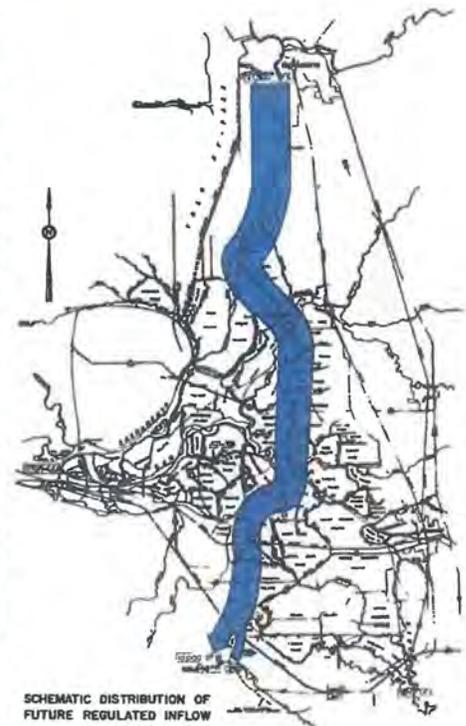
Integrated operation of the multipurpose facilities of the Comprehensive Delta Water Project would enhance all principal phases of the Delta's economy, salvage water otherwise needed for salinity control, and provide very good quality water throughout the Delta. Although the project would have some adverse effects on certain segments of the Delta's economy, such as recreation and navigation, the multipurpose works would afford opportunity for enhancement of these same segments in other ways.

Operation of the water supply and transfer facilities during summer months would be similar to that described for the Single Purpose and Typical Alternative plans. Where representative districts or agencies are organized, the facilities could be locally operated and maintained, and appropriate adjustments in costs thereof could be made to achieve equitable distribution of costs to all beneficiaries.

Creation of interior and project channels in the southern portion of the Delta would separate irrigation water supplies from drainage water originating on lands east of the San Joaquin River. Good quality water from cross-Delta flows would be available throughout most of the southern Delta.

Lands adjacent to the San Joaquin River upstream from Stockton would continue to divert from the river, but the quality of the water in this area could be improved by upstream flow in the San Joaquin River past Stockton induced by the pumping plants. A small net upstream flow occurs during summer months under present conditions. The quality of water in Paradise Cut could also be improved with circulation induced by pumping from the upper end into the San Joaquin River. Diversions from the river in this vicinity might be affected by operation of a San Joaquin Valley waste conduit. If current studies indicate that substitute supplies would then be necessary, or if further improvement of the quality of the supplies is desired even in the absence of adverse effects of a waste conduit, such supplies could be readily diverted from Delta channels without affecting works described herein.

Lands in the Holt island-group in the south central portion of the Delta range in elevation from several feet below sea level to a few feet above sea level. Irrigation water for the higher islands is pumped from the channels, while siphons are utilized for the lower islands. To achieve seepage control benefits for the lower islands, water



levels in the channels could be lowered. This could be accomplished locally without detriment to the higher lands by constructing low dams with pumping plants in the channels and maintaining different water levels in the interior channel system.

Large volumes of small craft and fishing boats move between marinas and resorts in the Bethel Island area and Franks Tract or more distant points in the Delta and San Francisco Bay system. Peak small boat traffic would be served by three small craft portages on Piper Slough, and by one small craft lock on Sand Mound Slough. Lock or portage service for small craft would be provided at various other locations in the Delta when dictated by construction of channel closures. It should be recognized that subsequent developments and changes in patterns of use may necessitate revisions in the planned local service. While the lock and portages would cause some inconvenience to recreationists, creation of interior channels not subject to flood and tidal stages would benefit shore line installations. An expected great increase in boating in the future would intensify problems of patrolling and safety enforcement. Opportunities would be available to local public agencies

to designate certain waterways for specific uses, and problems of regulation would be reduced under controlled access.

Master levees of the project in the southern half of the Delta would cause increased tidal amplitudes in the project channels. The maximum increase in the San Joaquin River system would be about one foot at Stockton. There would be no significant change in the mean water level. Some dredging in navigation channels would be necessary.

Tug and barge shipments into the southern Delta would be limited to the Cross-Delta Canal. Most of the present traffic involves beet shipments to a sugar refinery near Tracy, and the Holland Cut channel east of Franks Tract is generally used. The Cross-Delta Canal would be open to the San Joaquin River, and a barge lock at the Holland Cut control structure would not be economically justified. Although a slightly greater travel distance from northern and western Delta points would be involved under the project, the channel to the vicinity of the sugar refinery would be dredged. This would permit use of larger barges, which are presently precluded by shallow channel depths.



Project Accomplishments — Delta water supply

Over 90 percent of the Delta lowlands now has adequate water supplies during summer months due in part to operation of the Central Valley Project. However, ten percent of the Delta in the western portion, including lands occupied by large water-using industries and municipalities, does not have adequate good quality water supplies at all times. Moreover, additional regulation and use of water in areas tributary to the Delta, exclusive of Delta exports, will lengthen the average period each year when salinity incursion from the Bay causes increased operating costs, plant shutdowns, and decreased farm production. The concentrations of dissolved minerals in water from the Contra Costa Canal now approach upper limits of acceptable quality during several months of most years, and significant sums of money are expended by industries for demineralization and water softening.

Under any of the foregoing projects, water of very good quality would continue to be supplied to about 90 percent of the Delta lowlands through existing facilities. It is estimated that the mineral quality of the supplies would generally range between about 15 to 80 parts of chlorides and between 100 and 350 parts of total dissolved solids per million parts water. The quality of water in the southern portion of the Delta would be improved.

The quality of water in the Pittsburg-Antioch area with the Chipps Island Barrier Project in operation would be uncertain. Although downstream disposal of local municipal and industrial wastes and drainage from the San Joaquin Valley would eliminate the majority of the mineral pollutants, the effects of cooling water and mineral and organic wastes of the Delta might result in water supplies of questionable quality, particularly during critical dry

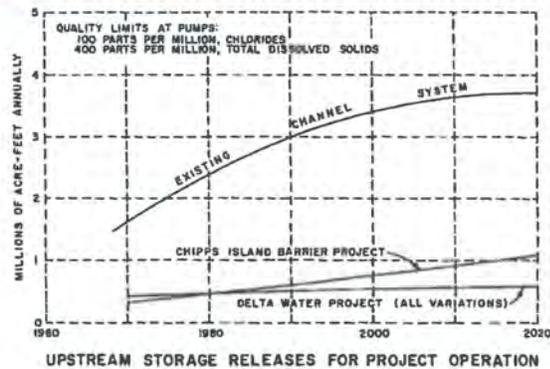
periods. Elimination of the tidal effects in this area by construction of the barrier would also reduce the supply of dissolved oxygen in the water, which is now partly replenished from Suisun Bay.

All of the alternative plans for the Delta Water Project would involve dual water supplies with different water quality characteristics. While the concentrations of minerals in water in certain western channels would increase due to greater ocean salinity incursion, the quality of water from the Contra Costa Canal and from proposed water supply facilities would be excellent. It is estimated that substitute industrial water supplies would generally contain between 15 and 80 parts of chlorides per million parts of water. Similarly, the total dissolved solids would generally range between 125 and 300 parts per million. Irrigation water supplies would be of similar quality. The Contra Costa Canal would annually supply about 195,000 acre-feet of water, including some substitute water in northeastern Contra Costa County. All additionally required supplemental and substitute water would be supplied from the Montezuma Aqueduct. This annual quantity would amount to about 120,000 acre-feet in 1990 and 330,000 acre-feet in 2020. Brackish water supplies in the western Delta channels would vary in quality with location. The mean quality would be about 3,000 parts of chlorides per million parts water at Antioch during summer months. Water containing this much salinity is not necessarily damaging to cooling equipment involving alloy metals. A composite of several factors, most of which would not be modified by alternative plans for the Delta Water Project, controls the rate of corrosion of cooling equipment.

Project Accomplishments — water salvage

Unless physical works are constructed in the Delta to prevent salinity incursion from the Bay system, or to channelize fresh water directly across the Delta channels, it will be necessary to release increasingly greater amounts of fresh water from upstream storage to maintain satisfactory quality conditions. Greater rates of fresh water outflow will be necessary as the rate of export pumping from the Delta increases, and greater quantities of stored water will have to be released as the amount of surplus water for outflow is reduced by upstream depletions and export from the Delta. If Delta works are not constructed, the yield of other features of the State Water Facilities would be reduced and subsequent features for importation of water from north coastal sources would be needed at an earlier date. Any such modifications in the program would increase the cost of water in the Delta.

With any of the plans for the Delta water facilities, the amount of outflow from the Delta otherwise necessary for salinity control would be greatly reduced. It would still be necessary to dispose of municipal and industrial wastes from the western Delta, and drainage from the San Joaquin Valley, into channels downstream from points of usable good quality water. All of the plans are comparable in this respect, except that these wastes would aid in repulsion of ocean salinity incursion with any of the alternatives of the Delta Water Project. Fresh water required for operation of locks and the fishway would be lost with a barrier at Chipps Island, but would be available for use downstream of the control structures with any of the alternatives of the Delta Water Project. A small amount of conservation yield could be obtained from limited storage in Delta channels with a barrier at Chipps Island, but alternatives of the Delta Water Project would not provide conservation storage.



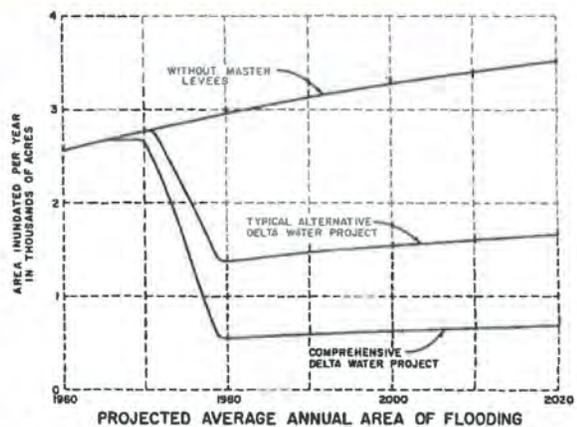
The amount of water otherwise necessary for salinity control which could be salvaged by Delta water facilities would vary with time, as indicated by the above graph. The amount of salvaged water would be the difference between demands on upstream storage for outflow without any works in the Delta, and demands with such works in operation. The estimated average annual salvage during the next 60 years would be 1,900,000 acre-feet with the Chipps Island Barrier Project, and 2,050,000 acre-feet with any of the alternative plans for the Delta Water Project.

PROJECT ACCOMPLISHMENTS — FLOOD AND SEEPAGE CONTROL

Only the Typical Alternative Delta Water Project and the Comprehensive Delta Water Project would provide flood and seepage control benefits to the Delta. However, all plans would include remedial works made necessary by adverse effects of flood or tidal water stages changed by project operation. These would be particularly necessary with the Chipps Island Barrier Project.

Project flood control benefits would result from reduction in the frequency of flooding, and from reductions in costs of maintaining Delta levees. It is emphasized that complete flood protection could not be assured, as the inflow to the Delta could exceed the designed capacity of the channels. Furthermore, although the stability of the master levees would be significantly greater than the stability of existing levees, the character of organic foundation soils is such that unforeseen stability problems might develop in some areas. For these reasons, emphasis should be given to zoning Delta lands lying below flood levels for uses involving low-value improvements such as farming, and precluding residential development. While complete flood protection for the Delta lands could not be assured under project conditions, there would be a marked improvement in protection over existing conditions which will worsen as land elevations in the Delta continue to subside.

About 103,000 acres would be benefited by master levees included in the Typical Alternative Delta Water Project, and about 143 miles of levees along interior channels would no longer require costly maintenance for high flood stages. The estimated average annual benefit of reduced flooding and operation and maintenance costs would be about \$4.65 per acre. Master levees of the Comprehensive Delta Water Project would benefit about 252,000 acres and would reduce expensive maintenance on 295 miles of interior channel levees. The estimate of average annual flood control benefits is about \$3.60 per acre.



Seepage control benefits would be made available by lowering water levels in interior channels created by the Typical Alternative Delta Water Project or by the Comprehensive Delta Water Project. In addition, lower water levels would prolong the economic life of certain islands. These benefits and the extent of increased economic life would depend upon lowering average water levels in the interior channels. A general lowering of five feet could be made without adversely affecting depths for small craft, except in isolated locations, or the majority of water supply siphons. Based upon a five-foot lowering of water levels, seepage control benefits, averaging an estimated \$0.50 per acre for 103,000 acres, would be available with the Typical Alternative Delta Water Project. The Comprehensive Delta Water Project would afford seepage benefits to 252,000 acres, and the estimated average annual benefit would be \$0.45 per acre.

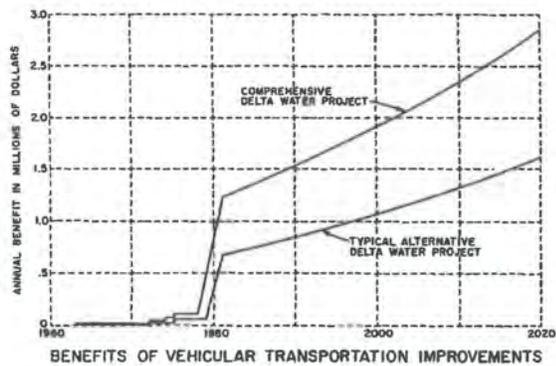
Project Accomplishments — vehicular transportation

The two basic problems of the existing road system in the Delta are (1) inadequate channel crossings and circuitous routes, with resultant excessive travel times, and (2) disproportionately high costs of maintenance. Projects involving master levees for flood control in the Delta would afford means for reducing both of these problems. However, the Chipps Island Barrier Project would provide no benefits to vehicular transportation, and the Single Purpose Delta Water Project would provide only incidental benefits of this kind.

The master levee system of the Typical Alternative Delta Water Project would include twenty-two channel closures upon which roads could be placed, and operation of four existing ferries could be terminated. The Comprehensive Delta Water Project would include thirty-nine channel closures providing new access and would eliminate the need for six ferries.

Roads on the landward berms of the master levees would be more stable and less difficult to maintain than existing roads on levee crowns. Driving on present levee roads is hazardous, as evidenced by frequent drownings when vehicles run off levees into adjacent channels. Passing clearance is often limited by parked vehicles. In addition to improved safety with roads on the levee berms, there would be ample width for parking off the roadways.

To realize the anticipated and needed development of recreation in the Delta, it will be necessary to greatly improve vehicular access. Realization of about 7,000,000 recreation-days each year by 1990, and almost 14,000,000 by 2020 will, in large degree, be dependent upon the improved vehicular access that could be provided by multipurpose use of the master flood control levees.



The project benefits from enhancement of the road system would be a combination of savings in maintenance costs and savings in costs to Delta traffic associated with farming and to the recreationists. Savings to Delta interests reflect reduced costs of general travel and produce shipments through decreased travel times and distances. Savings to the recreationists were based upon projected recreation use and decreased travel times and distances.

Project Accomplishments — Recreation

While some detriments to recreation are inherent in construction of any facilities in the Delta, substantial benefits would also be achieved. As has been stated, improvements in the road network would make more of the Delta accessible to recreationists. Land areas reclaimed by spoiling material from dredging of channels onto small islands would afford space for development of recreation service facilities and picnic areas. Project works at the head of the Cross-Delta Canal would be constructed to provide clearance for the majority of pleasure craft, thereby connecting the Sacramento and Mokelumne River systems. Elimination of flood and tidal effects from interior channels would make it possible to control water levels in those channels, reducing costs of maintaining waterfront recreation facilities. Furthermore, costs of new facilities would be less than for present conditions. The safety of the boating public is becoming a significant problem, and the incompatibility of high-speed boating, cruising, and skiing with fishing and swimming creates related safety problems. Local authorities will find it desirable and even necessary to designate certain Delta channels for specified types of recreation use. The interior project channels would lend themselves to this type of zoning and also to simplified enforcement.

Planning and construction of recreational developments in the Delta should involve local governmental agencies. Most project channel closures would not be constructed for eight or more years, and changing recreation patterns should be considered in future selection of remedial and enhancement facilities. Needs for small craft locks and boat portages should be re-evaluated at the time closures are constructed.

The most important form of recreation in the Delta is fishing. In terms of recreation-days, fishing is three times as important as the next most popular sport—cruising. A project which would cause a major reduction in fish populations might also cause very adverse effects on the recreation. In this connection the Chipps Island Barrier Project would result in losses of striped bass sev-

eral times as great as those anticipated with any of the alternative plans for the Delta Water Project.

It is recognized that cruising, sailing, and water skiing are rapidly gaining in popularity in the Delta, and that construction of master flood control levees and channel closures would interfere with unrestricted boating access to certain channels. However, access would be provided through small craft locks or portage facilities at many of the channel closures, thus reducing the detriment primarily to short delays. Studies in other areas indicate that lockage delays are not too important to the majority of pleasure boatmen.

The following tabulation summarizes physical features of the several alternative projects which would affect recreational activity and growth in the Delta.

Item	Chipps Island Barrier Project	Single Purpose Delta Water Project	Typical Alternative Delta Water Project	Comprehensive Delta Water Project
Control structures	1	4	3	4
Channel closures	1	10	23	41
New master levees (miles)	0	0	90	185
Fishways	1	1	1	1
Principal fish screens	0	2	1	1
Barge locks	1	1	1	1
Small craft locks	0	0	2	5
Small craft portage facilities	0	0	5	17
Open navigable area (acres)	49,300	49,400	45,800	42,600
Navigable interior area (acres)	0	100	3,700	6,900
Open navigable channels (miles)	700	695	590	450
Navigable interior channels (miles)	0	5	110	250
Project roads (miles)				
Paved	0	0	33	70
Graveled	0	1	47	109
State and county levee roads (miles)	295	295	279	265
New inter-island accesses (closures)	0	6	22	39
New public waterfront land (acres)				
From master levees	0	0	1,900	3,600
From dredge spoils	0	1,900	1,900	2,300
Normal overhead clearance through Delta Cross Channel (feet)	6	16	16	16

Project Accomplishments — fish and wildlife

Any Delta water facilities would affect the habitat of fish in the Delta, but would have little effect, if any, on Delta wildlife. While it is known that the Delta plays an important role in the life cycle of migratory fish, and also supports resident sport fish, insufficient biological information is available with which to clearly define the potential effects of Delta water facilities. Nevertheless, relative comparisons of the alternative projects can be made.

Studies of effects of the Delta water facilities and export pumping plants were made by the California Department of Fish and Game in co-operation with the Department of Water Resources. Cooperative experiments with a full-scale vertical baffle fishway indicate that all migratory species would use this type of fishway. The conclusions of the Department of Fish and Game regarding the alternative projects are as follows:

"Chippis Island Barrier

"This project would be the most damaging of the four studied. It would probably cause a disastrous reduction of almost all species of fish found in the Delta. These losses would be brought about by the rapid salinity and temperature change across the barrier, loss of current in the fresh-water pool for migration direction, striped bass spawning eliminated due to lack of current behind the barrier, loss of important food items, and a threefold increase in pumping of water at Tracy. The amount of

Sacramento River water being drawn around the tip of Sherman Island to the pumping plant would be greatly increased. Downstream migrants of the Sacramento River would be diverted to the pumps in large numbers. These fish would have to be screened at the pumps and returned to the river channel below the influence of this current. This condition would be a serious detriment to all fish using the Delta.

"Single Purpose Delta Water Project

"This project would be the least detrimental of the four projects studied. The reversal of flow around Sherman Island would be eliminated. Major fish screens would be installed at the Cross-Delta Canal headworks and at the head of Georgians Slough. Therefore, downstream migrants in the Sacramento River would be guided down the western side of the Delta out of the influence of the pumps. In general, fish and eggs in the western portion of the Delta would no longer be affected by the pumps. The replacement of the hundreds of existing small irrigation siphons in the western Delta by screened irrigation supply systems would further reduce losses of small fish. In these respects conditions for fish in the Delta would be improved.

"Fish habitat would not be reduced in the Delta. The one channel that would be isolated under this project would be insignificant. An important effect of the project would be the increased reversal of flow in the San Joaquin River above the Cross-Delta Canal crossing. This reversal of flow would occur during an average of seven months of the year under full project operation. We were unable to evaluate the effect of the reversal. However, it could result in serious losses to salmon that now spawn in San Joaquin River tributaries south of the Mokelumne River. Most seriously affected would be upstream migrating salmon. The amount of water pumped from the Delta would be increased threefold. This increased withdrawal of water would divert proportionately more fish than is presently being diverted.

"Typical Alternative Delta Water Project

"This project would be the second least detrimental. Losses would be expected to be greater than the Single Purpose Project because of the reduction of 8 percent of the fish habitat through channel closures, and partial

channelization of the Cross-Delta Canal. The channelization would cause a detriment by channeling the fish toward the pumps by a more direct route. Water diversions into isolated channels would be screened and loss of fish would be reduced. However, loss of eggs and fry would be unavoidable. Other project conditions would be the same as the Single Purpose Project.

"Comprehensive Delta Water Project

"This project would be the third least detrimental. It would cause greater loss than the Typical Alternative Project because of the reduction of 14 percent of the fish habitat, and the complete channelization of the Cross-Delta Canal. This would channel the fish directly to the pumps. Other project conditions would be the same as in the Single Purpose Project.

"From the foregoing, if one of the above-named projects is to be built in the Delta, the Department of Fish and Game would favor the Single Purpose Delta Water Project. However, all projects will cause serious fisheries problems and an intensive study would be required to solve these problems."

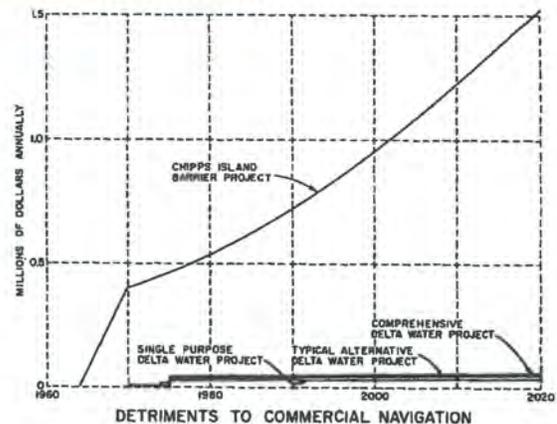
Formulation of project plans reflects comments and recommendations of the Department of Fish and Game. Fish screens would be installed at the heads of channels diverting water southward from the Sacramento River. Such screens would reduce the present rates of fish losses at the Tracy Pumping Plant and in numerous other diversions in the Delta. Project pumping plants would also be screened. Hundreds of diversion siphons and pumping plants in the Delta are not screened at this time. However, project diversions into interior channels would be screened, and the fish populations enhanced thereby.

Project Accomplishments — navigation

Commercial and military navigation in the Delta would be adversely affected in varying degrees by any Delta water facilities, but some potential benefits would also be realized through increases in channel depths and widths.

The Chipps Island Barrier Project would cause the greatest detrimental effect to navigation, since all traffic between the San Francisco Bay system and Delta points would have to pass through locks. At present, an average of about 570 deep-draft commercial vessels, and 10,300 tug and barge tows and small vessels pass Chipps Island each year. It is estimated the annual transits would increase to 2,800 and 40,000, respectively, by 2020. The volume of future military traffic cannot be realistically estimated, nor is it possible to place a reasonable value on its lost time. The increased tidal amplitude downstream from a barrier at Chipps Island would necessitate additional dredging in some areas to provide the required minimum navigation depth. This increased depth might cause additional maintenance dredging which frequently results from deepening navigation channels.

Completion of the Sacramento Deep Water Channel will divert most of the tug and barge traffic away from the Sacramento River between the vicinities of Rio Vista and Sacramento. The traffic which would pass the site of the Sacramento River control structure would generally be limited to that originating from or destined to points of call downstream from the vicinity of Freeport. It is anticipated that the volume of this traffic would increase from 600 transits per year after completion of the Sacramento Deep Water Channel to about 900 transits per year by 2020.



Construction of control structures and closures on channels south of the San Joaquin River in the heart of the Delta would increase time and distance for tug and barge travel to a sugar refinery near Tracy. However, channel improvements would permit use of larger barges, if shipping concerns should elect to do so. As this advantage would be subject to many factors in an operator's business which cannot be readily predicted, benefits were not claimed for possible use of larger barges.

Construction of a master levee system would necessitate relocation of some sugar beet loading docks in the Delta. However, improved roads would tend to compensate for increased hauls to relocated docks.

Economic Aspects — Benefits, Detriments, and Costs

Only direct, tangible benefits and detriments to the initial recipient were evaluated for comparison with direct costs. However, it must be recognized that direct, intangible benefits and detriments would also result from project operation. The ratios of benefits to costs provide a guide to project selection, but consideration should also be given to the net benefits in making the final project selection. Although variations in benefit-cost ratios can result from different basic economic premises, the relative comparison of alternative projects would not change.

Certain significant benefits and detriments were not evaluated. All alternative plans would improve the quality of water exported to the San Joaquin Valley and reduce the drainage problems there. Only direct benefits of flood protection to agriculture were evaluated, but this protection would also benefit principal highways and urban developments. The estimated recreation benefits from land made available for development were considered to be equivalent to the value of the land. Intangible benefits would also accrue to recreation, and intangible detriments would result from reduced convenience of access into some channels. Only detriments to commercial fishing are shown, but intangible detriments to sport fishing would also accrue.

All estimates of benefits, detriments, and costs, including amortization, operation, and maintenance, reflect annual equivalent values for the period 1960-2020. An interest rate of four percent per annum was used in the analysis.

Attention is invited to the net benefits of the Comprehensive Delta Water Project which are less than the net benefits of the Typical Alternative Delta Water Project. This condition results from inclusion of economically unjustified flood control for large

areas south of the San Joaquin River wherein the direct benefits would be less than the costs. However, flood control for some of the critical areas south of the San Joaquin River warrants further study.

ESTIMATED ANNUAL BENEFITS, DETRIMENTS, AND COSTS (In thousands of dollars)				
Item	Chappa Island Barrier Project	Single Purpose Delta Water Project	Typical Alternative Delta Water Project	Compre- hensive Delta Water Project
Benefits				
Water salvage (for export) ———	8,337	8,963	8,963	8,963
Improved water quality— municipal, industrial, and irrigation ———	880	880	880	880
Supplemental municipal and industrial water supply ———	503	1,343	1,343	1,343
Flood and seepage control ———	—	—	530	1,022
Vehicular transportation ———	—	—	410	734
Recreation ———	—	19	37	58
Total Benefits ———	9,720	11,205	12,163	13,000
Detriments				
Commercial navigation ———	617	18	24	27
Commercial fisheries ———	844	203	254	287
Total Detriments ———	1,461	221	278	314
BENEFITS MINUS DETRIMENTS ———	8,259	10,984	11,885	12,686
Costs				
Capital amortization ———	6,825	1,358	1,965	2,846
Annual operation and maintenance ———	2,077	691	884	1,136
Total Costs ———	8,902	2,049	2,849	3,982
NET BENEFITS ———	-643	8,935	9,036	8,704
BENEFIT-COST RATIO ———	0.91:1	5.36:1	4.17:1	3.19:1

Economic Aspects—allocation of costs

The capital and operational costs of each of the alternative projects were allocated among the project functions by the Separable Costs-Remaining Benefits method. In this method, all costs assignable to single functions are identified, and the remaining multipurpose costs are distributed among the functions in proportion to the benefits provided by the project, or in proportion to the lowest cost alternative means of providing equivalent benefits. The lowest value of either the benefits or alternative means is used as a limit.

The basic allocations were made in terms of present worth values (1960) of all costs and benefits. This procedure properly

accounts for the time-value of money (interest) and the wide variation in dates of expenditure of money and realization of benefits. Allocations of the capital and operational costs in terms of actual expenditures, rather than present worth, are indicated in the accompanying tabulations to permit convenient comparisons with total amounts of these costs.

Attention is invited to the allocated costs of the Chipps Island Barrier Project. The costs which would be allocated to water salvage and western Delta water supply were limited by the lowest cost alternative means of providing equivalent benefits, which would be the Single Purpose Delta Water Project. The values

ALLOCATION OF ESTIMATED CAPITAL COSTS (In thousands)				
Item	Chipps Island Barrier Project	Single Purpose Delta Water Project	Typical Alternative Delta Water Project	Compre- hensive Delta Water Project
Water salvage (for export).....	\$38,384	\$38,444	\$38,662	\$41,655
Western Delta water supply ¹	8,098	8,111	8,156	8,788
Flood and seepage control.....	none	none	11,900	25,159
Vehicular transportation.....	none	none	8,132	18,083
Recreation land.....	none	none	681	1,429
Unassigned local costs.....	155,490	none	none	2,945
TOTALS	\$201,972	\$46,555	\$67,531	\$98,059

¹ For improvement in quality and supplemental water supplies. Allocated costs include payments properly attributable to upstream water users for future effects on the western Delta area due to increased water use in areas tributary to the Delta. Definite values attributable to upstream water users would be dependent upon resolution, negotiated or otherwise, of water rights problems.

shown for the Chipps Island Barrier Project are slightly less than those for the lowest cost alternative, since the funds for the former would be expended at an earlier date. The allocations to both projects in present worth values would be the same. As the costs which may be properly allocated to water salvage and western Delta water supply are less than the total cost, a portion of the costs of the Chipps Island Barrier Project are shown as unassigned local costs. If these costs are not repaid from sources other than water users, the Chipps Island Barrier Project would be financially infeasible.

Attention is also invited to the allocated costs of the Comprehensive Delta Water Project which indicate certain unassigned local costs. In this case the costs of flood and seepage control in areas south of the San Joaquin River exceed the direct benefits of flood and seepage control in these areas. Therefore, the allocation to flood and seepage control for these areas was limited to the benefits. These flood and seepage control features of the Comprehensive Delta Water Project are not economically justified.

After the costs were allocated to principal project functions, it was necessary to make suballocations among particular groups of beneficiaries. These suballocations, which are indicated on the following pages, were also made by the Separable Costs-Remaining Benefits method and were the basis for computing the average annual costs to beneficiaries throughout a 60-year period. In the adjoining tabulations the amounts allocated to vehicular transportation include some costs which would be suballocated to recreation access to reflect the benefits to the public for improved access to recreation areas of the Delta. It is estimated that about \$7,075,000 of the capital costs and \$92,000 of the annual operational costs for vehicular transportation under the Typical Alternative Delta Water Project would be suballocated to recreation access. Under the Comprehensive Delta Water Project these respective amounts would be \$15,123,000 and \$176,000. These foregoing amounts would be in addition to the basic allocation to recreation land, which reflects the value of lands made available for recreational development.

ALLOCATION OF ESTIMATED AVERAGE ANNUAL OPERATIONAL COSTS				
(In thousands)				
Item	Chipps Island Barrier Project	Single Purpose Delta Water Project	Typical Alternative Delta Water Project	Compre- hensive Delta Water Project
Water salvage (for export).....	\$395	\$571	\$506	\$483
Western Delta water supply ²	83	120	107	102
Flood and seepage control.....	none	none	156	292
Vehicular transportation.....	none	none	106	210
Recreation land.....	none	none	9	16
Unassigned local costs.....	1,599	none	none	34
TOTALS	\$2,077	\$691	\$884	\$1,137

² For improvement in quality and supplemental water supplies. Allocated costs include portions properly attributable to upstream water users for future effects on the western Delta area due to increased water use in areas tributary to the Delta. Benefits values attributable to upstream water users would be dependent upon resolution, negotiated or otherwise, of water rights problems.

Economic Aspects—costs of project services

It was assumed that all project costs not specifically declared nonreimbursable would be repaid by all beneficiaries of project functions. In accordance with the contracting principles established for water service under the State Water Resources Development System, the conservation features of the Delta water facilities will be financially integrated with other conservation features of the system. The cost of supplemental water required by Delta water users will include the Delta Water Charge and an allocated transportation charge.

Estimates of present and future costs of water supply in the western Delta area were predicated on continuation of current federal salinity control policy, which limits the minimum regulated outflow from the Delta to 1,500 second-feet, considered necessary to afford satisfactory quality control at the Central Valley Project pumping plants. Estimates of increased future costs without the State Water Facilities reflect continued upstream depletion of surplus water in the Delta, and represent average costs during the next 60 years. Estimates of costs shown for project conditions also reflect average costs during the next 60 years. It is empha-

sized that the estimates are comparative average annual costs during a 60-year period and do not reflect estimates of year by year prices which may be established.

The amounts allocated for repayment were limited by the lowest cost alternative means of accomplishing equivalent benefits. It may be noted that the costs of water supply in the western Delta area would be the same for the Chipps Island Barrier Project,

Single Purpose Delta Water Project, and Comprehensive Delta Water Project. The Single Purpose Delta Water Project would be the lowest cost alternative means of providing water supplies and it limits the amount which may be allocated under the other two projects.

The costs of the Typical Alternative Delta Water Project allocated to water salvage would amount to an average of \$0.64

COMPARATIVE SUMMARY OF ESTIMATED AVERAGE ANNUAL COSTS OF WATER SUPPLY IN WESTERN DELTA AREA WITH AND WITHOUT STATE WATER FACILITIES DURING 1960-2020¹

Item	Future cost without State Water Facilities	Chipps Island Barrier Project	Single Purpose Delta Water Project	Typical Alternative Delta Water Project	Comprehensive Delta Water Project
Contra Costa Canal service, \$/acre-foot ²	14.52*	11.66	11.66	11.64	11.66
Substitute municipal and industrial water supply, \$/acre-foot.....	4	4	3.45	3.33	3.45
Supplemental water supply ³					
Contra Costa County, \$/acre-foot.....	15.20	9.06	9.06	8.92	9.06
Solano County, \$/acre-foot.....	17.00	8.82	8.82	8.68	8.82
Agricultural water supply, \$/acre ⁴	7.91 ⁵	1.50	1.50	1.45	1.50

¹ Average of estimated costs during a 60-year period. Values do not necessarily reflect prices for project services.

² For all municipal and industrial water served from the Contra Costa Canal. All costs include \$11 per acre-foot for water from the canal. Allocated costs reflect benefits from improved quality.

³ Includes estimated excess water treatment due to salinity degradation.

⁴ Estimated future cost of high quality water from Delta channels will vary between \$2.00 and \$5.00 per acre-foot, depending upon plant locations and operations.

⁵ All supplemental project water available through operation of the Montezuma Aqueduct.

⁶ Costs reflect average for about 24,000 acres in the western Delta lowlands.

⁷ Cost expressed as loss per acre due to salinity incursion.

per acre-foot for all water exported from the Delta by the State Water Facilities. Similar costs with the other projects would be about \$0.66 per acre-foot.

It is anticipated that a federal contribution would be provided for flood and seepage control. This contribution, tentatively estimated at \$10,123,000 for the Typical Alternative Delta Water Project and \$16,020,000 for the Comprehensive Delta Water Project, would probably reflect current federal policy for allocation of costs of levee improvements, and would be based on reduced flood damages and net savings from reduced levee maintenance costs. Local costs of maintaining existing levees incorporated in the master levee system probably would not be directly met by local districts. Maintenance would be included in the total project costs, and a portion of these costs would be allocated to local beneficiaries.

The total project costs allocated to vehicular transportation were suballocated to the benefited counties and to the general public. The allocation to the general public reflects enhancement of recreation, and was considered nonreimbursable.

COMPARATIVE SUMMARY OF ESTIMATED ANNUAL COSTS OF
FLOOD AND SEEPAGE CONTROL WITH AND WITHOUT
DELTA WATER FACILITIES DURING 1960-2020¹
(Per acre)

Item	Island-group					
	Isleton	Lodi	Holt	Tracy	Brentwood	Sherman
Present control cost	\$8.00	\$8.00	\$7.50	\$6.50	\$7.50	\$9.00
Future control cost without a project	10.85	10.29	9.16	7.50	8.83	13.10
Annual damage savings with a project	2.80	1.65	0.35	0.20	1.32	3.12
Typical Alternative Delta Water Project						
Allocated project cost	2.04	2.17				
Interior levees and pumping cost	7.96	7.34				
Total control cost	\$10.00	\$9.51				
Net savings	3.65	2.43				
Comprehensive Delta Water Project						
Allocated project cost	2.15	2.29	2.09	2.29	2.38	2.51
Interior levees and pumping cost	7.96	7.34	6.66	4.97	6.04	10.57
Total control cost	\$10.11	\$9.63	\$8.75	\$7.26	\$8.42	\$13.10
Net savings	3.54	2.31	0.76	0.44	1.73	3.12

¹ Average of estimated costs during a 60-year period. Values do not necessarily reflect prices for project services.

COMPARATIVE SUMMARY OF ESTIMATED ANNUAL COSTS AND SAVINGS
WITH VEHICULAR TRANSPORTATION IMPROVEMENTS DURING 1960-2020¹

Item	Contra Costa County	San Joaquin County	Sacramento County
Typical Alternative Delta Water Project			
Allocated project cost	\$—	\$41,600	\$4,500
Operational savings to present road system	—	38,500	1,100
Savings to road users	—	265,700	105,200
Net savings	—	268,800	101,800
Comprehensive Delta Water Project			
Allocated project cost	13,500	95,700	11,200
Operational savings to present road system	2,900	59,300	5,000
Savings to road users	82,000	465,600	119,700
Net savings	71,400	429,200	135,500

¹ Average of estimated costs during a 60-year period. Values do not necessarily reflect prices for project services.
NOTE: There would not be any vehicular transportation improvements in portions of other counties within the Delta.

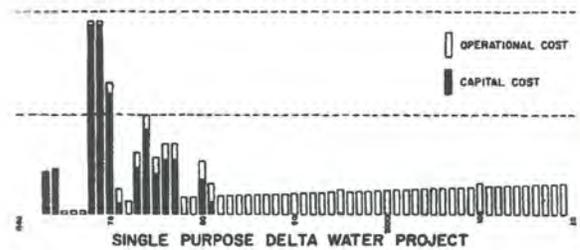
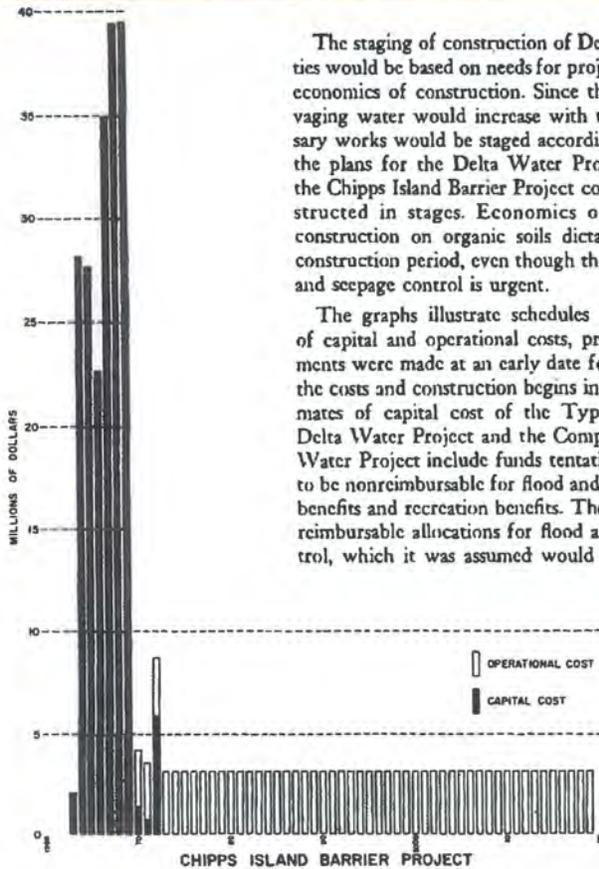
ECONOMIC ASPECTS — RECAPITULATION

The staging of construction of Delta water facilities would be based on needs for project services and economics of construction. Since the need for salvaging water would increase with time, the necessary works would be staged accordingly for any of the plans for the Delta Water Project. However, the Chipps Island Barrier Project could not be constructed in stages. Economics of master levee construction on organic soils dictate an extended construction period, even though the need for flood and seepage control is urgent.

The graphs illustrate schedules of expenditures of capital and operational costs, provided arrangements were made at an early date for repayment of the costs and construction begins in 1963. The estimates of capital cost of the Typical Alternative Delta Water Project and the Comprehensive Delta Water Project include funds tentatively considered to be nonreimbursable for flood and seepage control benefits and recreation benefits. The estimated non-reimbursable allocations for flood and seepage control, which it was assumed would be provided by

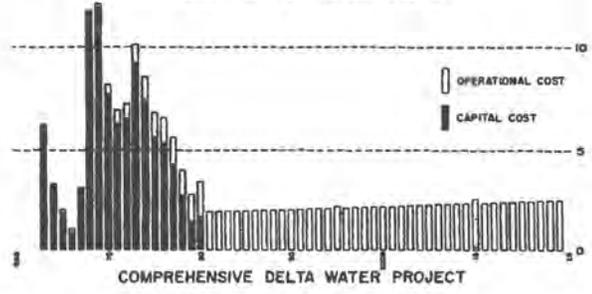
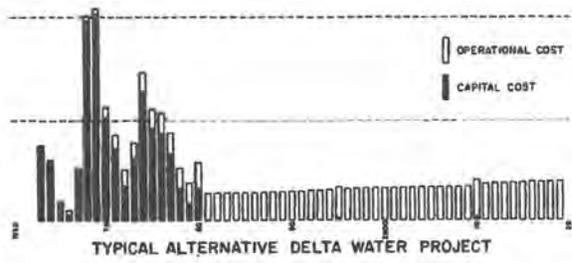
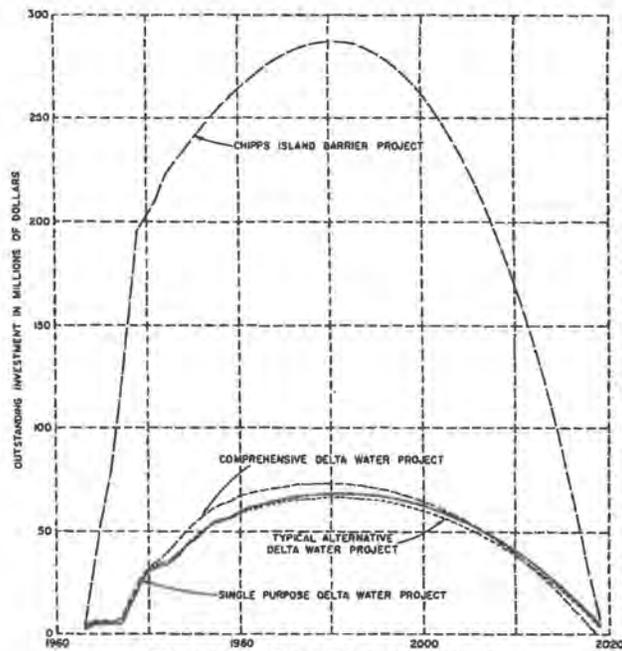
the Federal Government, amount to about \$10,123,000 for the Typical Alternative Delta Water Project and \$16,020,000 for the Comprehensive Delta Water Project. The estimated allocation of capital costs to recreation land and access would be \$7,756,000 with the Typical Alternative Delta Water Project and \$16,552,000 with the Comprehensive Delta Water Project. The corresponding allocations of annual operational costs would be \$101,000 and \$192,000, respectively. It was assumed that the allocated capital costs for recreation land and access would be nonreimbursable and be borne by the State of California. It was also assumed that the annual operational costs would be reimbursable from gas tax funds and nominal rental charges on land made available for recreation development.

The allocated reimbursable costs for water salvage and western Delta water supply would be repaid by water charges. The charges would be based on integrated repayment of other necessary State Water Facilities. The reimbursable costs of flood



and seepage control and vehicular transportation improvements would be repaid by annual payments from the beneficiaries of flood and seepage control and from the counties, respectively. It was assumed that unassigned local costs of the Chipps Island Barrier Project would be recovered in annual payments in proportion to the projected industrial tax base. This assumed method of repayment would necessitate a rate of about \$1.19 per \$100 of assessed valuation throughout a 60-year period. It was also assumed that unassigned local costs of the Comprehensive Delta Water Project would be recovered in annual payments based upon the total acreage of land south of the San Joaquin River which would benefit from flood and seepage control. An annual payment of \$0.86 per acre would be required.

The comparative investment requirements for allocated reimbursable costs, including interest and operational costs, of the several projects are shown in the accompanying graph.



CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

GENERAL

The plans for Delta water facilities described in this report are consistent with and would accomplish the water development purposes embraced in the California Water Resources Development Bond Act approved on November 8, 1960. Additional features could be incorporated to provide flood and seepage control, transportation, and recreation benefits.

WATER SUPPLY

Problems of water quality in the western portion of the Delta necessitate early construction of facilities to provide suitable water supplies for present and future uses.

WATER SALVAGE

Without physical control works in the Delta, increasingly greater quantities of fresh water from upstream storage will be required to repel ocean salinity and maintain good quality water for use within and export from the Delta. Water salvage will be dependent upon coordinated operation of regulatory storage, export works, and Delta water facilities.

FLOOD AND SEEPAGE CONTROL

The magnitude of flood damage and the costs of flood and seepage control will become increasingly greater as the land surface of many Delta islands continues to subside. A master levee system would reduce these costs. Early initiation of construction is necessary to economically provide stable levees.

VEHICULAR TRANSPORTATION AND RECREATION

Improvements to the road system in the Delta are needed to reduce costs of vehicular shipment and to develop the recreation potential to accommodate an estimated 7,000,000 recreation-days in 1990, and 14,000,000 recreation-days in 2020.

DELTA WATER FACILITIES

1. The Chipps Island Barrier Project would be functionally feasible, would provide adequate water supplies of acceptable quality for the Delta, and would salvage water otherwise needed for salinity control amounting to an estimated annual average of 1,900,000 acre-feet based on a 60-year period. However, the net benefits would be less than the project costs in a ratio of 0.93:1. Therefore, the project would not be economically justified. The project would not be financially feasible, unless revenues could be obtained from local taxes in addition to revenues derived from water sales.

2. The alternative plans of the Delta Water Project would be functionally feasible, would permit export of full water demands on the State Water Facilities, and would provide adequate water supplies, both in quality and quantity, for the Delta. The project would salvage water otherwise needed for salinity control amounting to an estimated annual average of 2,050,000 acre-feet based on a 60-year period.

3. The Chipps Island Barrier Project would probably cause disastrous reductions in the fisheries resource of the Delta. The Single Purpose Delta Water Project would be the least detrimental of all projects and would reduce some losses of fish and

Advanced Planning, Design, and Operation Studies

It is anticipated that the results of the planning studies summarized in this bulletin and described in detail in the supporting office reports will be the basis for selection of a general plan for the Delta Water Project. However, it is recognized that definite plans, designs, and operation programs will be dependent upon further studies and negotiations on certain aspects of the project plans.

LOCAL ACTION

Early consideration should be given by local agencies to the extent of their interest in facilities which could be constructed to provide local benefits. Acute water supply problems in the western Delta, particularly in the agricultural lowlands, warrant early resolution of interest in plans for water supply facilities. Consideration should be given to creation of master districts to represent related areas of interest in flood and seepage control benefits.

UNITED STATES CORPS OF ENGINEERS

Studies for flood and seepage control benefits and estimates of the federal contribution were based on methods and preliminary studies of the Corps of Engineers. Conditions in the Delta do not precisely fit standard procedures, and it will be necessary for the Corps of Engineers to make a detailed review of these studies to determine the extent of federal interest.

UNITED STATES BUREAU OF RECLAMATION

The Delta Water Project would enhance the operation of the Federal Central Valley Project by improving and insuring the quality of water exported from the Delta and by providing good quality water in the western Delta area in lieu of salinity control. The extent of federal interest in these benefits should be jointly analyzed by the Bureau of Reclamation and the Department of Water Resources.

HIGHWAYS

The channel closures and wide landward berms of the master levee system offer excellent opportunities for enhancing the road network in the Delta. Studies should be made by the State Division of Highways and county highway departments of transportation enhancement features, such as better road surfacing and connecting roads, which might be incorporated in the project plans.

FISHERY RESOURCES

To more definitely predict the anticipated project effects on fisheries and to design the fish screens and other remedial measures, it will be necessary to study certain biological aspects of the Delta fisheries. Joint studies of the anticipated project effects should be undertaken by the Department of Fish and Game and the Department of Water Resources.

OTHER STUDIES

Advance planning studies of flow distribution, salinity incursion, water quality, and sedimentation should continue throughout the design and early operation phases of project construction.

Test levee construction now being conducted pursuant to legislative directives will be continued to determine the most economical and efficient means of construction to provide an adequate levee system.

A general plan for remedial recreation facilities and recreation enhancement has been developed. Specific plans for facilities and development of land which can be made available for recreation uses should be prepared by county agencies, the Department of Water Resources, and other appropriate state agencies.

Acknowledgments

BOARD OF CONSULTING ENGINEERS

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COOPERATING AGENCIES

U. S. Corps of Engineers
Sacramento District—flood control and navigation aspects
San Francisco District—preliminary designs, Chipps Island Barrier Project

U. S. Coast and Geodetic Survey—subsidence surveying

California Department of Fish and Game—fish and game studies

Contra Costa County Water Agency—industrial water use studies

University of California
Berkeley—electric analog model of Delta channels
Davis—organic soil salination research
Stanford University—salinity incursion analyses

Parsons, Brinckerhoff, Hall and Macdonald—recreation studies

WESTERN DELTA ADVISORY COMMITTEE

A special Western Delta Advisory Committee was established at the suggestion of the Director of Water Resources to advise the department, primarily on studies of water requirements and plans in the western Delta. Committee membership, which has not endorsed all aspects of this report, included:

<u>Contra Costa County</u>	<u>Sacramento County</u>
W. G. Buchanan, Chairman	Arthur L. Kiefer
Thomas M. Carlson	Jack Hingo
William J. O'Connell	Wahar Rothwell, Secretary
<u>San Joaquin County</u>	<u>Salinas County</u>
L. H. Bradley	Lesell F. Bunn
Clifford B. Bull, Vice-Chairman	Albert M. Jangeneel
Richard G. Sutter	Howard Stoddard
<u>U. S. Bureau of Reclamation</u>	<u>U. S. Corps of Engineers</u>
Richard J. Shukle	William A. Doyle

STAFF

Harvey O. Banks, Director
Department of Water Resources
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Department of Water Resources
William L. Berry, Chief Engineer
Division of Resources Planning
John M. Halsey, Chief
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Albert J. Daleini, Chief
California Aqueduct Section

Investigations by Delta Studies Unit

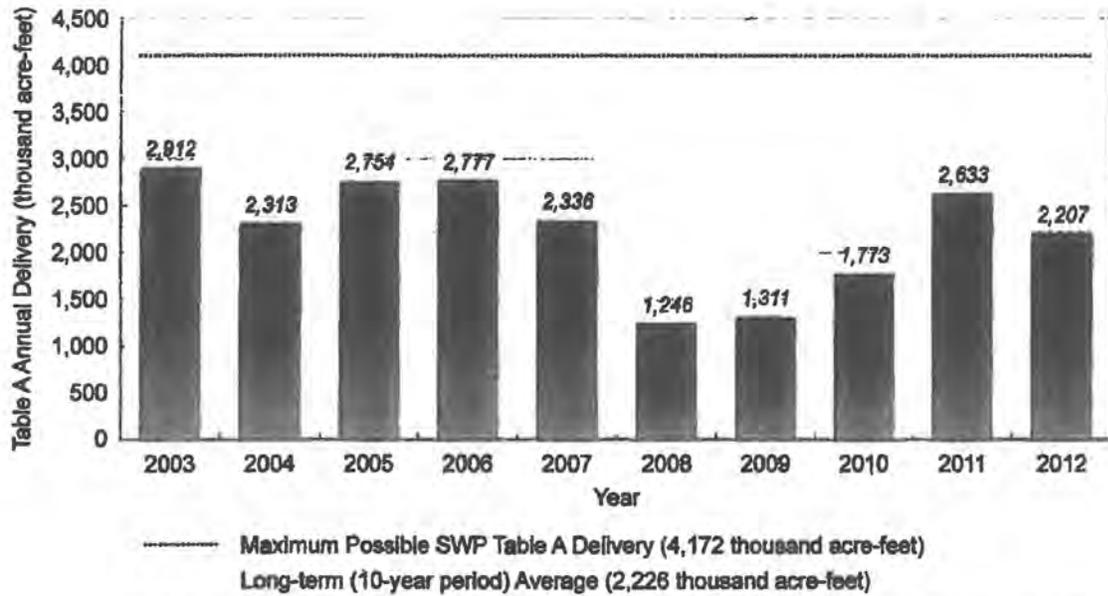
Herbert W. Graydonus, Engineer in Charge
Don H. Nance, Hydrology
Langden W. Owen, Planning and Design
Irene E. Batley, Executive Assistant
Marlene R. Schumaker, Stenographer

Hydrology

Joseph N. Soderstrand
Gerald C. Cox
Glenn R. Peterson
William A. Toomey
John D. Nelson
Ray F. Nelson
Gordon J. McGregor
David K. Marty
Philip W. Nahhas

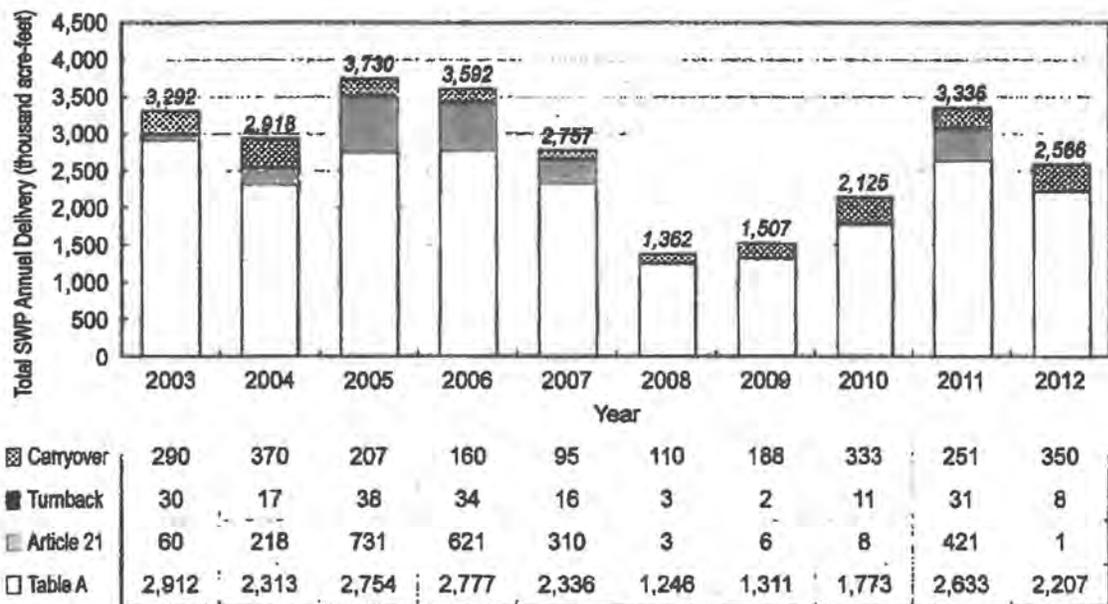
Planning and Design

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Edward A. Cecil
Franklin A. Prouss
Robert G. Potter
Sam I. Ito
Gene E. Linsley
Lee H. Woodward
Edward F. Huntley
Philip T. Zwanich
Virgil D. Buschler
Howard W. Welber



Note: The differences in historical deliveries from the State Water Project Delivery Reliability Report 2011 are due to reclassification of the various components of water delivered to SWP contractors.

Figure 2-3. Historical Deliveries of SWP Table A Water, 2003-2012



Note: The differences in historical deliveries from the State Water Project Delivery Reliability Report 2011 are due to reclassification of the various components of water delivered to SWP contractors.

Figure 2-4. Total Historical SWP Deliveries, 2003-2012 (by Delivery Type)

Dry-Year Deliveries of SWP Table A Water under Future Conditions

Table 6-3 and Figure 6-3 present estimates of future SWP Table A water deliveries during possible drought conditions and compare these estimates with the corresponding delivery estimates calculated for the 2011 Report. Drought scenarios for future conditions are analyzed using the historical drought-period precipitation and runoff patterns from 1922-2003 as a reference, while accounting for future conditions (e.g., land use, climate change).

The results of modeling future conditions under potential drought-year scenarios provide an estimated range of Table A deliveries that can be expected during drought periods.

The 2-year drought period (1976-1977) shows significantly lower Table A deliveries in the 2013 Report than in the 2011 Report (see Figure 6-3), because of modeling refinements (see the technical addendum at <http://baydeltaoffice.water.ca.gov/>) and reclassification of 1975 into a wet year rather than an above-normal year, as was used in the 2011 Report (due to the change in the assumed climate change model). Because 1975 is now considered a wet year in this 2013 Report's model, there are higher fall X2 requirements to meet and more Delta outflow is required in September. This leads to lower reservoir levels at the start of the new water year and smaller deliveries during the upcoming 2-year dry period.

	Long-term Average (1921-2003)		Single Dry Year (1977)		Dry Periods							
	Deliveries (thousand acre-feet)	% of Long-term Average	Deliveries (thousand acre-feet)	% of Long-term Average	2-Year Drought (1976-1977)		4-Year Drought (1931-1934)		6-Year Drought (1987-1992)		6-Year Drought (1929-1934)	
2011 Report	2,465	60%	441	11%	1,457	35%	1,401	34%	1,226	30%	1,365	33%
2013 Report	2,400	58%	453	11%	978	24%	1,263	31%	1,055	26%	1,251	30%

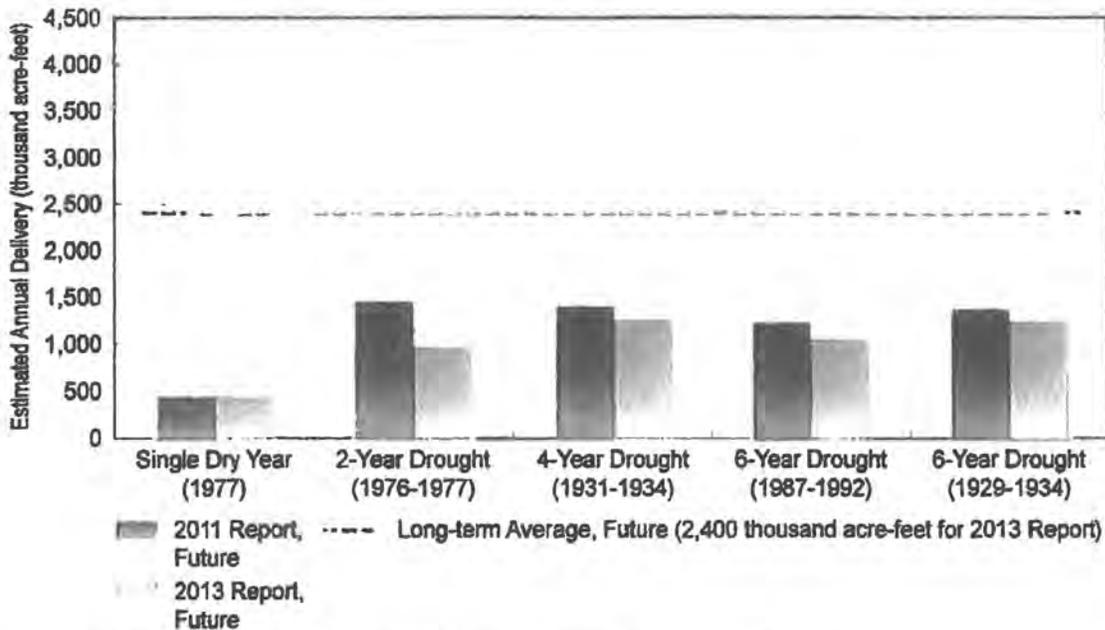


Figure 6-3. Estimated Dry-Period SWP Table A Water Deliveries (Future Conditions)

Title THE CALIFORNIA WATER RESOURCES DEVELOPMENT BOND ACT
Year/Election 1960 general
Proposition type bond (leg)
Popular vote Yes: 3,008,328 (51.5%); No: 2,834,384 (48.5%)
Pass/Fail Pass
Summary

This act provides for a bond issue of one billion, seven hundred fifty million dollars (\$1,750,000,000) to be used by the Department of Water Resources for the development of the water resources of the State.

For **Argument in Favor of California Water Resources Development Bond Act**

Your vote on this measure will decide whether California will continue to prosper.

This Act, if approved, will launch the statewide water development program which will meet present and future demands of all areas of California. The program will not be a burden on the taxpayer; no new state taxes are involved; the bonds are repaid from project revenues, through the sale of water and power. In other words, it will pay for itself. The bonds will be used over a period of many years and will involve an approximate annual expenditure averaging only \$75 million, as compared, for example with \$600 million a year we spend on highways.

Existing facilities for furnishing water for California's needs will soon be exhausted because of our rapid population growth and industrial and agricultural expansion. We now face a further critical loss in the Colorado River supply. Without the projects made possible by this Act, we face a major water crisis. We can stand no more delay.

If we fail to act now to provide new sources of water, land development in the great San Joaquin Valley will slow to a halt by 1965 and the return of cultivated areas to wasteland will begin. In southern California, the existing sources of water which have nourished its tremendous expansion will reach capacity by 1970 and further development must wholly cease. In northern California desperately needed flood control and water supplies for many local areas will be denied.

This Act will assure construction funds for new water development facilities to meet California's requirements now and in the future. No area will be deprived of water to meet the needs of another. Nor will any area be asked to pay for water delivered to another.

To meet questions which concerned, southern California, the bonds will finance completion of all facilities needed, as described in the Act. Contracts for delivery of water may not be altered by the Legislature. The tap will be open, and no amount of political maneuvering can shut it off.

Under this Act the water rights of northern California will remain securely protected. In addition, sufficient money is provided for construction of local projects to meet the pressing needs for flood control, recreation and water deliveries in the north.

A much needed drainage system and water supply will be provided in the San Joaquin Valley.

Construction here authorized will provide thousands of jobs. And the program will nourish tremendous industrial and farm and urban expansion which will develop an ever-growing source of employment and economic prosperity for Californians.

Our Legislature has appropriated millions of dollars for work in preparation, and construction is now underway. It would be tragic if this impressive start toward solution of our water problems were now abandoned.

If we fail to act now to insure completion of this constructive program, serious existing water shortages will only get worse. The success of our State is at stake. Vote "Yes" for water for people, for progress, for prosperity!

**CONTRACT BETWEEN THE STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES
AND THE NORTH DELTA WATER AGENCY
FOR THE ASSURANCE OF A DEPENDABLE WATER SUPPLY OF SUITABLE QUALITY**

THIS CONTRACT, made this 28th day of Jan, 1981, between the STATE OF CALIFORNIA, acting by and through its DEPARTMENT OF WATER RESOURCES (State), and the NORTH DELTA WATER AGENCY (Agency), a political subdivision of the State of California, duly organized and existing pursuant to the laws thereof, with its principal place of business in Sacramento, California.

RECITALS

(a) The purpose of this contract is to assure that the State will maintain within the Agency a dependable water supply of adequate quantity and quality for agricultural uses and, consistent with the water quality standards of Attachment A, for municipal and industrial uses, that the State will recognize the right to the use of water for agricultural, municipal, and industrial uses within the Agency, and that the Agency will pay compensation for any reimbursable benefits allocated to water users within the Agency resulting from the Federal Central Valley Project and the State Water Project, and offset by any detriments caused thereby.

(b) The United States, acting through its Department of the Interior, has under construction and is operating the Federal Central Valley Project (FCVP).

(c) The State has under construction and is operating the State Water Project (SWP).

(d) The construction and operation of the FCVP and SWP at times have changed and will further change the regimen of rivers tributary to the Sacramento-San Joaquin Delta (Delta) and the regimen of the Delta channels from unregulated flow to regulated flow. This regulation at times improves the quality of water in the Delta and at times diminishes the quality from that which would exist in the absence of the FCVP and SWP. The regulation at times also alters the elevation of water in some Delta channels.

(e) Water problems within the Delta are unique within the State of California. As a result of the geographical location of the lands of the Delta and tidal influences, there is no physical shortage of water. Intrusion of saline ocean water and municipal, industrial and agricultural discharges and return flows, tend, however, to deteriorate the quality.

(f) The general welfare, as well as the rights and requirements of the water users in the Delta, require that there be maintained in the Delta an adequate supply of good quality water for agricultural, municipal and industrial uses.

(g) The law of the State of California requires protection of the areas within which water originates and the watersheds in which water is developed. The Delta is such an area and within such a watershed. Part 4.5 of Division 6 of the California Water Code affords a first priority to provision of salinity control and maintenance of an adequate water supply in the Delta for reasonable and beneficial uses of water and relegates to lesser priority all exports of water from the Delta to other areas for any purpose.

(h) The Agency asserts that water users within the Agency have the right to divert, are diverting, and will continue to divert, for reasonable beneficial use, water from the Delta that would have been available therein if the FCVP and SWP were not in existence, together with the right to enjoy or acquire such benefits to which the water users may be entitled as a result of the FCVP and SWP.

(i) Section 4.4 of the North Delta Water Agency Act, Chapter 283, Statutes of 1973, as amended, provides that the Agency has no authority or power to affect, bind, prejudice, impair, restrict, or limit vested water rights within the Agency.

(j) The State asserts that it has the right to divert, is diverting, and will continue to divert water from the Delta in connection with the operation of the SWP.

(k) Operation of SWP to provide the water quality and quantity described in this contract constitutes a reasonable and beneficial use of water.

(l) The Delta has an existing gradient or relationship in quality between the westerly portion most seriously affected by ocean salinity intrusion and the interior portions of the Delta where the effect of ocean salinity intrusion is diminished. The water quality criteria set forth in this contract establishes minimum water qualities at various monitoring locations. Although the water quality criteria at upstream locations is shown as equal in some periods of some years to the water quality at the downstream locations, a better quality will in fact exist at the upstream locations at almost all times. Similarly, a better water quality than that shown for any given monitoring location will also exist at interior points upstream from that location at almost all times.

(m) It is not the intention of the State to acquire by purchase or by proceeding in eminent domain or by any other manner the water rights of water users within the Agency, including rights acquired under this contract.

(n) The parties desire that the United States become an additional party to this contract.

AGREEMENTS

1. **Definitions.** When used herein, the term:

(a) "Agency" shall mean the North Delta Water Agency and shall include all of the lands within the boundaries at the time the contract is executed as described in Section 9.1 of the North Delta Water Agency Act, Chapter 283, Statutes of 1973, as amended.

(b) "Calendar year" shall mean the period January 1 through December 31.

(c) "Delta" shall mean the Sacramento-San Joaquin Delta as defined in Section 12220 of the California Water Code as of the date of the execution of the contract.

(d) "Electrical Conductivity" (EC) shall mean the electrical conductivity of a water sample measured in millimhos per centimeter per square centimeter corrected to a standard temperature of 25° Celsius determined in accordance with procedures set forth in the publication entitled "Standard Methods of Examination of Water and Waste Water", published jointly by the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation, 13th Edition, 1971, including such revisions thereof as may be made subsequent to the date of this contract which are approved in writing by the State and the Agency.

(e) "Federal Central Valley Project" (FCVP) shall mean the Central Valley Project of the United States.

(f) "Four-River Basin Index" shall mean the most current forecast of Sacramento Valley unimpaired runoff as presently published in the California Department of Water Resources Bulletin 120 for the sum of the flows of the following: Sacramento River above Bend Bridge near Red Bluff; Feather River, total inflow to Oroville Reservoir; Yuba River at Smartville; American River, total inflow to Folsom Reservoir. The May 1 forecast shall continue in effect until the February 1 forecast of the next succeeding year.

(g) "State Water Project" (SWP) shall mean the State Water Resources Development System as defined in Section 12931 of the Water Code of the State of California.

(h) "SWRCB" shall mean the Control Board.

(i) "Water year" shall mean the

Public Law 86-488

AN ACT

June 3, 1960
(S. 44)

To authorize the Secretary of the Interior to construct the San Luis unit of the Central Valley project, California, to enter into an agreement with the State of California with respect to the construction and operation of such unit, and for other purposes.

Central Valley
Project, Calif.
San Luis unit.
Construction.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) for the principal purpose of furnishing water for the irrigation of approximately five hundred thousand acres of land in Merced, Fresno, and Kings Counties, California, hereinafter referred to as the Federal San Luis unit service area, and as incidents thereto of furnishing water for municipal and domestic use and providing recreation and fish and wildlife benefits, the Secretary of the Interior (hereinafter referred to as the Secretary) is authorized to construct, operate, and maintain the San Luis unit as an integral part of the Central Valley project. The principal engineering features of said unit shall be a dam and reservoir at or near the San Luis site, a forebay and afterbay, the San Luis Canal, the Pleasant Valley Canal, and necessary pumping plants, distribution systems, drains, channels, levees, flood works, and related facilities, but no facilities shall be constructed for electric transmission or distribution service which the Secretary determines, on the basis of an offer of a firm fifty-year contract from a local public or private agency, can through such contract be obtained at less cost to the Federal Government than by construction and operation of Government facilities. The works (hereinafter referred to as joint-use facilities) for joint use with the State of California (hereinafter referred to as the State) shall be the dam and reservoir at or near the San Luis site, forebay and afterbay, pumping plants, and the San Luis Canal. The joint-use facilities consisting of the dam and reservoir shall be constructed, and other joint-use facilities may be constructed, so as to permit future expansion; or the joint-use facilities shall be constructed initially to the capacities necessary to serve both the Federal San Luis unit service area and the State's service area, as hereinafter provided. In constructing, operating, and maintaining the San Luis unit, the Secretary shall be governed by the Federal reclamation laws (Act of June 17, 1902 (32 Stat. 388), and Acts amendatory thereof or supplementary thereto). Construction of the San Luis unit shall not be commenced until the Secretary has (1) secured, or has satisfactory assurance of his ability to secure, all rights to the use of water which are necessary to carry out the purposes of the unit and the terms and conditions of this Act, and (2) received satisfactory assurance from the State of California that it will make provision for a master drainage outlet and disposal channel for the San Joaquin Valley, as generally outlined in the California water plan, Bulletin Numbered 3, of the California Department of Water Resources, which will adequately serve, by connection therewith, the drainage system for the San Luis unit or has made provision for constructing the San Luis interceptor drain to the delta designed to meet the drainage requirements of the San Luis unit as generally outlined in the report of the Department of the Interior, entitled "San Luis Unit, Central Valley Project," dated December 17, 1958.

(b) No water provided by the Federal San Luis unit shall be delivered in the Federal San Luis service area to any water user for the production on newly irrigated lands of any basic agricultural commodity, as defined in the Agricultural Act of 1949, or any amendment thereof, if the total supply of such commodity as estimated by the Secretary of Agriculture for the marketing year in which the bulk

43 USC 371 and
note.
Preliminary
measures.

Conditions.

63 Stat. 1051.
7 USC 1421 note.

PL 99-546, October 27, 1986, 100 Stat 3050

UNITED STATES PUBLIC LAWS
99th Congress - Second Session
Convening January 21, 1986

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DATA SUPPLIED BY THE U.S. DEPARTMENT OF JUSTICE. (SEE SCOPE)

Additions and Deletions are not identified in this document.

PL 99-546 (HR 3113)
October 27, 1986

An Act to implement the Coordinated Operations Agreement, the Suisun Marsh Preservation Agreement, and to amend the Small Reclamation Projects Act of 1956, as amended, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

**TITLE I -- COORDINATED OPERATIONS
PROJECT OPERATION POLICY**

SEC. 101. Section 2 of the Act of August 26, 1937 (50 Stat. 850) is amended by --

(a) inserting at the beginning "(a)"; and

(b) inserting the following new subsection:

"(b)(1) Unless the Secretary of the Interior determines that operation of the Central Valley project in conformity with State water quality standards for the San Francisco Bay/Sacramento-San Joaquin Delta and Estuary is not consistent with the congressional directives applicable to the project, the Secretary is authorized and directed to operate the project, in conjunction with the State of California water project, in conformity with such standards. Should the Secretary of the Interior so determine, then the Secretary shall promptly request the Attorney General to bring an action in the court of proper jurisdiction for the purposes of determining the applicability of such standards to the project.

"(2) The Secretary is further directed to operate the Central Valley project, in conjunction with the State water project, so that water supplied at the intake of the Contra Costa Canal is of a quality equal to the water quality standards contained in the Water Right Decision 1485 of the State of California Water Resources Control Board, dated August 16, 1978, except under drought emergency water conditions pursuant to a declaration by the Governor of California. Nothing in the previous sentence shall authorize or require the relocation of the Contra Costa Canal intake."

REIMBURSABLE COSTS

SEC. 102. Section 2 of the Act of August 26, 1937 (50 Stat. 850) is amended by inserting the following new subsection:

"(c)(1) The costs associated with providing Central Valley project water supplies for the purpose of salinity control and for complying with State water quality standards identified in exhibit A of the 'Agreement Between the United States of America and the Department of Water Resources of the State of California for Coordinated Operation of the Central Valley Project and the State Water Project' dated May 20, 1985, shall be allocated among the project purposes and shall be reimbursed in accordance with existing Reclamation law and policy. The costs of providing water for salinity control and for complying with State water quality standards above those standards identified in the previous sentence shall be nonreimbursable.

"(2) The Secretary of the Interior is authorized and directed to undertake a cost allocation study of the Central Valley project, including the provisions of this Act, and to implement such allocations no later than January 1, 1988."

COORDINATED OPERATIONS AGREEMENT

Exhibit 19

SEC. 103. Section 2 of the Act of August 26, 1937 (50 Stat. 850) is amended by inserting the following new subsection:

"(d) The Secretary of the Interior is authorized and directed to execute and implement the 'Agreement Between the United States of America and the Department of Water Resources of the State of California for Coordinated Operation of the Central Valley Project and the State Water Project' dated May 20, 1985: Provided, That --

"(1) the contract with the State of California referred to in subarticle 10(h)(1) of the agreement referred to in this subsection for the conveyance and purchase of Central Valley project water shall become final only after an Act of Congress approving the execution of the contract by the Secretary of the Interior; and

"(2) the termination provisions of the agreement referred to in this subsection may only be exercised if the Secretary of the Interior or the State of California submits a report to Congress and sixty calendar days have elapsed (which sixty days, however, shall not include days on which either the House of Representatives or the Senate is not in session because of an adjournment of more than three days to a day certain) from the date on which said report has been submitted to the Speaker of the House of Representatives and the President of the Senate for reference to the Committee on Interior and Insular Affairs of the House of Representatives and the Committee on Energy and Natural Resources of the Senate. The report must outline the reasons for terminating the agreement and, in the case of the report by the Secretary of the Interior, include the views of the Administrator of the Environmental Protection Agency and the Governor of the State of California on the Secretary's decision,".

REFUGE WATER SUPPLY INVESTIGATION

SEC. 104. The Secretary of the Interior shall not contract for the delivery of more than 75 percent of the firm annual yield of the Central Valley project not currently committed under long-term contracts until one year after the Secretary has transmitted to the Congress a feasibility report, together with his recommendations, on the "Refuge Water Supply Investigations, Central Valley Basin, California,".

ADJUSTMENT OF RATES AND ABILITY TO PAY

SEC. 105. The Secretary of the Interior shall include in all new or amended contracts for the delivery of water from the Central Valley project a provision providing for the automatic adjustment of rates by the Secretary of the Interior if it is found that the rate in effect may not be adequate to recover the appropriate share of the existing Federal investment in the project by the year 2030. The contracts shall also include a provision authorizing the Secretary of the Interior to adjust determinations of ability to pay every five years.

OPERATION AND MAINTENANCE DEFICITS

SEC. 106. The Secretary of the Interior shall include in each new or amended contract for the delivery of water from the Central Valley project provisions ensuring that any annual deficit (outstanding or hereafter arising) incurred by a Central Valley project water contractor in the payment of operation and maintenance costs of the Central Valley project is repaid by such contractor under the terms of such new or amended contract, together with interest on any such deficit which arises on or after October 1, 1985, at a rate equal to the average market yields on outstanding marketable obligations of the United States with remaining periods to maturity comparable to the applicable reimbursement period of the project, adjusted to the nearest one-eighth of 1 percent.

TITLE II -- SUISUN MARSH PRESERVATION AGREEMENT AUTHORITY TO ENTER AGREEMENT

SEC. 201. The Secretary of the Interior is authorized to execute and implement the agreement between the Department of the Interior, the State of California and the Suisun Resources Conservation District (dated November 1, 1985).

COST-SHARING PROVISIONS

(iii) evaluation of lower Mokelumne River floodway improvements.

(C) INTERTIES.—Activities under this subparagraph consist of—

(i) evaluation and construction of an intertie between the State Water Project California Aqueduct and the Central Valley Project Delta Mendota Canal, near the City of Tracy, as an operation and maintenance activity, except that the Secretary shall design and construct the intertie in a manner consistent with a possible future expansion of the intertie capacity (as described in subsection (f)(1)(B)); and

(ii) assessment of a connection of the Central Valley Project to the Clifton Court Forebay of the State Water Project, with a corresponding increase in the screened intake of the Forebay.

(D) PROGRAM TO MEET STANDARDS.—

(i) IN GENERAL.—Prior to increasing export limits from the Delta for the purposes of conveying water to south-of-Delta Central Valley Project contractors or increasing deliveries through an intertie, the Secretary shall, not later than 1 year after the date of enactment of this Act, in consultation with the Governor, develop and initiate implementation of a program to meet all existing water quality standards and objectives for which the Central Valley Project has responsibility.

Deadline.



(ii) MEASURES.—In developing and implementing the program, the Secretary shall include, to the maximum extent feasible, the measures described in clauses (iii) through (vii).

(iii) RECIRCULATION PROGRAM.—The Secretary shall incorporate into the program a recirculation program to provide flow, reduce salinity concentrations in the San Joaquin River, and reduce the reliance on the New Melones Reservoir for meeting water quality and fishery flow objectives through the use of excess capacity in export pumping and conveyance facilities.

(iv) BEST MANAGEMENT PRACTICES PLAN.—

(I) IN GENERAL.—The Secretary shall develop and implement, in coordination with the State's programs to improve water quality in the San Joaquin River, a best management practices plan to reduce the water quality impacts of the discharges from wildlife refuges that receive water from the Federal Government and discharge salt or other constituents into the San Joaquin River.

(II) COORDINATION WITH INTERESTED PARTIES.—The plan shall be developed in coordination with interested parties in the San Joaquin Valley and the Delta.

(III) COORDINATION WITH ENTITIES THAT DISCHARGE WATER.—The Secretary shall also coordinate activities under this clause with other entities that discharge water into the San Joaquin River to reduce salinity concentrations discharged into

the River, including the timing of discharges to optimize their assimilation.

(v) ACQUISITION OF WATER.—The Secretary shall incorporate into the program the acquisition from willing sellers of water from streams tributary to the San Joaquin River or other sources to provide flow, dilute discharges of salt or other constituents, and to improve water quality in the San Joaquin River below the confluence of the Merced and San Joaquin Rivers, and to reduce the reliance on New Melones Reservoir for meeting water quality and fishery flow objectives.

(vi) PURPOSE.—The purpose of the authority and direction provided to the Secretary under this subparagraph is to provide greater flexibility in meeting the existing water quality standards and objectives for which the Central Valley Project has responsibility so as to reduce the demand on water from New Melones Reservoir used for that purpose and to assist the Secretary in meeting any obligations to Central Valley Project contractors from the New Melones Project.

(vii) UPDATING OF NEW MELONES OPERATING PLAN.—The Secretary shall update the New Melones operating plan to take into account, among other things, the actions described in this title that are designed to reduce the reliance on New Melones Reservoir for meeting water quality and fishery flow objectives, and to ensure that actions to enhance fisheries in the Stanislaus River are based on the best available science.

(3) WATER USE EFFICIENCY.—

(A) WATER CONSERVATION PROJECTS.—Activities under this paragraph include water conservation projects that provide water supply reliability, water quality, and ecosystem benefits to the California Bay-Delta system.

(B) TECHNICAL ASSISTANCE.—Activities under this paragraph include technical assistance for urban and agricultural water conservation projects.

(C) WATER RECYCLING AND DESALINATION PROJECTS.—Activities under this paragraph include water recycling and desalination projects, including groundwater remediation projects and projects identified in the Bay Area Water Plan and the Southern California Comprehensive Water Reclamation and Reuse Study and other projects, giving priority to projects that include regional solutions to benefit regional water supply and reliability needs.

(D) WATER MEASUREMENT AND TRANSFER ACTIONS.—Activities under this paragraph include water measurement and transfer actions.

(E) URBAN WATER CONSERVATION.—Activities under this paragraph include implementation of best management practices for urban water conservation.

(F) RECLAMATION AND RECYCLING PROJECTS.—

(i) PROJECTS.—This subparagraph applies to—

(I) projects identified in the Southern California Comprehensive Water Reclamation and Reuse Study, dated April 2001 and authorized by

Applicability.

water right decision 1485

In the Matter of Permit 12720 (Application 5625) and Other Permits of United States Bureau of Reclamation for the Federal Central Valley Project and of California Department of Water Resources for the State Water Project.

DECISION IN FURTHERANCE OF JURISDICTION RESERVED IN DECISIONS D 898, D 890, D 1020, D 1250, D 1278, D 1291, D 1368, D 1358, and PERMIT ORDER 124

Sacramento-San Joaquin Delta and Suisun Marsh



August 1978

STATE WATER RESOURCES CONTROL BOARD

executed. The criteria in the draft agreement were recommended by Fish and Game and endorsed by the Department, and were extensively analyzed by the Board staff. Based on our most current assessment, the fishery standards provide significantly higher protection than existing basin plans. The Striped Bass Index is a measure of young bass survival through their first summer. The Striped Bass Index would be 71 under without project conditions (i.e., theoretical conditions which would exist today in the Delta and Marsh in the absence of the CVP and SWP), 63 under the existing basin plans, and about 79^{3/} under this decision.

While the standards in this decision approach without project levels of protection for striped bass, there are many other species, such as white catfish, shad and salmon, which would not be protected to this level. To provide full mitigation of project impacts on all fishery species now would require the virtual shutting down of the project export pumps. The level of protection provided under this decision is nonetheless a reasonable level of protection until final determinations are made concerning a cross-Delta transfer facility or other means to mitigate project impacts.

D 1485
1978

NO SHUT DOWN
INSTEAD
INCREASED EXPORT

^{3/} There is some indication that factors other than those considered in the Board's analysis of without project levels may also affect striped bass survival. The effects of these factors are such that the without project levels would be greater than 71. However, the magnitude of this impact is unknown and cannot be quantified at this time.

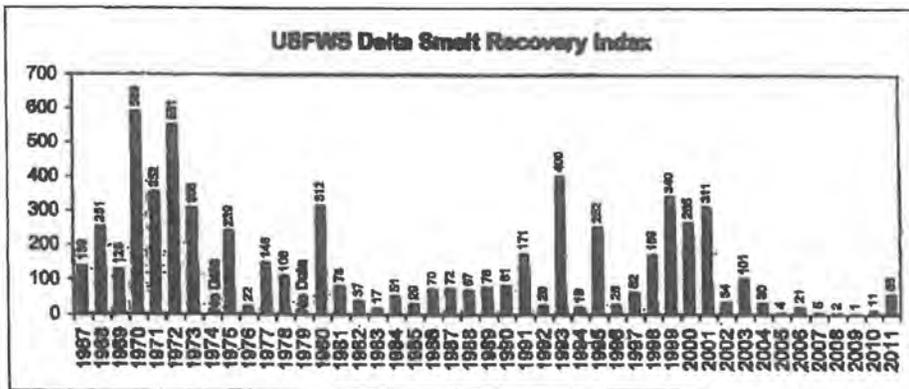
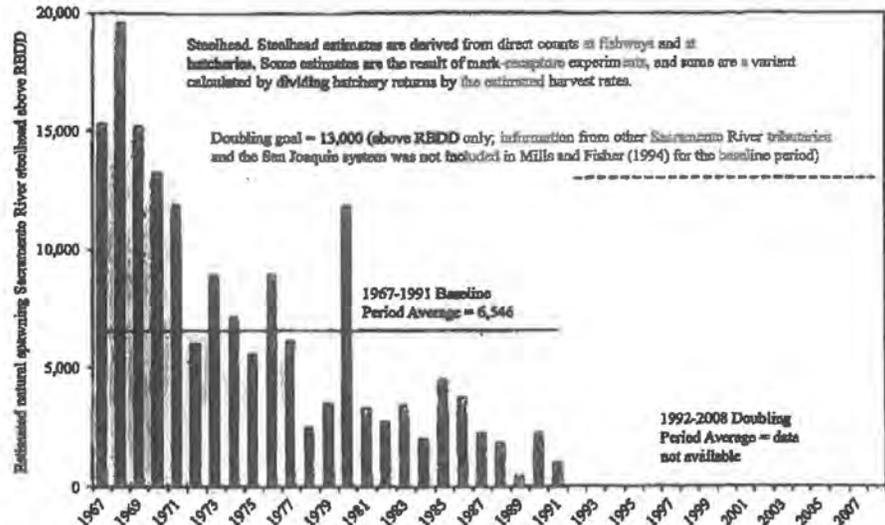
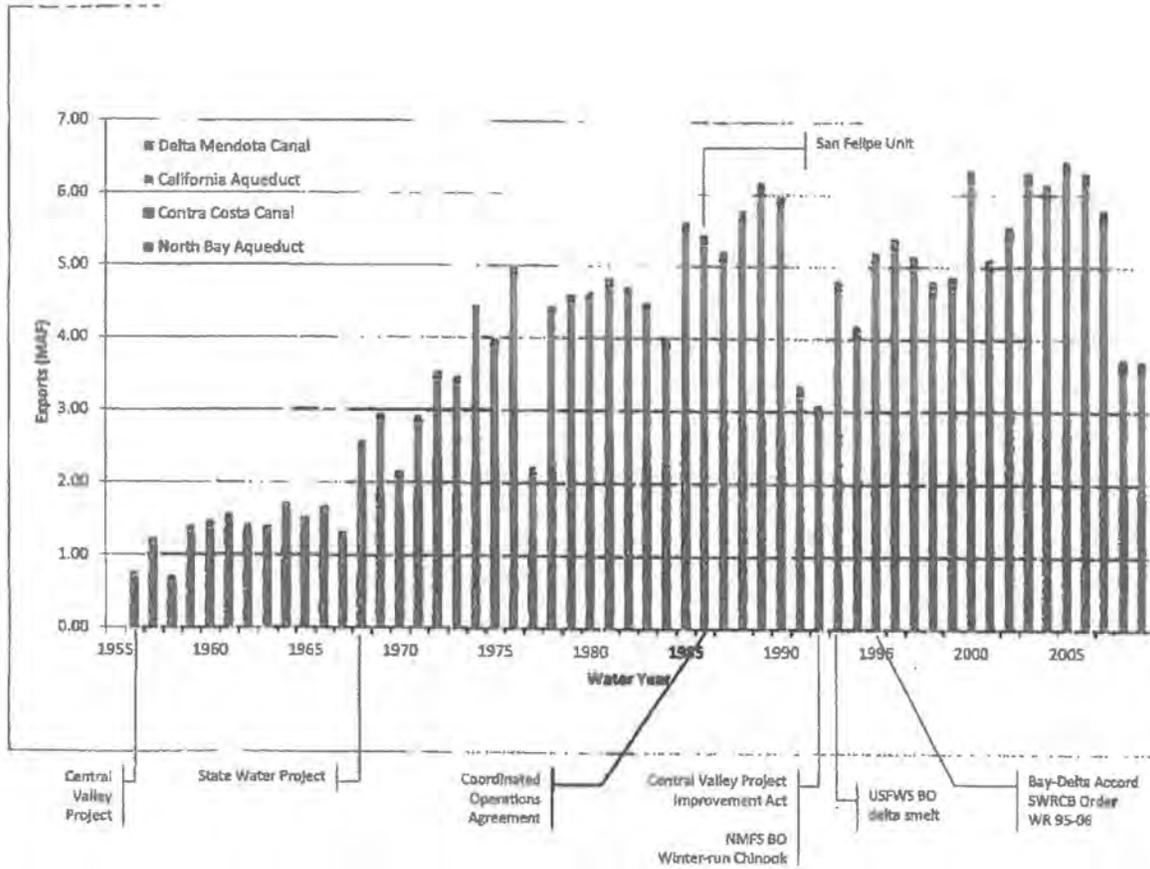
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Suisun Marsh. Full protection of Suisun Marsh now could be accomplished only by requiring up to 2 million acre-feet of freshwater outflow in dry and critical years in addition to that required to meet other standards. This requirement would result in a one-third reduction in combined firm exportable yield of State and federal projects. In theory, the existing Basin 5B Plan purports to provide full protection to the Marsh. However, during the 1976-77 drought when the basin plan was in effect, the Marsh received little if any protection because the system almost ran out of water and emergency regulations had to be imposed. This decision balances the limitations of available water supplies against the mitigation responsibility of the projects. This balance is based on the constitutional mandate "...that the water resources of the State be put to beneficial use to the fullest extent of which they are capable..." and that unreasonable use and unreasonable diversion be prevented (Article 10, Section 2, California Constitution).

The Bureau, the Department, Fish and Game, and U. S. Fish and Wildlife Service are working together to develop alternative water supplies for the Marsh. Such alternative supplies appear to represent a feasible and reasonable method for protection of the Marsh and mitigation of the adverse impacts of the projects. Under this decision the Department and Bureau are required, in cooperation with other agencies, to develop a plan for Suisun Marsh by July 1, 1979. The Suisun Marsh plan should ensure that the

NOT PROVIDED



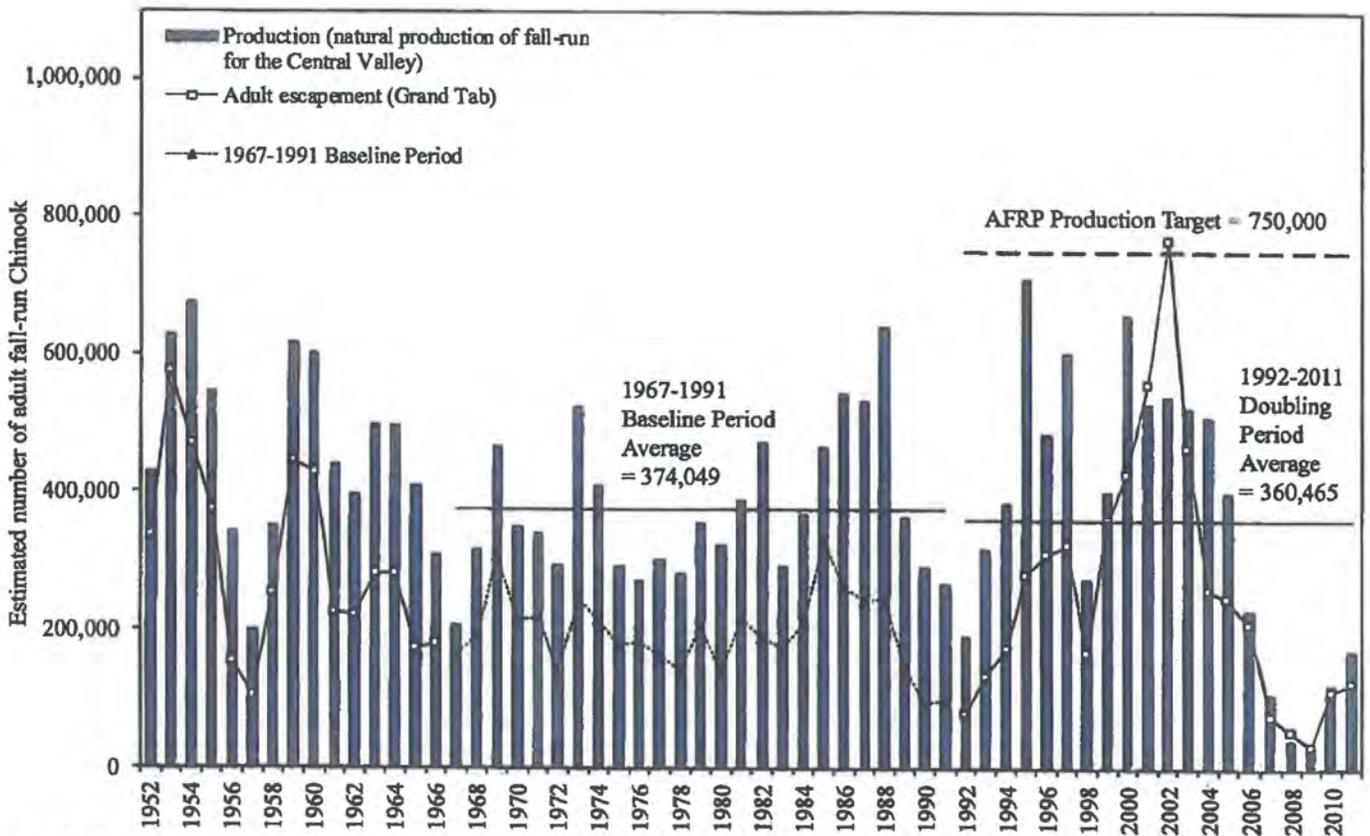


Figure 2. Estimated yearly natural production and in-river escapement of adult fall-run Chinook salmon in the Central Valley rivers and streams. 1952 - 1966 and 1992 - 2011 numbers are from CDFG Grand Tab (Apr 24, 2012). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).

2-1-13

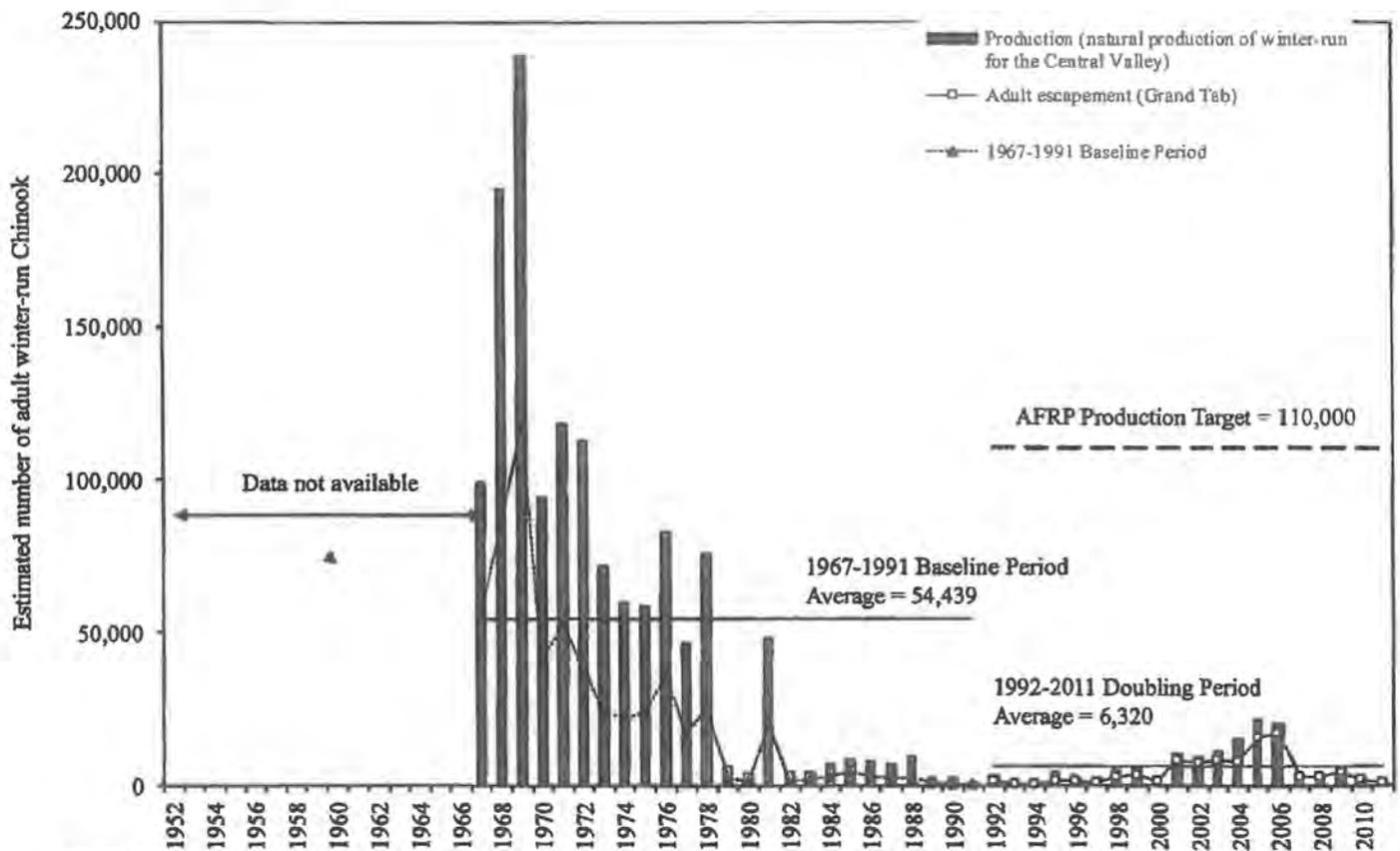
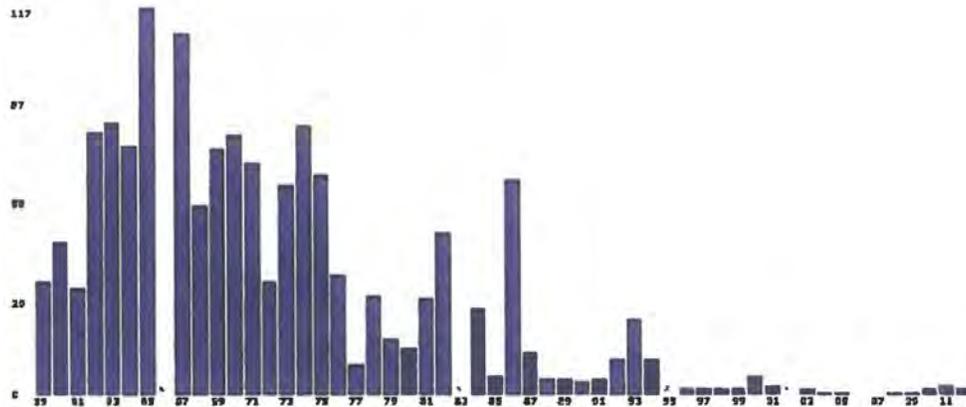


Figure 4. Estimated yearly adult natural production, and in river adult escapements of winter-run Chinook salmon in the Central Valley rivers and streams. 1992 - 2011 numbers are from CDFG Grand Tab (Apr 24, 2012). 1967-1991 Baseline Period numbers are from Mills and Fisher (CDFG, 1994).



Home → Regions → Bay Delta Region → Studies and Surveys → Summer Towntnet Survey → Striped Bass Indices

Striped Bass Indices



Striped Bass Indices

YEAR	INDEXDATE	DELTA INDEX	SUISUN BAY INDEX	TOTAL INDEX
1959	12-Jul	30.7	3.0	33.7
1960	16-Jul	32.0	13.6	45.6
1961	21-Jul	25.2	6.4	31.6
1962	26-Jul	46.8	32.1	78.9
1963	3-Aug	38.2	43.5	81.7
1964	1-Aug	54.7	20.7	75.4

Exhibit 25

<http://www.dfg.ca.gov/delta/data/towntnet/indices.asp?species=0>

9/24/2013

Jeff Opperman
Final Report for Fellowship R/SF-4

My CALFED fellowship (R/SF-4) had three primary research areas: (1) how native fish use California floodplains; (2) developing a method to identify and quantify a particular type of floodplain in the Sacramento Valley; and (3) a white paper for CALFED that reviews, summarizes, and synthesizes research on floodplains generally, and Central Valley floodplains specifically.

1. Native fish and floodplains.

For this research I collaborated with Carson Jeffres, a graduate student at UC Davis (this research was his Master's thesis). We compared the growth rates of juvenile Chinook salmon between various floodplain and riverine habitats. This study built on previous work; (1) in the Yolo Bypass that found that juvenile Chinook grew faster in the flooded Bypass than in the nearby Sacramento River and; (2) in the Cosumnes Preserve which showed that native, wild juvenile Chinook salmon appeared to use the Cosumnes floodplain for rearing when it was inundated.

Juvenile salmon were obtained from a hatchery on the Mokelumne River and placed in enclosures within the Cosumnes River and floodplain (ten fish per enclosure). For two flood seasons (2004 and 2005), six enclosures were placed in each of three different habitat types in the floodplain and two locations in the river (30 enclosures total). Floodplain habitats included an ephemeral pond, flooded terrestrial herbaceous vegetation, and a pond that was permanent during the first year of the study and ephemeral during the second. The river locations were the river channel above the floodplain and the river channel below the floodplain.

The fish were measured at one week intervals, although measurement frequency declined during large flood events that made access difficult. In 2004 fish were measured three times over 4.5 weeks and in 2005 they were measured four times over 8 weeks. After the final measurement the fish were sacrificed and a sub-set were saved for a gut-content analysis.

In general, fish had faster growth rates in floodplain habitats than in the river. During periods of low, clear water, fish growth rates in the river site above the floodplain were comparable to those in the floodplain. However, during higher flows, with more turbid water, growth in the river above the floodplain was significantly lower than on the floodplain. Fish in the river below the floodplain, which was representative of intertidal delta habitat, were consistently low.

The main channel of the Cosumnes River, like those of many Central Valley rivers, is incised and lacks complexity. There are few side channels, backwaters, or accessible floodplain habitats (other than the Cosumnes Preserve). Thus, juvenile fish will tend to be displaced downstream during high flow events. In the Cosumnes, juvenile fish will be flushed downstream to either the intertidal delta or the floodplain. Among these two

habitats, the floodplain appears to provide significantly better habitat for rearing (Figure 1).



Figure 1. Juvenile Chinook on the right were reared within an enclosure within the Cosumnes River floodplain while those on the left were reared within an enclosure in the river below the floodplain (intertidal Delta habitat).

This study confirms that juvenile Chinook benefit from access to floodplain habitats. While river habitats comparable to those above the floodplain can support similar growth rates as the floodplain, this habitat is more variable. During high flows the river offers poor habitat and fish living in this type of habitat will tend to be displaced downstream. The floodplain can provide optimal growing conditions during such floods and likely offers superior habitat conditions to the downstream Delta.

The risk of fish stranding on the floodplain merits further research. However, initial research on the Cosumnes suggests that native fish tend to respond to cues that facilitate emigration from the floodplain during draining and that primarily non-native fish become stranded. This work further supports the concept that floodplain restoration can be an important strategy for restoring Central Valley salmon populations.

This research is summarized in:

Jeffres, C., J. Opperman, and P. B. Moyle. *Submitted*. Ephemeral floodplain habitats provide best growth conditions for juvenile Chinook salmon in a California river. Submitted to *Environmental Biology of Fishes*.

This work has also been presented at the following conferences:

1. Floodplain Management Association 2005
2. Society for Ecological Restoration 2005
3. Riverine Hydroecology (Stirling, Scotland) 2006

2. Identifying and mapping the floodplain inundated by the Floodplain Activation Flood.

Working in collaboration with Phil Williams and Associates (PWA), we worked to define, identify, and quantify a particular type of floodplain: that which is inundated by a Floodplain Activation Flood (FAF). The FAF is a relatively frequent, long duration, spring-time flood that has particular value for native fish and food web productivity (see text on floodplain conceptual model below for further description of a Floodplain Activation Flood).

The FAF was defined as follows:

1. occurs in two out of three years (67% exceedance probability)
2. duration of at least one week
3. occurs between March 15 and May 15.

These criteria were applied to a series of paired gauges along the Sacramento River and within the Yolo Bypass. This process derived a flood stage elevation that corresponded to the FAF criteria. This flood stage was then used to develop a water surface that was applied to topography for the Sacramento River and surrounding floodplain (from US Army Corps of Engineers' Sacramento-San Joaquin Comprehensive Study), estimating the area of floodplain inundated during the FAF.

We found that there is very little floodplain area inundated by the FAF in the current Sacramento Valley. Nearly all floodplain that corresponds to the FAF is found within the Yolo Bypass.

This work is further described in:

Philip Williams & Associates, L., and J. J. Opperman. 2006. The frequently activated floodplain: quantifying a remnant landscape in the Sacramento Valley, San Francisco, CA.

Williams, P., J. Opperman, E. Andrews, S. Bozkurt, and P. Moyle. Quantifying activated floodplain on a lowland regulated river. *In preparation for San Francisco Estuary and Watershed Science.*

3. The Central Valley Floodplain White Paper

I am continuing to work on the floodplain white paper along with my co-author, Peter Moyle. A central part of the white paper is a conceptual model for Central Valley floodplains, briefly described below.

This work has been presented at the following conferences:

1. Floodplain Management Association, 2005
2. American Geophysical Union and the North American Benthological Society, 2005
3. Society for Ecological Restoration, 2005

4. State of the Estuary Conference, 2005
5. CALFED Science Conference, 2006
6. Riverine Hydroecology (Stirling, Scotland), 2006
7. State of Washington, the Ecological Value of High Flows, 2006

Brief overview of conceptual model:

Floodplains support high levels of biodiversity and are among the most productive ecosystems in the world. They provide a range of ecosystem services to human society, including storage and conveyance of flood flows, groundwater recharge, open space, recreational opportunities, and habitat for a diversity of species, many of them of economic importance. Among the world's ecosystem types, Costanza et al. (1997) ranked floodplains second only to estuaries in terms of the ecosystem services provided to society. In the Central Valley, the most important ecosystem services provided by floodplains include reduction of flood risk and habitat for numerous species, including commercially and recreationally valuable species (e.g., chinook salmon and waterfowl) and for endangered species. Recent research has demonstrated that floodplains provide necessary spawning habitat for the Sacramento splittail, an endemic minnow (Sommer et al. 1997) and that juvenile chinook salmon grow faster on floodplains than in main-stem river channels (Sommer et al. 2001b) (Figure 1). Productivity from floodplains can be exported to the Sacramento-San Joaquin Delta, where food limitation is likely one of the factors contributing to the decline of fish species (Jassby and Cloern 2000, Schemel et al. 2004). Further, in places such as the Yolo Bypass, ecologically valuable floodplains can be compatible with productive agriculture (Sommer et al. 2001a).

Recognizing these valuable services, state and federal agencies have expressed policy goals to restore floodplains in the Central Valley (CALFED Bay-Delta Program 2000). Further, flood management projects in the Central Valley now generally include a floodplain restoration component. To guide these restoration efforts, we convened a floodplain working group, composed of floodplain experts drawn from academia, agencies, NGOs, and the private sector, to define ecologically functional floodplains. This group described three primary components of ecologically functional floodplains:

- **Connectivity** between river and floodplain.
- **Hydrological variability**
- **Sufficient geographic scale** for associated ecological benefits to be meaningful on a system- or population-scale.

We developed a conceptual model of floodplain processes based on the scientific literature, our collective experiences studying floodplains, and guidance from the floodplain working group (Figure 2). This conceptual model illustrates the linkages between physical and biological processes in floodplains and can be used to inform floodplain restoration projects.

Organization of the conceptual model.

A diverse range of flows influence floodplain geomorphic and ecological processes, ranging from flows below bankfull to large, rare, and highly erosive floods. Numerous aspects of these flows have geomorphic and ecological significance, including magnitude, frequency, duration, rates of change, and seasonality, as well as antecedent conditions on the floodplain. To simplify, our conceptual model focuses on three types of 'representative floods,' characterized by their frequency and magnitude, which are found in the blue boxes in the Hydrology portion of the model. These floods perform geomorphic work, described in the brown-outline boxes in the Geomorphology portion of the model. Hydrologic and geomorphic processes create the conditions for Ecosystem Responses and Processes to occur (green-outlined boxes). The Ecosystem Responses and Processes produce Ecological Benefits, the magnitudes of which are influenced by the geographic scale of floodplain. Two representative floods, the Floodplain Activation Flood and the Floodplain Reorganization Flood are illustrated in Figures 2 and 3 and described below.

Two representative floods

Floodplain Activation Flood. The floodplain activation flood (FAF) is a small-magnitude flood that occurs relatively frequently (e.g., almost every year) (Figure 3). The FAF can be further defined in terms of seasonality and duration—for example a flood that lasts at least one week and occurs in the Spring. The following article by Betty Andrews defines a FAF in terms of frequency, season, and duration and then describes a process to map the floodplain that corresponds to the FAF in the Sacramento Valley. A long duration flood produces characteristic ecological benefits such as habitat for native fish spawning and rearing (Figure 1) and food web productivity. The duration of the flood is important as these processes cannot occur during a short event. The seasonality of the flood also influences which ecological processes occur (see the temporal scale bar (Winter □ Late spring) in one of the ecological process boxes). The importance of duration and seasonality for a FAF is indicated by the question mark adjacent to the flood occurring in late January on the hydrograph in Figure 2 (a short, winter-time flood). Because floodplains can remain inundated for a period of time after the loss of direct connection with river flows, a series of short connections can also function as a floodplain activation flood.

Floodplain Reorganization Flood. The floodplain reorganization flood is a greater magnitude flood that occurs less frequently (Figure 3). This higher energy flood produces geomorphic work including extensive erosion and deposition on the floodplain which creates heterogeneous floodplain topography. In turn, these dynamic events and heterogeneous topography create a diverse ecosystem with vegetation patches of varying age, species composition and structure, and floodplain water bodies of varying successional stage and connectivity to the river. The ecosystem processes that occur during a Floodplain Activation Flood take place within the mosaic of habitat features created during Floodplain Reorganization Floods.

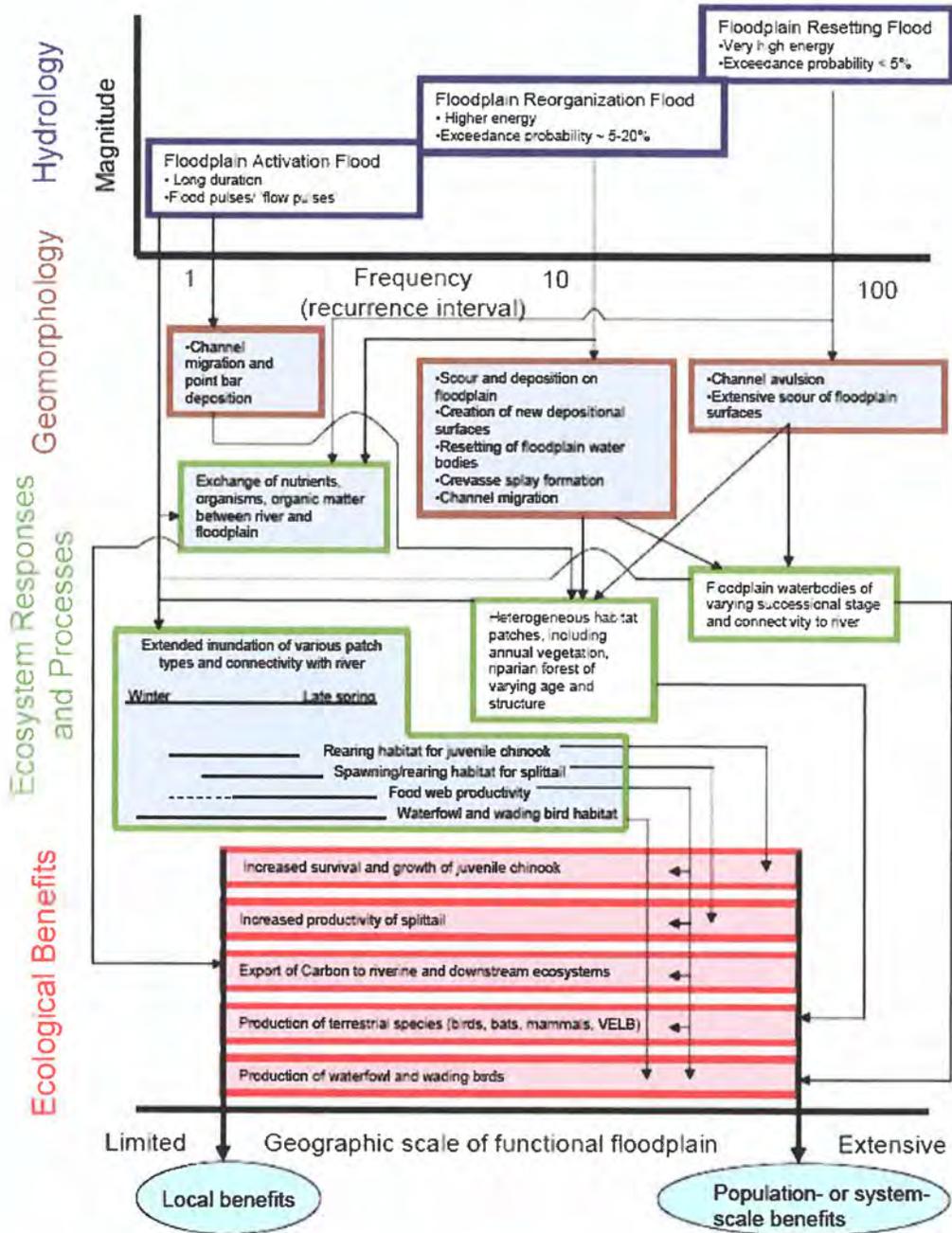
Conclusions

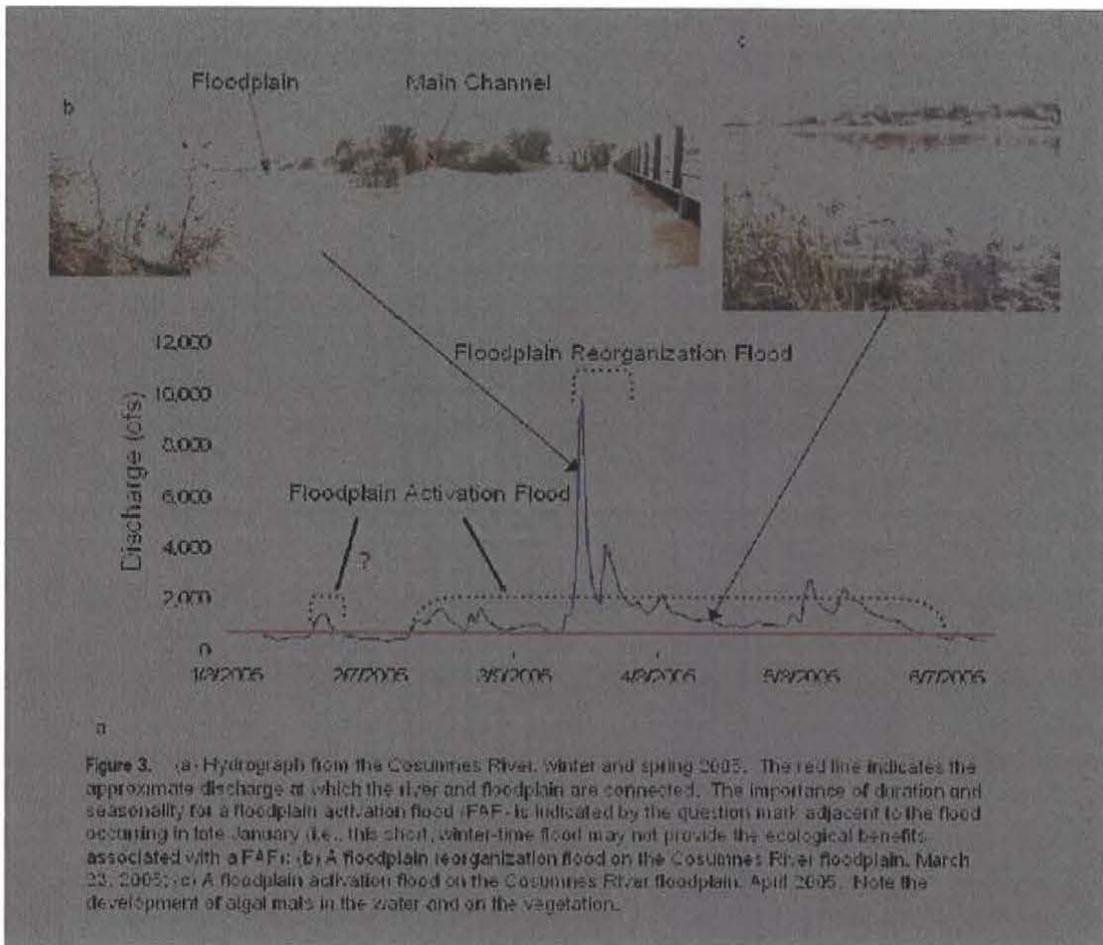
The model illustrates the importance of hydrological variability for an ecologically functional floodplain. For example, a floodplain that rarely is inundated by a Floodplain

Activation Flood will not produce the ecological benefits of food web productivity or spawning and rearing habitat for native fish. A floodplain that is not subject to Floodplain Reorganization Floods will not maintain the mosaic of habitats (e.g., vegetation and water bodies of varying successional stages) that help support floodplain biodiversity. Therefore, floodplain restoration projects should not only focus on reintroducing connectivity between rivers and floodplains. Floodplain managers should also ask the following questions about this connectivity: how often, for how long, in what season, and of what magnitude? The answers to these questions will strongly influence the range of ecological benefits that the restored floodplain can provide.

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Figure 2. Floodplain Conceptual Model





Floodplain rearing of juvenile chinook salmon: evidence of enhanced growth and survival

T.R. Sommer, M.L. Nobriga, W.C. Harrell, W. Batham, and W.J. Kimmerer

Abstract: In this study, we provide evidence that the Yolo Bypass, the primary floodplain of the lower Sacramento River (California, U.S.A.), provides better rearing and migration habitat for juvenile chinook salmon (*Oncorhynchus tshawytscha*) than adjacent river channels. During 1998 and 1999, salmon increased in size substantially faster in the seasonally inundated agricultural floodplain than in the river, suggesting better growth rates. Similarly, coded-wire-tagged juveniles released in the floodplain were significantly larger at recapture and had higher apparent growth rates than those concurrently released in the river. Improved growth rates in the floodplain were in part a result of significantly higher prey consumption, reflecting greater availability of drift invertebrates. Bioenergetic modeling suggested that feeding success was greater in the floodplain than in the river, despite increased metabolic costs of rearing in the significantly warmer floodplain. Survival indices for coded-wire-tagged groups were somewhat higher for those released in the floodplain than for those released in the river, but the differences were not statistically significant. Growth, survival, feeding success, and prey availability were higher in 1998 than in 1999, a year in which flow was more moderate, indicating that hydrology affects the quality of floodplain rearing habitat. These findings support the predictions of the flood pulse concept and provide new insight into the importance of the floodplain for salmon.

Résumé : Notre étude démontre que le canal de dérivation Yolo, la principale plaine d'inondation de la région aval de la rivière Sacramento (Californie, É.-U.), offre de meilleurs habitats pour l'alevinage et la migration des jeunes Saumons Quinnet (*Oncorhynchus tshawytscha*) que les bras adjacents de la rivière. En 1998 et 1999, la taille des saumons a augmenté plus rapidement dans la plaine d'inondation agricole, sujette aux débordements saisonniers de crue, que dans la rivière, ce qui laisse croire à de meilleurs taux de croissance. De plus, des jeunes saumons marqués à l'aide de fils de métal codés et relâchés dans la plaine d'inondation étaient plus gros au moment de leur recapture et avaient des taux de croissance apparente plus élevés que des poissons relâchés dans la rivière en même temps. L'amélioration des taux de croissance dans la plaine de débordement résultait en partie d'une consommation significativement plus importante de proies, le reflet d'une plus grande disponibilité des invertébrés de la dérive. Un modèle bioénergétique laisse croire que le succès de l'alimentation a été meilleur dans la plaine d'inondation que dans la rivière, en dépit du coût métabolique d'alevinage significativement plus grand dans les eaux plus chaudes de la plaine d'inondation. Les indices de survie des poissons marqués et relâchés dans la plaine d'inondation étaient quelque peu plus élevés que ceux des poissons de la rivière, mais les différences n'étaient pas statistiquement significatives. La croissance, la survie, le succès de l'alimentation et la disponibilité des proies étaient tous supérieurs en 1998 par comparaison avec 1999, une année à débit plus modéré, ce qui indique que l'hydrologie affecte la qualité des habitats d'alevinage dans la plaine d'inondation. Nos résultats appuient les prédictions du concept de pulsion de crue (flood pulse concept) et mettent en lumière l'importance de la plaine d'inondation pour le saumon.

[Traduit par la Rédaction]

Introduction

Although the trophic structure of large rivers is frequently dominated by upstream processes (Vannote et al. 1980), there is increasing recognition that floodplains plays a major role in the productivity and diversity of riverine communities (Bayley 1995). Based largely on observations from relatively undisturbed river-floodplain systems, Junk et al. (1989) pro-

posed the flood pulse concept, which predicts that annual inundation is the principal force determining productivity and biotic interactions in river-floodplain systems. Floodplains can provide higher biotic diversity (Junk et al. 1989) and increased production of fish (Bayley 1991; Halyk and Balon 1983) and invertebrates (Gladden and Smock 1990). Potential mechanisms for floodplain effects include increased habitat diversity and area (Junk et al. 1989), large inputs of

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Exhibit 27

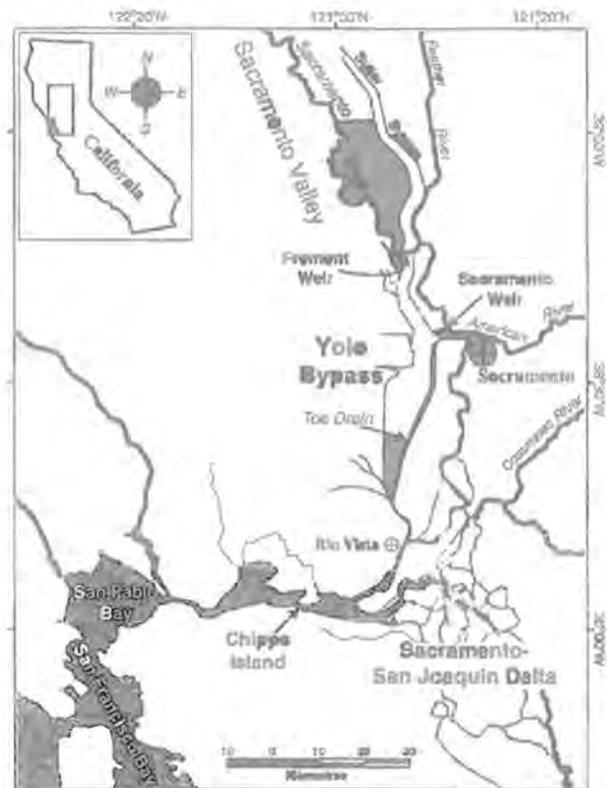
terrestrial material into the aquatic food web (Winemiller and Jepsen 1998), and decreased predation or competition due to intermediate levels of disturbance (Corti et al. 1997). Nonetheless, the degree to which floodplains support riverine ecosystems remains poorly understood, particularly in regulated and temperate rivers. Uncertainties about river-floodplain relationships are due, in large part, to the difficulty in separating the relative contribution of floodplain versus channel processes and sampling problems in seasonal habitats, which are frequently subject to extreme environmental variation.

In this study, we examined the relative importance of floodplain and riverine habitat to juvenile chinook salmon (*Oncorhynchus tshawytscha*) in the Sacramento River (California, U.S.A.), a large regulated river (Fig. 1). The system is particularly well suited to a comparative study, because young salmon migrating down the lower Sacramento River to the San Francisco Estuary in wet years have two alternative paths: they may continue down the heavily channelized main river or they may pass through the Yolo Bypass, an agricultural floodplain bordered by levees. We had two reasons to believe that the floodplain might be important habitat for young salmon. First, years of high flow are known to enhance populations of a variety of species in the San Francisco Estuary (Jassby et al. 1995) and the survival of chinook salmon (Kjelson et al. 1982). However, the specific mechanisms for these benefits have not been established. Possible reasons for the positive effects of flow on fish include increased habitat availability, migration cues, food supply, larval transport, and reduced predation rates (Bennett and Moyle 1996). Floodplain inundation is one of the unique characteristics of wet years, during which the Yolo Bypass is likely to be a significant migration corridor for young chinook salmon in the Sacramento Valley. During high-flow events, the Yolo Bypass can convey >75% of the total flow from the Sacramento River basin, the major producer of salmon among tributaries of the San Francisco Estuary. Second, floodplains are known to be among the most important fish-rearing areas in a variety of river systems, yet in developed regions, the availability of this habitat has been greatly reduced by channelization and levee and dam construction (Rasmussen 1996). A high degree of habitat loss may greatly enhance the biological significance of remnant floodplains in heavily modified systems, such as the San Francisco Estuary and its tributaries.

This study tests the hypothesis that the agricultural floodplain provides better habitat quality than the adjacent river channel. For the purpose of this analysis, we focus on salmon growth, feeding success, and survival as indicators of habitat quality. Obviously, there are many other possible measures of habitat quality, such as reproductive output of adults or physiological indicators. However, we believe that the chosen suite of parameters is reasonably representative of habitat quality. For example, Gutreuter et al. (2000) successfully used growth as a factor to test the hypothesis that floodplain inundation had a major effect on fish production.

The San Francisco Estuary is one of the largest estuaries on the Pacific Coast (Fig. 1). The system includes downstream bays (San Pablo and San Francisco) and a delta, a broad network of tidally influenced channels that receive inflow from the Sacramento and San Joaquin rivers. The estu-

Fig. 1. The location of Yolo Bypass in relation to the San Francisco Estuary and its tributaries. The San Francisco Estuary encompasses the region from San Francisco Bay upstream to Sacramento. Feather River Fish Hatchery is located on the Feather River approximately 112 km upstream of Yolo Bypass.



ary and its tributaries have been heavily altered by levees, dams, land reclamation activities, and water diversions. The primary floodplain of the Sacramento River portion of the delta is the Yolo Bypass, a 24 000-ha leveed basin that conveys excess flow from the Sacramento Valley, including the Sacramento River, Feather River, American River, Sutter Bypass, and westside streams. The 61 km long floodplain floods seasonally in winter and spring in about 60% of years, and is designed to convey up to $14\,000\text{ m}^3\text{ s}^{-1}$. During a typical flooding event, water spills into the Yolo Bypass via the Fremont Weir when Sacramento Basin flows surpass approximately $2000\text{ m}^3\text{ s}^{-1}$. Except during extremely high flow events, the mean depth of the floodplain is generally less than 2 m, creating broad shoal areas. During dry seasons, the Toe Drain channel, a permanent riparian corridor, remains inundated as a result of tidal action. At higher levels of Sacramento Basin flow (e.g., $>5000\text{ m}^3\text{ s}^{-1}$), the Sacramento Weir is also frequently operated. Agricultural fields are the dominant habitat type in Yolo Bypass, but approximately one-third of the floodplain area is natural vegetation, including riparian habitat, upland habitat, emergent marsh, and permanent ponds.

There are four races of chinook salmon in the Sacramento Valley: winter, spring, late fall, and fall run (Yoshiyama et al. 2000). Historical data indicate that all races have de-

creased in abundance since the 1950s, but the spring, winter, and late-fall runs have shown the most pronounced declines. There are multiple causes for these long-term reductions, including habitat loss, habitat degradation, water diversions, and oceanic conditions. In the present study, we focused on the fall run, the numerically dominant race in the Sacramento Valley. The typical life-history pattern for these salmon is for young to migrate from the tributaries to the bay-delta area at the "fry" stage (Brandes and McLain 2001), when most individuals are approximately 35- to 70-mm fork length (FL). In low flow years, there may be substantial upstream rearing in the Sacramento River. Peak juvenile emigration from the tributaries occurs during winter and spring (Kjelson et al. 1982).

Materials and methods

Physical conditions

During 1998-1999, flow measurements in Yolo Bypass and the adjacent stretch of the Sacramento River were obtained from gauges operated by the U.S. Geological Survey (USGS). Daily water temperatures for each site were calculated as the mean of maximum and minimum daily measurements for single stations in the Sacramento River (USGS) and a temperature recorder (Onset Corp.) installed in the Yolo Bypass Toe Drain channel (Fig. 1). However, from 1 February to 26 March 1998, these data were not available for Yolo Bypass. During this period, before the recorder was installed, discrete measurements were taken at the same location, typically during mid or late morning.

Fish sampling

Salmon FL (mm) was measured during January-April in 1998 and 1999 on samples collected with 15-m beach seines (4.75-mm mesh). Samples were collected weekly at five core locations located around the perimeter of the Yolo Bypass, during periods when the basin was flooded. After the bypass drained, additional samples were collected at random locations around the perimeter of ponds near the core locations. Comparative data on salmon size in the adjacent reach of the Sacramento River were collected by the U.S. Fish and Wildlife Service (USFWS) at five beach-seine sites, using techniques similar to those used when the the bypass was flooded.

FLs of salmon obtained from beach-seine sampling were compared to determine whether there was evidence of major differences in salmon size between the Yolo Bypass and the Sacramento River. However, these data were not considered unambiguous evidence of growth differences, because the two systems were open to immigration and emigration during much of the study, and migrating salmon include multiple races of salmon that cannot be readily separated. We addressed this issue by using paired releases of coded-wire-tagged (CWT) juvenile salmon in Yolo Bypass and the Sacramento River. This approach allowed comparisons of growth among fish of similar origin and provided a relative estimate of migration time and survival. The salmon were produced and tagged at the Feather River Fish Hatchery and released on 2 March 1998 and 11 February 1999. The release sites were in Yolo Bypass below Fremont Weir (52 000 in 1998; 105 000 in 1999) and in the adjacent reach of the Sacramento River (53 000 in 1998; 105 000 in 1999). The fish had a mean FL of 57.5 ± 0.5 mm (SE) in 1998 and of 56.8 ± 0.4 mm (SE) in 1999. A small portion of each group was subsequently collected by trawling at the seaward margin of the delta at Chipps Island, which is located downstream of the confluence of the Yolo Bypass and the Sacramento River (Fig. 1). The USFWS Chipps Island survey samples a single channel location with a midwater trawl towed at the surface (Baker et al. 1995;

Brandes and McLain 2001). Ten 20-min tows were made each day, except during March in 1998 and 1999, when sampling was conducted every other day. Data on migration time (days) and FL (mm) were recorded for fish recaptured from each release group. Apparent growth rate was also calculated for each fish, as: $(FL \text{ of individual at Chipps Island} - \text{mean FL of CWT release group}) \times (\text{migration time})^{-1}$. Survival indices of the paired CWT releases were calculated by USFWS by dividing the number of fish recovered for each release group at Chipps Island by the number released, corrected for the fraction of time and channel width sampled (Brandes and McLain 2001).

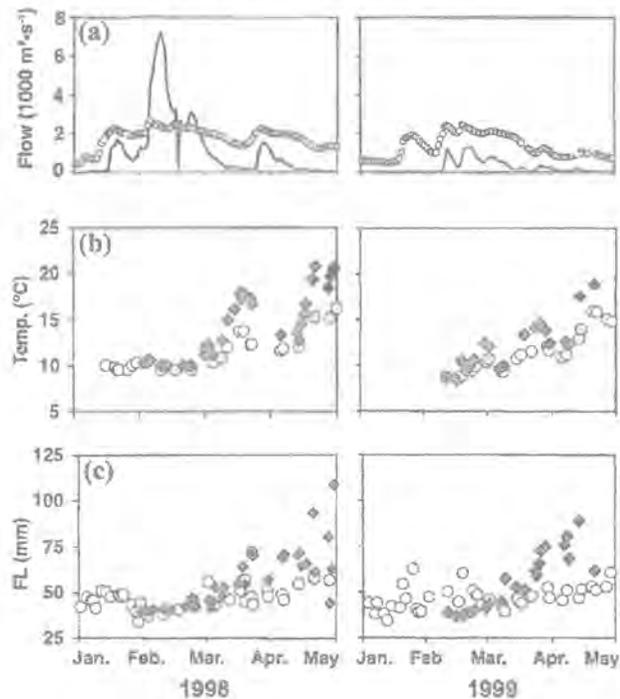
Diet

We performed diet comparisons on fall-run juvenile salmon (33-81 mm) collected in beach-seine samples during February-March of 1998 and 1999 from the Yolo Bypass (103 individuals) and the Sacramento River (109 individuals). Fish samples were tagged and stored individually in a deep freeze. After thawing, stomachs were removed from the fish and the contents were identified (using a dissecting microscope) to order (insects and arachnids), genus (crustaceans), or phylum (rarely eaten taxa such as oligochaetes). To develop average invertebrate length estimates, up to 10 individuals of each prey type encountered were measured. Prey dry weight estimates were calculated from average lengths, using regression equations for delta crustaceans obtained from J. Orsi (California Department of Fish and Game, Stockton, CA 95205, unpublished data) and from literature sources. Diet results were compared as an index of relative importance (IRI) (Shreffler et al. 1992) for each month. The index was calculated as: $IRI = (\% \text{ numeric composition} + \% \text{ weight composition}) \times \% \text{ frequency of occurrence}$.

Prey availability

Invertebrates were sampled in February-March of 1998 and 1999, to examine prey availability in the Yolo Bypass and the Sacramento River. Sampling was not designed as a comprehensive evaluation of spatial and temporal variation of prey. Rather, it was intended to provide information on whether variation in salmon diets between the two locations was consistent with gross differences in prey type or relative abundance. We focused on Diptera (adults, pupae, and larvae) and crustacean zooplankton, which comprised over 90% of the diets of Yolo Bypass and Sacramento River juvenile salmon. Weekly drift samples were collected at fixed stations on the Yolo Bypass and the Sacramento River during periods when the floodplain was inundated. The sampling points were located away from overhanging vegetation and bank eddies, in water velocities of approximately $15-60 \text{ cm} \cdot \text{s}^{-1}$, depending on flow. Net (500- μm mesh) dimensions were 0.46×0.3 m mouth and 0.91 m length. The nets were fished for approximately 30 min during mid-morning, to coincide with the time period when most fish-stomach samples were taken. Sample volume was calculated using a flowmeter (General Oceanics Model 2030R) and net dimensions. Drift samples were stored in ethanol or formaldehyde, then identified to family or order using a dissecting microscope. In 1998, zooplankton were collected in the Yolo Bypass at two fixed stations with battery-operated rotary-vane pumps with a mean flow rate of $17 \text{ L} \cdot \text{min}^{-1}$. Samples were taken via pipes with outlets at multiple locations beneath the water surface. Discharge was directed into a 150 μm mesh net held in a basin on the bank. Flow rate was recorded at the beginning and end of the sample period, which varied from 1 to 6 h. No samples were taken in the Sacramento River during a comparable period in 1998. In 1999, zooplankton samples were taken with a Clarke-Bumpus net (160- μm mesh, diameter 0.13 m, length 0.76 m) placed in surface flow in the Yolo Bypass and Sacramento River. Sample volume was recorded as for the drift net. Zooplankton samples were concentrated and stored in 5%

Fig. 2. Chinook salmon size versus physical conditions in Yolo Bypass and the Sacramento River during winter and spring in 1998 and 1999. (a) Mean daily flow (m^3s^{-1}) in Yolo Bypass (solid line) and the Sacramento River (circles). (b) Mean water temperature ($^{\circ}\text{C}$) in Yolo Bypass (solid symbols) and the Sacramento River (open symbols). (c) Mean daily chinook salmon FL for Yolo Bypass (solid symbols) and Sacramento River (open symbols) beach-seine stations. For presentation purposes, only the daily mean FLs are shown; however, individual observations for February–March were used for statistical analyses.



formaldehyde, for later identification to genus using a dissecting microscope.

Bioenergetics

Feeding success was examined in two ways: (1) prey biomass estimated from stomach contents and (2) prey biomass estimated as a function of maximum theoretical consumption. For the first measure, we used the previously described stomach-content data to calculate total-prey biomass for individual fish.

A limitation of using prey biomass as a measure of feeding success between locations is that thermal history affects how consumption alters growth rate (Hewett and Kraft 1993). As will be discussed in further detail, water temperatures were significantly higher in the Yolo Bypass floodplain than in the Sacramento River. To correct for this problem, our second approach used bioenergetic modeling to incorporate the metabolic effects of water temperature. We used methods similar to those of Rand and Stewart (1998) to calculate a wet weight ration index, which uses prey biomass for each sampled individual as a proportion of the theoretical maximum daily consumption. The stomach-content data were used as our estimate of prey biomass for individual fish. The theoretical maximum daily consumption rate (C_{max}) was modeled using Fish Bioenergetics 3.0 (Hanson et al. 1997), using observed body size and water temperature at the time each beach-seine sample was collected. The model input also required fish mass, which we estimated from FL data, using length–weight relationships from Sacra-

Table 1. Robust regression statistics for Yolo Bypass and Sacramento River salmon FLs for 1998 and 1999.

	1998		1999	
	Parameter \pm SEM	<i>t</i>	Parameter \pm SEM	<i>t</i>
Intercept	29.4 \pm 0.6	46.8	23.5 \pm 0.5	43.7
Location	6.4 \pm 0.6	10.2	11.1 \pm 0.5	20.6
Day	0.3 \pm 0.01	34.5	0.3 \pm 0.01	48.5
Location:day	-0.14 \pm 0.01	-18.4	-0.21 \pm 0.01	-33.6

Note: The *t* values are all highly significant ($p < 0.0001$).

mento River juvenile salmon (Petrusso 1998). The caloric value of the prey was taken from weight conversion factors provided by Hanson et al. (1997). Model parameters were derived from those of Stewart and Ibarra (1991) for chinook salmon. The model was run for individual fish collected at each sampling location in 1998 and 1999.

We emphasize that the second approach provides an *index*, rather than an *absolute* measure of feeding success. The wet weight ration index is conceptually analogous to “*P*” in Hanson et al. (1997), a model parameter that indicates what fraction of C_{max} is obtained over the course of the day. The major difference is that *P* is based on prey consumption over a 24-hour period, whereas our wet weight ration index is based on instantaneous measurements of stomach contents, which may not represent mean trends over the entire day. An additional limitation is that the Stewart and Ibarra (1991) model parameters were developed for adult salmon and we applied the model to juveniles. We did not have sufficient field or laboratory data to develop bioenergetic-model parameters specific to the earliest life stages. Nonetheless, other studies (Rand and Stewart 1998) have demonstrated that similar wet weight ration indices can provide an effective technique for comparing relative salmonid feeding success between seasons and years.

Statistical analysis

Overlapping temperature measurements from continuous recorders and the discrete measurements during 26 March–May 1998 were analyzed with Wilcoxon’s matched-pairs test, to determine whether the two methods yielded different results. Mean water temperature for Yolo Bypass and the Sacramento River during the primary period of floodplain inundation (February–March) was analyzed with a generalized linear model with a variance function that increased with the mean squared, since variances were not homogeneous (Venables and Ripley 1997). Salmon FL measurements for Yolo Bypass and the Sacramento River during February–March of 1998 and 1999 were compared with a robust iteratively reweighted least squares regression procedure (“rlm”; Venables and Ripley 1997), because we detected substantial numbers of outliers in preliminary graphical evaluations of the data. Initial analyses revealed a substantial difference in the effects of location between years, so years were analyzed separately. Results from the CWT and bioenergetic studies were analyzed using a factorial-design analysis of variance, to evaluate the effects of location (Yolo Bypass, Sacramento River) and year (1998, 1999). Residuals from each model were examined graphically, to confirm that they met the assumption of normality and homogeneity of variance. Cochran and Levene’s tests were also used, to test the assumption of homogeneity of variance. Logarithmic transformation was performed where necessary.

Results

Physical conditions

Yolo Bypass was inundated in 1998 and 1999 but the hydrology was substantially different in the two years (Fig. 2).

Table 2. Results of salmon collections at Chipps Island for 1998 and 1999 coded-wire-tagged groups released concurrently in Yolo Bypass and the Sacramento River.

	1998		1999	
	Yolo Bypass	Sacramento River	Yolo Bypass	Sacramento River
Fork length (mm)	93.7±2.0	85.7±1.4	89.0±2.6	82.1±1.7
Migration time (days)	46.2±2.3	55.4±3.5	58.2±2.8	58.6±4.1
Apparent growth rate (mm·day ⁻¹)	0.80±0.06	0.52±0.02	0.55±0.06	0.43±0.03
Survival index	0.16	0.09	0.09	0.07
Sample size	9	10	9	8

Note: Values for FL, migration time, and apparent growth rate are mean ± standard error (SEM)

The first year was extremely wet, with multiple flow pulses and a peak flow of 7200 m³·s⁻¹. In 1999, floodplain hydrology was more moderate, with a peak of 1300 m³·s⁻¹. Flows in the Sacramento River were much less variable than in the floodplain and generally remained at or below 2000 m³·s⁻¹, a level within the design capacity (3100 m³·s⁻¹) of the channel. Overlapping sampling between the continuous-temperature recorders and the discrete measurements during March–May 1998 showed a mean difference of 0.9°C between the two approaches, but this disparity was not statistically significant (Wilcoxon's matched-pairs test, $p > 0.25$). In 1998 and 1999, temperatures increased fairly steadily throughout the study period; however, in both years, temperature levels in Yolo Bypass were up to 5°C higher than those in the adjacent Sacramento River during the primary period of inundation, February–March. Temperature in the Yolo Bypass was described in 1998 by $T_y = -7.7 \pm 2.1 + (1.9 \pm 0.2)T_s$ and in 1999 by $T_y = -3.5 \pm 1.2 + (1.5 \pm 0.1)T_s$, where T_y is the temperature of the Yolo Bypass, T_s is the temperature of the Sacramento River, and the range for each value is the 95% confidence limit.

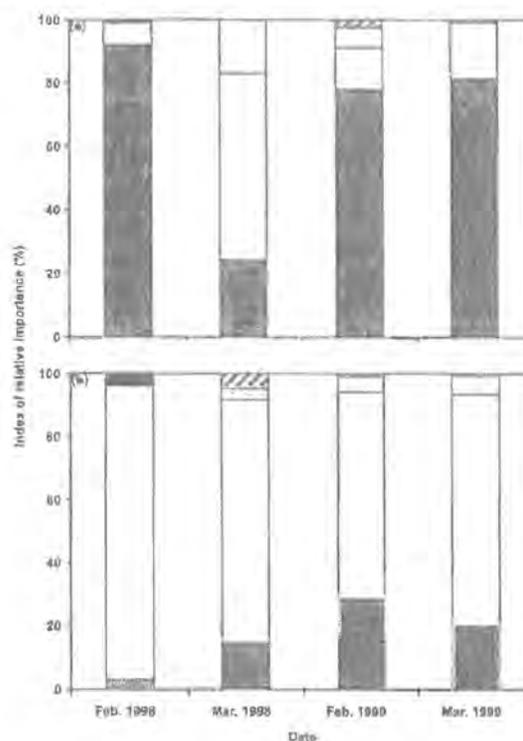
Fish growth, migration time, apparent growth rate, and survival

Salmon increased in size substantially faster in the Yolo Bypass than in the Sacramento River during each of the study years (Fig. 2). Robust regression results showed that the effect of location was highly significant ($p < 0.00001$) in each year (Table 1). This result is consistent with the CWT data (Table 2), which showed that the 1998 and 1999 Yolo Bypass CWT release groups had significantly larger mean length ($F = 14.34$, $p = 0.0006$) and higher apparent growth rates ($F = 20.67$, $p = 0.0007$) than the Sacramento River release groups. There was also a statistically significant effect of year: both release groups had larger mean sizes ($F = 4.42$, $p = 0.04$) and higher apparent growth rates ($F = 16.47$, $p = 0.0002$) in 1998 than in 1999. The 1998 Yolo Bypass CWT group showed the fastest migration time, arriving an average of at least 9 days ahead of any other release group. However, there was no statistically significant ($F = 2.22$, $p = 0.15$) effect of release location on migration time in the analysis of variance (ANOVA). As for fish size and apparent growth rate, mean migration time was slower in 1999 than in 1998 ($F = 5.60$, $p = 0.02$). There was no statistically significant interaction between location and year for salmon size ($F = 0.07$, $p = 0.78$), apparent growth rate ($F = 1.62$, $p = 0.21$), or migration time ($F = 1.8$, $p = 0.18$). The survival indices were somewhat higher for CWT groups released in the Yolo By-

pass than for those released in the Sacramento River for both 1998 and 1999. However, the lowest coefficient of variation based on a Poisson distribution of the CWT recaptures is 32%, and the actual (unknown) distribution of counts is likely to have higher variance than a Poisson distribution. Clearly the confidence limits of the paired survival indices would overlap, so the differences are not statistically significant.

Diet
The diet of young salmon in the Yolo Bypass was dominated by dipterans, principally chironomid pupae and adults (Fig. 3). The second most common prey item was zooplank-

Fig. 3. Chinook salmon diet during February and March of 1998 and 1999 in Yolo Bypass (a) and the Sacramento River (b). The index of relative importance (y-axis) is defined in the text. Diptera (solid bars), zooplankton (open bars), other aquatic prey (shaded bars), and other terrestrial prey (striped bars) are shown for each month.

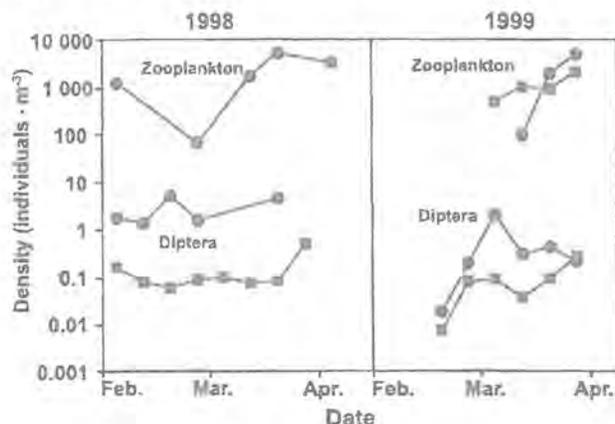


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Diet

The diet of young salmon in the Yolo Bypass was dominated by dipterans, principally chironomid pupae and adults (Fig. 3). The second most common prey item was zooplank-

Fig. 4. Log₁₀-scaled weekly abundance (individuals m⁻³) of zooplankton and Diptera in Yolo Bypass (circles) and the Sacramento River (squares) during 1998 and 1999. Note that 1998 zooplankton data were not available for the Sacramento River.



ton, mostly cladocerans and copepods. Except for March 1998, zooplankton comprised less than 15% of the Yolo Bypass diets. Other aquatic (mainly amphipods and collembola) and terrestrial (mainly ants and arachnids) prey were relatively minor diet items. As for the floodplain samples, dipterans and zooplankton comprised over 90% of the diets of Sacramento River salmon; however, zooplankton were the dominant prey item in all months. Other aquatic (mostly amphipods, oligochaetes, and collembola) and terrestrial (mostly ants and other terrestrial insects) prey were consumed infrequently.

Prey availability

The drift samples contained many of the same taxa observed in the salmon diets, with Diptera (principally chironomids) as the major type at both sampling locations. However, the density of Diptera was much higher in the Yolo Bypass than in the Sacramento River (Fig. 4), particularly in 1998, when densities were consistently an order of magnitude higher. In general, dipteran drift densities were higher at each location in 1998 than in 1999. There was little difference in zooplankton density in the Yolo Bypass between 1998 and 1999 or between Yolo Bypass and the Sacramento River in 1999.

Bioenergetics

Young salmon from the Yolo Bypass had higher total-prey weights ($F = 39.2$, $df = 1$, $p < 0.0001$) than those from the Sacramento River (Fig. 5). The bioenergetic-modeling results showed that Yolo Bypass salmon also had higher wet weight ration indices than those from the Sacramento River ($F = 19.3$, $df = 1$, $p < 0.0001$). The interaction between location and year was significant for both the wet weight ration indices ($F = 10.0$, $df = 1$, $p = 0.02$) and the prey weights ($F = 4.7$, $df = 1$, $p = 0.03$).

Discussion

Chinook salmon that rear in the Yolo Bypass floodplain have higher apparent growth rates than those that remain in

the adjacent Sacramento River channels. Mean length increased faster in the Yolo Bypass during each study year, and CWT fish released in the Yolo Bypass were larger and had higher apparent growth rates than those released in the Sacramento River. It is possible that these observations are due to higher mortality rates of smaller individuals in the Yolo Bypass or of larger individuals in the Sacramento River; however we have no data or reasonable mechanism to support this argument.

Apparent growth differences between the two areas are consistent with water temperature and stomach-content results. We found that the Yolo Bypass floodplain had significantly higher water temperatures and that young salmon from the floodplain ate significantly more prey than those from the Sacramento River. The wet weight ration indices calculated from bioenergetic modeling suggest that the increased prey availability in Yolo Bypass was sufficient to offset increased metabolic requirements from higher water temperatures. Higher water temperatures in the Yolo Bypass are expected as a result of the shallow depths on the broad floodplain. Increased feeding success in the Yolo Bypass is consistent with trends in prey availability. While Yolo Bypass and the Sacramento River had similar levels of zooplankton, Yolo Bypass had more dipteran prey in the drift, particularly in 1998. Studies of juvenile chinook salmon diets by Rondorf et al. (1990) showed that zooplankton were the least-favored prey items. Therefore, the dominance of zooplankton in the diets of Sacramento River salmon probably reflects a relatively low availability of other more energetically valuable prey items.

Recoveries of paired releases were too few to determine whether the higher survival indices for the Yolo Bypass release groups represent actual survival differences or random variation. Additional validation is needed from new release studies and from CWT recoveries in the adult ocean fishery and escapement. Nonetheless, the hypothesis that floodplain rearing could improve survival is substantiated by the growth data and bioenergetic modeling. Faster growth rates reflect improved habitat conditions, which would be expected to lead to improved survival, both during migration and later in the ocean. Elevated Yolo Bypass survival rates are also consistent with significantly faster migration rates in 1998, the likely result of which would be reduced exposure time to mortality risks in the delta, including predation and water diversions.

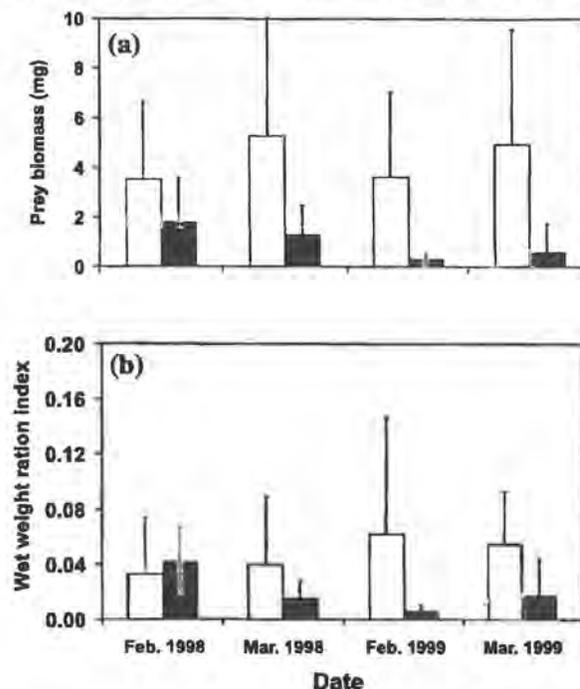
Improved survival is consistent with other habitat differences between the Yolo Bypass floodplain and the Sacramento River channel. We estimate that complete inundation of the Yolo Bypass creates a wetted area approximately 10 times larger than the reach of the Sacramento River we studied. This level of inundation is equivalent to a doubling of the wetted area of the entire delta portion of the San Francisco Estuary. Much of the floodplain habitat consists of broad shoals composed of soil and vegetation that are typical of the low-velocity conditions selected by young salmon (Everest and Chapman 1972). An increase in rearing area should reduce competition for food and space and perhaps reduce the probability of encountering a predator. In contrast, the Sacramento River channel is relatively narrow, with steep rock-reinforced banks and little shallow habitat. Migration through the Yolo Bypass corridor would also prevent

fish from entering the channels of the central delta, in which there are various risks, including major water diversions (Brandes and McLain 2001). However, the Yolo Bypass is a less-stable environment, with stranding risks when flood waters recede. The relatively well-drained topography of the Yolo Bypass floodplain may help to reduce the magnitude of this problem. This is not to say, however, that access to floodplain rearing habitat represents the only mechanism to account for possible improvements in juvenile salmon survival in wetter years. Other covariates, such as reduced water temperature (Baker et al. 1995), reduced predation losses from higher turbidity (Gregory and Levings 1998), and reduced water diversion effects (Kjelson et al. 1982), also contribute to improved wet-year survival of salmon that migrate through the San Francisco Estuary.

The results from this study suggest that hydrology may affect salmon feeding success, migration, and survival in both floodplain and river habitat. The CWT results indicate that salmon grew faster, migrated faster, and may have had better survival rates in 1998 than in 1999. One clear difference between the years is that the flow pulses were higher and of longer duration in 1998 than in 1999. Higher flow could directly increase migration rates through higher water velocities and have multiple indirect effects on growth through factors such as food supply or water temperature. The abundance of Diptera in drift samples was substantially higher in 1998 than in 1999 in both locations. The significant interaction between location and year for both prey weights and the wet weight ration index indicates that the combined effects of diet and water temperature under 1998 hydrology should have resulted in higher growth rates. Higher growth rates and faster migration times in 1998 may, in turn, have improved survival by reducing predation risk. Higher-flow conditions in 1998 increased the quantity and duration of floodplain rearing area, perhaps reducing resource competition and predator encounter rates. Increased flow duration and magnitude in 1998 could also have improved survival on the floodplain by reducing stranding risks.

These results provide new insight into the significance of seasonal floodplain habitat for salmon rearing, which has been studied primarily in perennial waterways such as estuaries and rivers (Healey 1991; Kjelson et al. 1982). Indeed, this is the first study we are aware of demonstrating that off-channel floodplain provides major habitat for chinook salmon. We do not believe that the benefits of the floodplain to chinook salmon are unique to Yolo Bypass. Initial results from the Cosumnes River, an undammed watershed in the delta, show similar growth enhancements for juvenile chinook salmon that rear on the floodplain rather than in adjacent river channels (Peter Moyle, University of California, Davis, CA 95616, personal communication). Moreover, the benefits of the floodplain to salmon are consistent with findings for other fish species. Sommer et al. (1997) found that the Yolo Bypass provides major spawning, rearing, and foraging habitat for the native cyprinid Sacramento splittail (*Pogonichthys macrolepidotus*). The spawning and rearing of fish on floodplains has been reported in diverse locations that range from small streams (Halyk and Balon 1983; Ross and Baker 1983) to large rivers (Copp and Penaz 1988) in both temperate (Gehrke 1992; Turner et al. 1994) and tropical (Winemiller and Jepsen 1998) locations. The growth ef-

Fig. 5. Feeding success results for Yolo Bypass (open bars) and Sacramento River (solid bars) juvenile salmon during 1998 and 1999. (a) Estimated prey weights in stomach contents. (b) Wet weight ration indices. Means and standard errors are shown.



fects of floodplain habitat have been described for several tropical locations (Welcomme 1979); however, the present study and the results of Gutreuter et al. (2000) represent the only examples from temperate rivers of which we are aware.

Differences between the invertebrate communities in floodplains versus river channels have been reported by Castella et al. (1991). The exceptional production of drift invertebrates on the Yolo Bypass floodplain is consistent with the results of Gladden and Smock (1990), who found that invertebrate production was one to two orders of magnitude greater on the floodplain than in adjacent streams. Although we did not monitor benthic invertebrates, results from other studies of large rivers indicate that benthic biomass may be up to an order of magnitude higher in the floodplain (Junk et al. 1989). The Yolo Bypass drift invertebrate results contrast with the results for zooplankton, which were not particularly abundant on the floodplain. This finding is comparable with that of Welcomme (1979), who reported that densities of zooplankton in natural floodplains are frequently low, except for low-water periods and localized concentrations near habitat interfaces such as shorelines.

The mechanism for greater abundance of drift invertebrates in the Yolo Bypass remains unclear, but is unlikely to be an artifact of land use on the floodplain. Possible explanations for increased drift abundance include increased food supply (e.g., primary production or detritus), more habitat, and longer hydraulic residence times. For each of these mechanisms, Yolo Bypass probably provides functions similar to more "natural" floodplains. Improved food supply is supported by the work of Jassby and Cloern (2000), whose

modeling studies suggest that the Yolo Bypass should have enhanced phytoplankton production as a result of its large surface area and shallow depth. Inputs of fertilizers from agriculture in the Yolo Bypass would not be important contributing factors, as nitrogen and phosphorous are rarely limiting to phytoplankton production in the delta (Ball and Arthur 1979). Like less-disturbed floodplains in other regions (Junk et al. 1989), invertebrate production in the Yolo Bypass may be stimulated by an increased availability of detritus in the food web. Alternatively, the trends in invertebrate abundance we observed may be a consequence of physical differences between floodplain and channel habitat. Inundation of the floodplain may increase the amount of habitat for benthic invertebrates, a major source of drift biomass. Given the larger surface area and lower velocities in Yolo Bypass, the floodplain probably has a much longer hydraulic residence time than the Sacramento River, reducing the rate at which drift invertebrates would be flushed out of the system. Increased habitat area and hydraulic residence time would also have been functional characteristics of the historical floodplain.

In the broader context, the results for salmon and drift invertebrates are consistent with the flood pulse concept, which predicts that floodplains should yield greater fish and invertebrate production than channel habitat (Junk et al. 1989). This finding is significant in that the flood pulse concept was developed primarily on the basis of relatively undisturbed rivers, whereas our study was conducted in a regulated river with a floodplain dominated by agricultural uses. Gutreuter et al. (2000) showed similar enhancements in fish growth from floodplain inundation in the Upper Mississippi River, another large regulated river. These studies suggest that floodplains can maintain important functional characteristics even in heavily modified rivers. In the case of the San Francisco Estuary and its tributaries, we do not claim that floodplain inundation is the primary factor regulating the productivity of the system. The Yolo Bypass floodplain may be seasonally more productive than the Sacramento River for some fish and invertebrates, but we have no data regarding its contribution during dry months or years. Nonetheless, the results of the present study and of Sommer et al. (1997) are sufficient to demonstrate that the floodplain represents one of the most biologically important habitat types in the region. We believe that proposed large-scale restoration activities in the San Francisco Estuary and its tributaries (Yoshiyama et al. 2000) that would increase the area and connectivity of the floodplain offer particular promise for native fish populations such as chinook salmon and Sacramento splittail.

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Habitat Use and Stranding Risk of Juvenile Chinook Salmon on a Seasonal Floodplain

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Abstract.—Although juvenile Chinook salmon *Oncorhynchus tshawytscha* are known to use a variety of habitats, their use of seasonal floodplains, a highly variable and potentially risky habitat, has not been studied extensively. Particularly unclear is whether a seasonal floodplain is a net “source” or a net “sink” for salmonid production. To help address this issue, we studied salmon habitat use in the Yolo Bypass, a 24,000-ha floodplain of the Sacramento River, California. Juvenile salmon were present in the Yolo Bypass during winter–spring; fish were collected in all regions and substrates of the floodplain in diverse habitats. Experimental releases of tagged hatchery salmon suggest that the fish reared on the floodplain for extended periods (mean = 33 d in 1998, 56 d in 1999, and 30 d in 2000). Floodplain rearing and associated growth are also supported by the significantly larger size of wild salmon at the floodplain outlet than at the inlet during each of the study years. Several lines of evidence suggest that although the majority of young salmon successfully emigrated from the floodplain, areas with engineered water control structures had comparatively high rates of stranding. Adult ocean recoveries of tagged hatchery fish indicate that seasonal floodplains support survival at least comparable with that of adjacent perennial river channels. These results indicate that floodplains appear to be a viable rearing habitat for Chinook salmon, making floodplain restoration an important tool for enhancing salmon production.

A large downstream movement of fry to provide dispersal to rearing areas is typical of ocean-type Chinook salmon *Oncorhynchus tshawytscha* (Healey 1991). Rearing areas include channel and off-channel habitat in natal and nonnatal streams and their estuaries (Bjornn 1971; Kjelsen et al. 1982; Levy and Northcote 1982; Swales et al. 1986; Swales and Levings 1989; Healey 1991; Shreffler et al. 1992). Recently, Sommer et al. (2001b) observed that juvenile Chinook salmon also live on seasonal floodplains. Large rivers and streams typically have dynamic floodplains varying in size from several to thousands of hectares, unless their channels are heavily confined by topography (e.g., streams at high elevation or confined by canyons or levees). Floodplains are known to be of major importance to aquatic ecosystems in most regions; large rivers typically favor the development of a fauna adapted to colonize this habitat (Welcomme 1979; Junk et al. 1989; Sparks 1995). As a result, it is reasonable to expect dispersing salmonid fry show some ability to use seasonal habitat. In support of this hypothesis, Sommer et al. (2001b) reported that food resources and water temperatures on the seasonal floodplain of a large river were superior to those in an adjacent perennial channel,

resulting in enhanced growth rates of young salmon. Despite some evidence that enhanced growth on the floodplain improved fry–smolt survival in the estuary, Sommer et al. (2001b) did not address any effects on adult production.

Intuitively, rearing in seasonal floodplains or intermittent streams seems risky because these habitats are among the most dynamic on earth (Power et al. 1995). It is still unknown whether seasonally dewatered habitats are a net “source” or a “sink” for salmonid production relative to production in permanent stream channels (Brown 2002). In particular, the high degree of seasonal flow fluctuation characteristic of floodplain habitat could cause major stranding events and increase mortality rates of young salmon (Bradford 1997; Brown 2002). For resident taxa in intermittent streams, the benefits of very large flow fluctuations appear to outweigh costs associated with a variable environment (Spranza and Stanley 2000). This issue continues to be a key concern for regulatory agencies that evaluate off-channel restoration projects or proposed flow fluctuations for possible effects on fishes (Brown 2002; Bruce Oppenheim, NOAA Fisheries, personal communication).

Here, we describe spatial and temporal trends in juvenile Chinook salmon habitat use and stranding in a large California river floodplain. Our study was conducted in the Yolo Bypass, the primary floodplain of the Sacramento River, the major pro-

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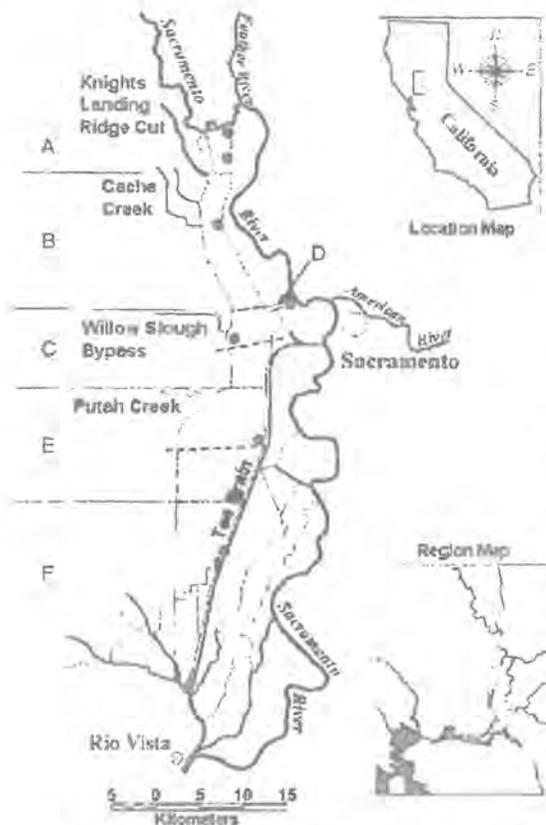


FIGURE 1.—Location of Yolo Bypass in relation to the San Francisco Bay–Delta and its tributaries. Fremont Weir is the upper (northern) edge of the Yolo Bypass. The major regions of the floodplain are delineated from north to south and correspond to the following codes: (A) Fremont Weir; (B) Cache Creek sinks; (C) Yolo Bypass Wildlife Area; (D) Sacramento Bypass; (E) Putah Creek Sinks; and (F) Liberty Island. The sampling locations are identified as follows: beach seine sites (solid circles); screw trap (star); and purse seine transects (dotted lines).

ducer of salmon in the San Francisco estuary (Figure 1). Because the Yolo Bypass can convey 75% or more of the total flow from the Sacramento River basin (Sommer et al. 2001a), this floodplain can be expected to be a migratory pathway for a substantial number of juvenile Chinook salmon. A major objective of our study was to collect basic information about the timing, duration, and habitat use of salmon on floodplains. We hoped that these data would provide insight into whether a floodplain is a net source (i.e., with rearing benefits) or a net sink (i.e., with high mortality because of stranding or predation) for salmon populations. The major hypotheses evaluated were as follows: (1) salmon occur in all major habitat types and

geographic regions; (2) floodplains provide rearing habitat for salmon and are not simply a migration corridor; and (3) stranding of juvenile salmon does not have a major population-level effect on survival of the fish that use floodplain habitat. We addressed these hypotheses by sampling wild fish throughout the floodplain, experimentally releasing tagged fish, and using hydrologic modeling and measurements of physical conditions to describe how habitat varied over the study period.

Study Area

The San Francisco Estuary and its two component regions, Sacramento–San Joaquin Delta and downstream bays (Figure 1), make up one of the largest estuaries on the Pacific coast of North America. Major changes to the system have included diking and isolation of about 95% of the wetlands, introduction of exotic species, channelization, sediment inputs from hydraulic mining, and discharge of agricultural and urban chemicals (Nichols et al. 1986; Kimmerer 2002). The Estuary receives most freshwater via the Delta, which drains approximately 100,000 km². Most precipitation occurs upstream of the Delta during winter and spring, resulting in a greater than 10-fold seasonal range of daily freshwater flow into the estuary. However, the hydrograph is substantially altered by dams on each of the major rivers. Peak flow pulses typically occur during winter, but dam operations can reduce the magnitude of the pulses, particularly in dry years, when much of the inflow is captured behind reservoirs (Mount 1995; Kimmerer 2002). The historically prominent spring flow pulse from snowmelt is at present muted except during heavy, late-season storms. For the past several decades, much of the spring snowmelt has been stored in reservoirs and released during summer and autumn, periods of historically lower flow. As much as 65% of the net Delta flow during summer and autumn is diverted from the channels by two large water diversions (the State Water Project and the Central Valley Project); additional water is diverted by 2,200 pumps and siphons for irrigation (Kimmerer 2002).

The 24,000-ha Yolo Bypass is the primary floodplain of the Delta (Sommer et al. 2001a). The majority of the floodplain is leveed to protect surrounding cities from floodwaters, but levees confine flow through the bypass only under very high flow events. The Yolo Bypass currently floods an average of every other year, typically under high-flow periods in winter and spring. The Yolo Bypass has a complex hydrology, with inundation possible

from several different sources. The floodplain typically has a peak inundation period during January–March but can flood as early as October and as late as June. The primary input to the Yolo Bypass is through Fremont Weir in the north, which conveys floodwaters from the Sacramento and Feather rivers. During major storm events (e.g., $>5,000 \text{ m}^3/\text{s}$), additional water enters from the east via the Sacramento Weir, adding flow from the American and Sacramento rivers. Flow also enters the Yolo Bypass from several small streams on its western margin, including Knights Landing Ridge Cut, Cache Creek, and Putah Creek. During much of the winter, water-suspended sediment levels in the Yolo Bypass and Sacramento River are high, generally resulting in secchi depths of less than 0.25 m. However, hydraulic residence times are typically longer in the Yolo Bypass than in the Sacramento River (Sommer et al. 2004). Floodwaters recede from the northern and western portions of the bypass along relatively even elevation gradients of 0.09% west–east and 0.01% north–south into a perennial channel on the eastern edge of the Bypass; they then rejoin the Sacramento River near Rio Vista. The majority of the Yolo Bypass is at present managed for wildlife in a mosaic that includes riparian, wetland, upland, and perennial pond habitats; however, a dominant land use during the past two decades, agriculture has decreased in recent years because of habitat restoration activities.

Our data collection focused on the fall-run juvenile Chinook salmon, currently the numerically dominant race in the Sacramento Valley (Yoshizawa et al. 2000). There are four races of Chinook salmon in the Sacramento Valley: winter, spring, late-fall, and fall-run. Like many other native fish, Chinook salmon in the San Francisco estuary and its tributaries have been adversely affected by such factors as habitat loss, water diversions, and species introductions (Bennett and Moyle 1996); as a result, the Sacramento River winter and spring run Chinook salmon are protected under the Federal Endangered Species Act. The typical life history pattern is for young fall-run salmon fry (approximately 35–70 mm fork length) to migrate from the tributaries during winter and spring to the estuary (Brandes and McLain 2001).

Methods

Physical habitat.—Because seasonal hydrologic variability is a key characteristic of floodplain habitat, we reasoned that detailed data on changes in physical habitat would be necessary to evaluate

the responses of young salmon. Daily flow data were obtained from gauging stations in the floodplain, and temperature data were collected using continuous temperature recorders (Sommer et al. 2001b). However, the vast area of Yolo Bypass made it impractical to directly measure other parameters, such as depth and surface area. As an alternative, we used a hydrologic model to estimate these parameters (Sommer et al. 2004). To summarize, the model treated Yolo Bypass as a "reservoir" described by (1) basin geometry and (2) flow and stage time series. The Yolo Bypass floodplain geometry was developed from 200 cross-sections with data collected at 300-m intervals by standard rod and level survey techniques. Mean daily stage and flow data were obtained from five gauging stations in the Yolo Bypass. For each date in the time series, we used linear interpolation between the gauging stations to estimate the stage at each cross-section. The estimated stage value was then used to calculate conveyance characteristics of each cross-section: area, width, and wetted perimeter. The daily results for each cross-section were used to estimate total surface area and mean depth. The large scale of the study reach did not allow validation of the depth estimates. As a partial validation of the model, Sommer et al. (2004) estimated total inundated area for the Yolo Bypass by using aerial photographs on days when the floodplain was inundated (February 8 and March 2, 1998) and when the floodplain was draining (April 28, 1998). To provide additional information about areas where fish stranding and consequent losses could occur, we estimated the portion of the area that was isolated ponds versus inundated area that was actively draining to the Delta (i.e., perennial channels and adjacent inundated area) on April 28, 1998.

Fish habitat use.—We used beach seine sampling to examine which regions and substrates of the floodplain were used by young salmon (hypothesis 1). During January through April of each year, a 15-m seine (3.2-mm mesh) was used to sample six regions of the Yolo Bypass (Figure 1). Fixed stations were used in each region during flooded periods. After floodplain drainage, samples were collected randomly within each region. For all periods, the primary substrate type of the habitat (sand, mud, gravel, pavement, or vegetation), fish species and size, and an estimate of the surface area swept by the seine were recorded. Habitat use during flood events was summarized in terms of the percentage of samples that contained salmon for each region and substrate type.

To provide additional information about habitat use, we conducted purse seine sampling along two transects (Figure 1). This sampling, performed in 1998 when the Yolo Bypass flow was relatively high ($>850 \text{ m}^3/\text{s}$), used purse seines ($30.5 \text{ m} \times 4.6 \text{ m}$, 4.75-mm mesh) set from a jet boat. Purse seining was conducted at 1–2 transects up to five times weekly, depending on hydrology. Hauls were made at random points in each of three habitat types (riparian, agricultural fields, and wetlands), the boundaries of which were established from aerial photographs taken before the Bypass was inundated. In the case of riparian habitat, hauls were made in clearings adjacent to trees to avoid snagging. We also recorded transect side (east or west half) for each haul because the western side of the Yolo Bypass was shallower and flow was dominated by inputs from westside streams rather than from Fremont or Sacramento weirs (Sommer et al. 2004). Most of these hauls were performed in areas exposed to at least a modest current. Additional limited paired sampling was conducted to examine possible differences between areas with and without velocity refuges. Low-velocity habitats sampled included downstream edges of levees, islands, and clusters of trees. Water velocities in randomly selected areas were approximately 0–0.05 m/s compared with greater than 0.33 m/s in adjacent exposed areas. Water depths were similar for each sampling pair. Differences in salmon densities for each habitat type were examined by using a Kruskal–Wallace test. A randomization *t*-test with 1,000 iterations (Haddon 2001) was used to compare salmon density on the east and west sides of the floodplain.

Migration trends.—To examine temporal trends in salmon migration through the floodplain (hypotheses 2 and 3), we operated a rotary screw trap (EG Solutions, Corvallis, Oregon) near the base of the Yolo Bypass during each study year. This technique was intended to provide an indication of the timing and duration of migration, rather than an absolute measure of the number of salmon emigrating the floodplain. During much of the sampling period the inundated width of the floodplain was 1–5 km, an area we considered too large for the traditional mark–recapture evaluations required to measure trap efficiency and total emigration (Roper and Scarnecchia 1996). A 1.5-m-diameter trap was used for the first 3 weeks of sampling in February 1998, after which a 2.4-m trap was used for all other sampling. We operated traps as often as 7 days each week, the daily effort varying from 1 to 24 h, depending on debris load

and safety considerations. Fish number and size were recorded in all years. In 1998, young salmon were classified as fry (prominent parr marks) or transitional fish/smolt (faded parr marks, silver appearance).

Floodplain residence time and growth.—We used experimental releases of salmon with coded wire tags (CWTs) as our primary method to evaluate fish residence time on the floodplain (hypothesis 2). Fry (mean size = 57 mm fork length) from the Feather River Fish Hatchery (Figure 1) were tagged by using coded-wire half tags (Northwest Marine Technologies) and released in the Yolo Bypass below the Fremont Weir on March 2, 1998 (53,000 fry); February 11, 1999 (105,000 fry); and February 22, 2000 (55,000 fry). We assessed residence time in the Yolo Bypass from recoveries of tagged fish in the screw trap at the base of the floodplain.

We also examined, using the previously described beach seine data, whether there was evidence of long-term rearing of wild salmon in the floodplain. We compared the slopes of weekly fork length measurements for the two northern beach seine regions (“North”) to the southernmost region (“South”), using a generalized linear model (GLM) with a Poisson distribution and log link variance function. We reasoned that major significant differences between the sizes of fish in the two areas provided evidence of extended rearing and growth of fish in the floodplain.

Salmon survival and stranding.—We used several independent data sources to examine whether salmon successfully emigrated from the floodplain (hypothesis 3). First, we compared survival of each of the Yolo Bypass CWT hatchery-reared salmon release groups with the survival of parallel CWT groups containing the same number of fish released into the Sacramento River (Sommer et al. 2001b). Recapture rates at the smolt stage of the 1998 and 1999 release groups had previously been analyzed by Sommer et al. (2001b); in the present study, we evaluated adult recoveries in the commercial and recreational ocean fisheries through 2003. Second, we examined stranding by using beach seine data (described previously) collected within a few weeks after the Sacramento River stopped flowing into the Yolo Bypass. Densities of salmon were compared with a randomization *t*-test (Haddon 2001) for (1) isolated earthen ponds (2) perennial channels, and any sites immediately adjacent to these water sources. The results for all years were pooled because of relatively low sample sizes for individual years. Data for each year

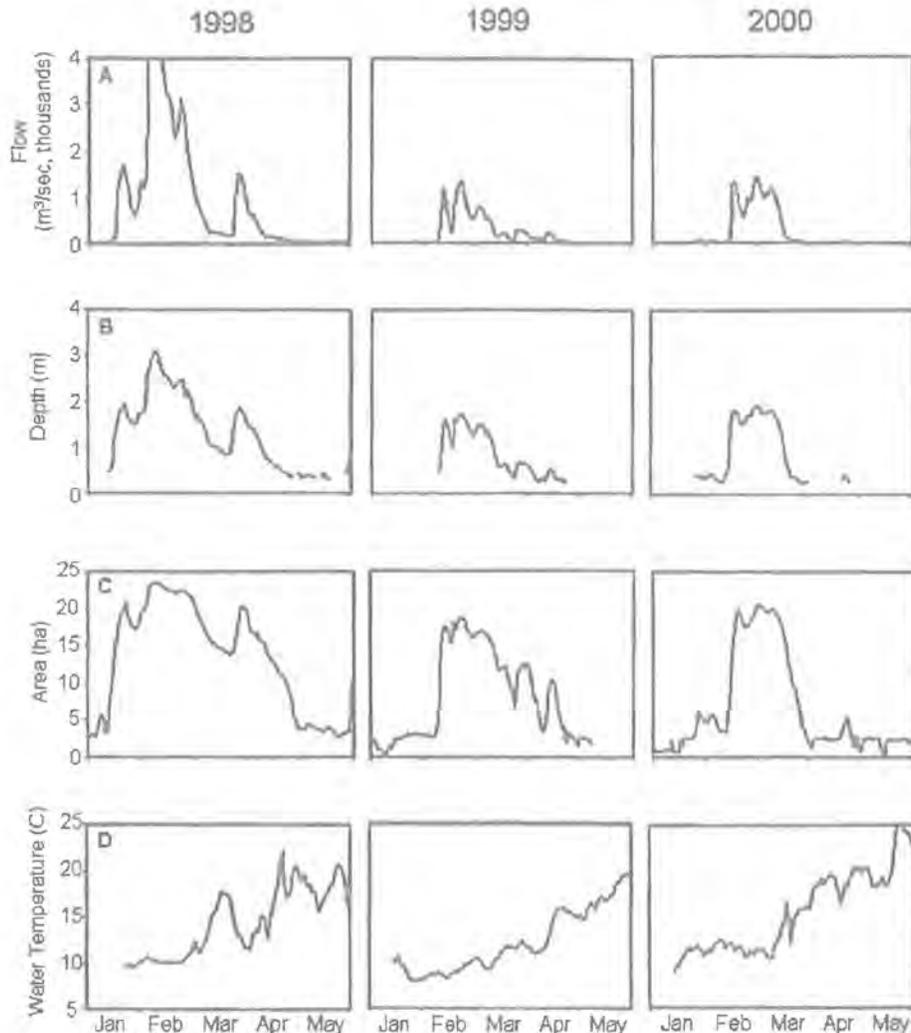


FIGURE 2.—Trends in physical variables for January–June 1998–2000: (A) mean daily flow in the Yolo Bypass; (B) simulated mean daily depth; (C) surface area; and (D) daily mean water temperature. The surface area data for 1998 and 2000 are from Sommer et al. (2004).

were first standardized for possible annual differences in abundance by conversion to *z*-scores; we then ran the randomization analysis using 1,000 iterations. We hypothesized that abundance of salmon would be equal in isolated ponds and contiguous water sources; that is, they would show no distinct “preferences.” Our reasoning was that similar abundance levels would indicate successful emigration, because most of the water drains from the floodplain. To further understand factors that could affect stranding, we also used a randomization *t*-test to compare densities of fish in two types of isolated ponds: isolated earthen ponds and concrete weir scour ponds at Fremont and Sacramento weirs (Figure 1). Sampling effort was much

greater in the isolated earthen ponds, so the randomization *t*-test was performed after randomly subsampling the earthen pond data from throughout the floodplain to provide equal sample sizes. We predicted that flood control structures would cause higher stranding than “natural” ponds. In addition, we examined trends in the catch of salmon in the screw trap data. We predicted that salmon catch would increase substantially during drainage because fish successfully emigrated the floodplain.

Results

Physical Habitat

The hydrographs varied substantially during the years of study (Figure 2A). In 1998 the hydrology

was wet (4.4-year recurrence flood event) and the Yolo Bypass was inundated during mid-January through mid-April and again in early June. The flow was lower in the other 2 years, when inundation occurred between mid-February and mid-March, peak flood events being at the 1.7-year recurrence interval in 1999 and at the 2.4-year recurrence interval in 2000. Surface area in the Yolo Bypass closely followed the flow peaks, the amounts of inundated area being successively smaller in each of the study years (Figure 2C). For the April 28, 1998, photographs, the total surface area of 5,050 ha was slightly lower than the model estimate of 6,700 ha. Based on the aerial photographs, we estimated that only 600 ha of the 5,050 ha comprised isolated ponds, the remainder being water that drained to the Delta. For all but peak flood events, mean water depth remained less than 1 m (Figure 2B). During peak flood events, mean depths did not exceed 2 m except in February 1998. Water temperature showed gradual increases throughout each study year (Figure 2D).

Fish Habitat Use

We captured salmon in all regions of the floodplain and on all substrate types. During 1998–2000 flood events, salmon were captured in a high percentage of samples in each region (Figure 1) of the floodplain: (1) Fremont Weir (100%, $n = 13$ samples); (2) Cache Creek Sinks (50%, $n = 16$ samples); (3) Yolo Bypass Wildlife Area (77%, $n = 22$ samples); (4) Sacramento Bypass (100%, $n = 7$ samples); (5) Putah Creek Sinks (94%, $n = 11$ samples); and (6) Liberty Island (100%, $n = 7$ samples). Similarly, during 1998–2000 flood events we collected salmon on a high percentage of substrate types: (1) mud (70%, $n = 47$ samples); (2) sand (100%, $n = 3$ samples); (3) pavement (100%, $n = 8$ samples); (4) vegetation (97%, $n = 32$ samples); and (5) gravel (89%, $n = 9$ samples).

Salmon densities as estimated by purse seine sampling were not significantly different between riparian (mean abundance = 46.9/ha, SE = 10.4, $n = 23$), agricultural (mean abundance = 20.9/ha, SE = 6.1, $n = 35$), or natural vegetated habitat types (mean abundance = 27.5/ha, SE = 5.6, $n = 31$) based on a Kruskal–Wallis test ($H = 4.38$, $df = 2$, $P = 0.112$). There was also no statistically significant difference between the east (mean abundance = 29.5/ha, SE = 6.0, $n = 53$) and west (mean abundance = 29.9/ha, SE = 6.7, $n = 36$) sides of the Bypass as shown by a randomization t -test ($P = 0.95$). Salmon were collected in six hauls in low-velocity habitat (mean abundance =

189/ha, SE = 24/ha), but none were collected in adjacent areas exposed to a current.

Floodplain Migration Trends

Salmon migration as indicated by trends in screw trap catch was highly variable over the course of the study, but there were prominent peaks in Chinook salmon catch coincident with floodplain drainage during late March–April (Figure 3B). Additional smaller peaks in salmon catch also paralleled flow, mostly during February and March. The life history stage of salmon during 1998 was exclusively parr through the end of March, after which the majority showed signs of smoltification.

Floodplain Residence Time

Based on recoveries of tagged fish in the screw trap, the mean residence time of CWT salmon was 33 d (range, 16–46 d; $n = 10$) in 1998, 56 d (range, 4–76 d; $n = 49$) in 1999, and 30 d (range, 28–37 d; $n = 25$) in 2000. The size of fish was significantly larger ($P < 0.001$; GLM) at the outlet of the floodplain than at the top (Figure 3C) during each of the study years.

Salmon Survival and Stranding

The numbers of CWT fish recovered for the Yolo Bypass were higher than in the Sacramento River in 1998, similar in 1999, and lower in 2000 (Table 1). Densities of wild Chinook salmon were highly variable during floodplain drainage events, with no statistically significant difference between densities in isolated earthen ponds and contiguous water sources (Table 2). However, densities of salmon were significantly higher ($P < 0.0001$; randomization t -test) in concrete weir scour ponds than in isolated earthen ponds (Table 3).

Discussion

Research on migratory fishes reveals that these species frequently have alternative life histories that may be influenced by habitat use at early life stages (Clark 1968; Secor 1999). Under Clark's (1968) "contingent hypothesis," migratory taxa have divergent migration pathways that could help the species deal with environmental variability and heterogeneity. This theory is consistent with our understanding of Chinook salmon, which are adapted to the extreme hydrologic variability in western North America and show a range of life histories (Healey 1991; Bottom et al. 2005). In this context, the use of multiple habitats—including natal and nonnatal streams (Bjornn 1971; Scriv-

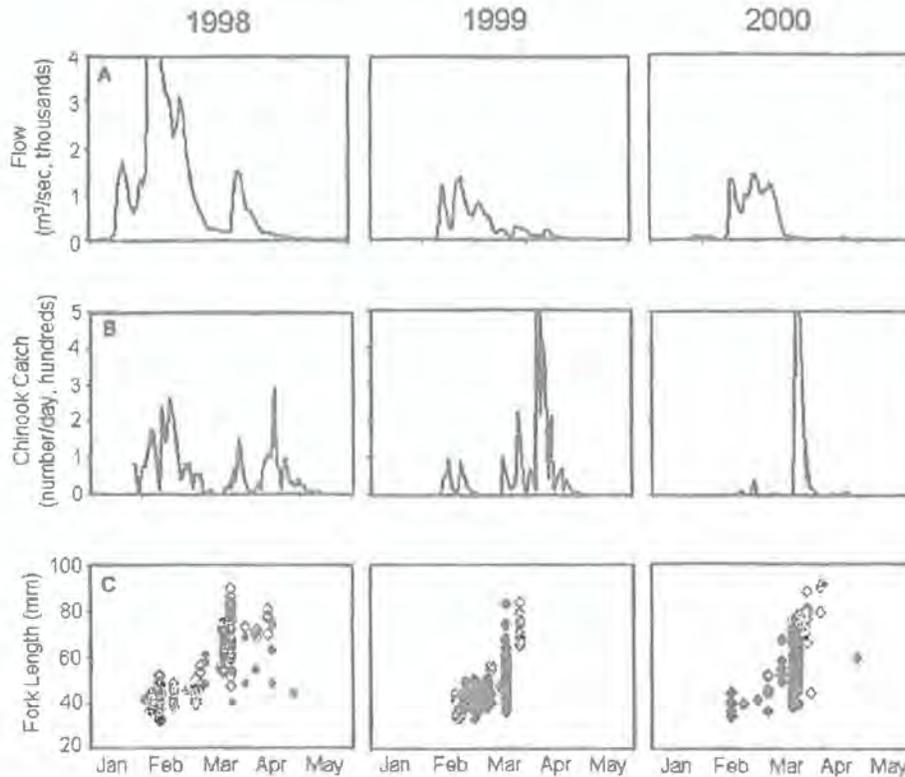


FIGURE 3.—Chinook salmon results during winter and spring 1998–2000: (A) mean daily flow; (B) salmon catch rates in screw trap sampling; and (C) salmon size for beach seine samples near the Yolo Bypass intake (solid symbols) and outlet (clear symbols).

ener et al. 1994), side channels and off-channel ponds (Swales et al. 1986; Swales and Levings 1989), low-elevation rivers (Kjelsen et al. 1982; Brown 2002), and estuaries (Healey 1991; Shreffler et al. 1992)—can be considered as part of an overall “bet-hedging” strategy that spreads risk across a variable environment. Despite the fact that seasonal floodplain represents perhaps the single most variable habitat available to salmon, our study suggests that floodplains are a viable rearing location for young fish.

TABLE 1.—Number of coded wire tags recovered in the ocean and commercial fisheries for Chinook salmon released in the Yolo Bypass and Sacramento River. The total number of tagged fish released in each location for each year is shown in parentheses. The survival ratio is calculated as the number of Yolo Bypass recoveries divided by the number of Sacramento River recoveries.

Release group	1998 (53,000)	1999 (105,000)	2000 (55,000)
Yolo Bypass	75	136	27
Sacramento River	35	138	47
Survival ratio	2.14	0.99	0.57

At the beginning of our study, our conceptual model for floodplain habitat use was that young salmon move into the floodplain during high-flow events and spread throughout the broad expanse of seasonally inundated habitat. Among the wide variety of suitable substrates and habitat types for rearing, young salmon appear to seek out low-velocity areas. Moreover, floodplain habitat apparently is not simply a migration corridor; many young salmon actively rear on the highly productive floodplain habitat for extended periods of time, resulting in high growth rates. Our findings suggest that salmon emigrate from the seasonally inundated habitat both during flood events and during drainage. Juvenile Chinook salmon do not appear to be especially prone to stranding mortality; indeed, survival may actually be enhanced by floodplain rearing in some years. Our conceptual model was supported by our results and has a variety of management implications.

Salmon were present in a broad range of habitat and substrate types and were collected in all regions and sides of the Yolo Bypass floodplain. The

TABLE 2.—Densities of Chinook salmon (number/ha \pm SE, with sample size in parentheses) collected in beach seine sampling during drainage events in 1998–2000. The sample locations are divided into isolated earthen ponds and contiguous water sources. Density differences were not statistically significant between the two pond types based on a randomization *t*-test of the pooled data for all years ($P = 0.79$; $n = 43$ for isolated ponds; $n = 59$ for contiguous water sources).

Location type	1998	1999	2000
Isolated ponds	206 \pm 112 (30)	890 \pm 491 (8)	126 \pm 65 (5)
Contiguous water sources	167 \pm 79 (33)	310 \pm 104 (13)	463 \pm 123 (13)

fact that they were present on the western half of the Bypass, where flows are dominated by Knights Landing Ridge Cut and Cache and Putah creeks, suggests that salmon spread throughout the floodplain after entering the basin by way of Fremont and Sacramento weirs. A few of these fish may have originated from a modest spawning population in Putah Creek (Marchetti and Moyle 2001). The fact that salmon were present in a wide range of habitat and substrate types and in different regions of the Yolo Bypass indicates that many areas of habitat were suitable, although this does not mean that there were no habitat preferences. Like many young fishes, much of the distribution of juvenile Chinook salmon can be explained by their association with shallow depths and low velocities (Everest and Chapman 1972; Roper et al. 1994; Bradford and Higgins 2001). The physical modeling indicated that mean depths were generally 1 m or less during all but peak flood periods, so much of the thousands of hectares of inundated habitat was probably within the shallow range typically preferred by young Chinook salmon (Everest and Chapman 1972). Our limited purse seine sampling suggested that young salmon were most abundant in low-velocity areas, which is consistent with previous studies in river and stream habitat (Everest and Chapman 1972; Roper et al. 1994; Bradford and Higgins 2001). We did not directly simulate water velocity in the present study; however, the relatively shallow water depth during flood events reflects the broad area of low-velocity rearing habitat created during flood events. We expect that this increase in rearing habitat in the Yolo Bypass

provides foraging opportunities (Sommer et al. 2001b), reduced energy expenditure, and perhaps reduced probability of encounter with a predator (Ward and Stanford 1995).

Our results also suggest that fish rear in the system for extended periods rather than simply using it as a migration corridor. The mean residence time of 30–56 d for the 44-km reach between the floodplain release location and the screw trap is substantially longer than one would expect, given that (1) fingerlings are capable of migrating at rates of at least 6–24 km/d in low-elevation reaches of other large rivers (Healey 1991) and (2) one of our 1999 CWT fish was recovered just 4 days after being released, having traveled an estimated rate of 11 km/d. The fish were significantly larger at the base of the Yolo Bypass, suggesting that their period of residence in the floodplain was long enough to support substantial growth. Similarly, Sommer et al. (2001b) found that salmon showed higher growth rates in the Yolo Bypass than in the adjacent Sacramento River, primarily because of higher levels of invertebrate prey in the floodplain. A long period of rearing is also supported by the screw trap data, which showed that the densities of salmon were greatest during drainage of the floodplain. We believe that these peaks are a result of rearing salmon being forced off of the floodplain by receding flows. Temperature and salmon life history stage do not provide good alternative explanations for the emigration trends. In 1998, for example, water temperatures were relatively high by late March and salmon began smoltification shortly thereafter; yet the screw trap data indicate

TABLE 3.—Densities of Chinook salmon (number/ha \pm SE, with sample size in parentheses) collected in beach seine sampling for earthen ponds and adjacent concrete weir ponds. Density differences were statistically significant between the two pond types based on a randomization *t*-test of the pooled data for all years ($P < 0.0001$; $n = 26$ for each pond type). Note that we used a randomly sampled subset of the earthen pond data to provide equal sample sizes for the comparison.

Location type	1998	1999	2000
Earthen ponds	186 \pm 67 (63)	531 \pm 200 (21)	369 \pm 97 (18)
Concrete weir ponds	2,717 \pm 1,115 (14)	14,208 \pm 3,898 (12)	4,181 \pm 1,275 (3)

that emigration did not peak until the end of April, when the floodplain drained. Perhaps the emigration trends are partially confounded by seasonal variation in salmon abundance. In the absence of trap efficiency data, we cannot estimate the proportion of the population that emigrated in winter versus spring events.

Several lines of evidence suggest that the majority of fish successfully emigrated from the floodplain. One important observation was that the area of isolated ponds was small relative to the overall area of the floodplain during both peak flood and drainage periods. As an example, in 1998, the wettest year we studied, the peak area of inundation was 24,000 ha, but the total inundated area dropped to 5,000 ha by late April. Of the 5,000 ha remaining at this point, our estimates from aerial photographs showed that isolated ponds took up only 600 ha. Put another way, isolated ponds represented just 12% of the wetted area in April and only 2.5% of the peak inundated area in winter. The same trend is evident in the area simulations for 1999 and 2000, when the peak area was 20,000 ha, but dropped to about 2,000 ha within a month. These results demonstrate that the Yolo Bypass drains fairly efficiently, leaving little isolated area where stranding can occur. This finding was somewhat unexpected, because many parts of the Yolo Bypass have natural topographic features or agricultural levees that could potentially impede drainage and fish emigration. Even if the area of isolated ponds is low, stranding could still be a substantial source of mortality if densities of fish in the remaining ponds were very high. However, we found no evidence that densities of fish stranded in isolated ponds were significantly higher than those in contiguous water sources that were draining to the Delta. The key point here is that most of the water drains from the floodplain and apparently the majority of the fish are leaving with the receding floodwaters. To help illustrate this issue, if we assume that mean densities of fish observed in Table 2 were representative of the entire wetted area of floodplain in April 1998, then the total number of fish in the 600 ha of isolated ponds would have been 123,600 salmon, lower than an estimate of 835,000 fish in the 5,000 ha of contiguous water sources. This conservative estimate also does not include the large numbers of fish that emigrated from the floodplain before April.

In addition to the beach seine and surface area data, we believe that trends in screw trap data support the hypothesis that stranding is not consis-

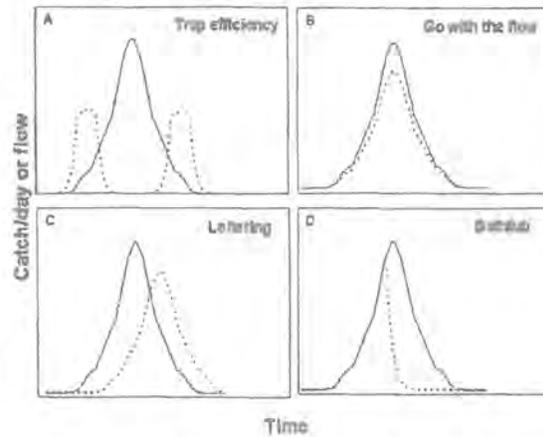


FIGURE 4.—Four conceptual models of expected screw trap catch (dotted line) relative to flow (solid line). See the Discussion for further details about each model.

tently a major problem on the floodplain. The screw trap data are somewhat ambiguous, because the large area of the floodplain makes it unreasonable to measure the efficiency of the trap. Therefore, we cannot accurately estimate the absolute number of salmon emigrating from the floodplain. However, we can at least examine the patterns of trap catch to evaluate likely mechanisms. Some of the possible patterns that we would expect to see for different factors are summarized in Figure 4. First, under the "trap efficiency" model, we would have expected dual peaks in the earliest and latest portions of flood events, when the screw trap would be sampling the highest portion of total flow (Figure 4A). If young salmon follow the "go with the flow" model, catch and flow peaks should be well-correlated (Figure 4B). Alternatively, if floodplains represent an important rearing habitat, we would expect catch trends to follow the "loitering" model, in which catch does not increase until drainage, when fish are forced from their rearing habitat by receding floodwaters (Figure 4C). Finally, if stranding were a major factor controlling catch trends, we would expect an early increase in catch as fish moved through the floodplain during inundation, but then catch should drop earlier than flow as young salmon became isolated from draining floodwaters (Figure 4D; "bathtub" model). Of these patterns, our data for the Yolo Bypass provide the strongest support for both the "go with the flow" and "loitering" models. In each year we saw obvious screw trap catch peaks associated with flow events, and additional prominent peaks associated with drainage. To summarize, apparently some of the fish move

through the floodplain in direct association with flow, whereas others remain as long as possible to rear on the floodplain. The screw trap trends show no evidence that stranding had a major influence on patterns of emigration.

Relatively low stranding rates on the Yolo Bypass floodplain are supported by observations from other seasonal floodplain habitat in the San Francisco estuary (Peter Moyle, University of California–Davis, personal communication) and other studies. Higgins and Bradford (1996) and Bradford (1997) report that juvenile salmonids are relatively mobile and that most avoid being stranded during moderate rates of stage change. Higgins and Bradford (1996) state that maximum recommended stage reduction levels for gravel bars of regulated rivers are typically 2.5–5 cm/h, much more than the 1 cm/h or less rates of change in mean water depth we observed during drainage in the present study. In his review of the ecology of fishes in floodplain rivers, Welcomme (1979) noted that the majority of fish emigrate from floodplain habitat during drainage.

Even if stranding is not a major source of mortality, this does not necessarily mean that floodplains are not sinks for salmon production. Of the possible sources of mortality, birds and piscivorous fishes may have benefited from stranded salmon (Brown 2002). As noted by Sommer et al. (2001a), major avian predation is unlikely because densities of wading birds are low relative to the thousands of hectares of rearing habitat available during flood events. We did not measure densities of fish predators, but believe that the creation of large areas of rearing habitat should create more refuges for young fish and decrease the probability of encounter with a predator.

Ultimately, it is survival data that allow us to differentiate source from sink habitat. The size and complexity of the San Francisco estuary made it very difficult to directly measure survival rates with statistical rigor (Newman and Rice 2002); however, our CWT release studies at least provide an indication of whether survival rates in the Yolo Bypass were substantially different from those in the Sacramento River, the adjacent migration corridor. The limited results suggest that fry–adult survival rates were at least comparable in the Yolo Bypass and the Sacramento River. Moreover, the 1998 results suggest that in some years, survival may actually be substantially higher for salmon that migrate through the floodplain. Although none of these CWT releases were replicated, the fact that Sommer et al. (2001b) reported similar results

for fry-to-smolt survival for the same releases in 1998 and 1999 increases our confidence that the survival data are not spurious.

Our data indicate that floodplains are a viable rearing habitat for juvenile Chinook salmon. Hence, the most important management implication of our study is that seasonal habitat should be considered as part of restoration plans for this species. Despite frequent concerns that off-channel habitat could increase stranding mortality (Brown 2002; Bruce Oppenheim, NOAA Fisheries, personal communication), our results for a hydrologically variable seasonal floodplain suggest that one should be able to design restoration projects that do not create a population sink because of excessive mortality. This is not to say, however, that stranding mortality is never an issue on floodplain habitat. For example, in the Yolo Bypass we saw significantly higher stranding rates in the concrete weir scour ponds of Fremont and Sacramento weirs than in earthen ponds. This finding suggests that artificial water control structures can create unusual hydraulics that promote stranding. However, the total area of these concrete weir ponds was only 3 ha, much smaller than our estimate of 600 ha for total isolated pond area for April 1998 and insignificant compared with the peak inundated area of 24,000 ha area. Fixing the poor hydraulics at these water-control structures may, nonetheless, be an attractive option, particularly if the cost of the solution is relatively low or if it helps to address other fisheries issues such as adult fish passage. In the Yolo Bypass, the concrete weirs not only create stranding problems for juveniles but also frequently block upstream passage of adult salmon, sturgeon, and steelhead trout (Sommer et al. 2001a), thus creating an incentive to resolve both issues simultaneously.

Finally, we wish to acknowledge that even natural floodplain or well-designed restored floodplain habitat could at least occasionally be a population sink because of stranding or predation losses. Our study was conducted over 3 years for a single, large floodplain; we cannot rule out the possibility that floodplains may not have net benefits in other years or locations. As an example, fish densities in the Yolo Bypass were relatively low compared with those reported in some other studies (Levy and Northcote 1982; Swales et al. 1986; Swales and Levings 1989); perhaps young salmon behavior could be different at higher densities. However, the potential for such losses can still be consistent with effective management of salmon populations. Diverse life history strategies

provide bet-hedging for salmon populations in the highly variable environment of coastal tributaries (Secor 1999; Bottom et al. 2005). We therefore expect that young salmon will not thrive in all habitats in every year. In the case of highly variable seasonal environments such as floodplains, stranding losses might cause excessive mortality in some years, but the risks may be offset by increased rearing habitat and food resources in other years (Sommer et al. 2001b; Brown 2002).

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**Insights into the
Problems, Progress, and Potential Solutions
for Sacramento River Basin Native Anadromous Fish Restoration**



Spring-Run Chinook Salmon in Mill Creek, California (Photo by Dave Vogel)

April 2011

Prepared for:

**Northern California Water Association
and
Sacramento Valley Water Users**

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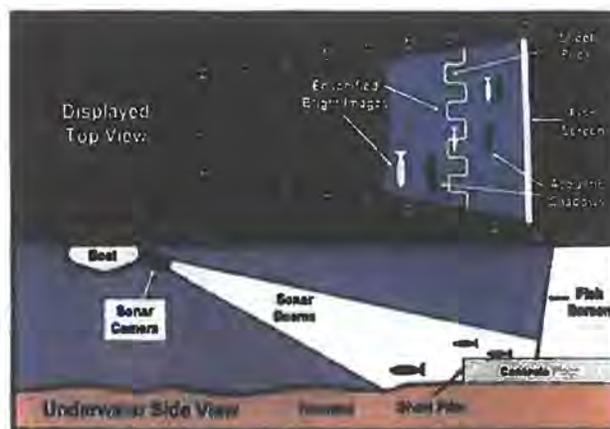


Figure 60. Schematics of DIDSON™ imaging at the base of a flat-plate fish screen. Bottom diagram shows orientation of sonar beams from the acoustic camera off the side of a boat and submerged objects at the fish screens. Top diagram shows the resultant corresponding sonar imaging of objects ensounded with acoustic shadows from the objects. (from Vogel 2008b)

From 1996 through 2010, Natural Resource Scientists, Inc. conducted 22 separate research projects on juvenile salmon (including four studies of predatory fish) in the Delta using acoustic or radio telemetry as a means to gain an improved understanding of fish movements and mortality (Vogel 2010a). The reason juvenile salmon telemetry studies were initiated in the Delta was to acquire detailed data on fish behavior, fish route selection through complex channels, and estimate fish survival in discrete reaches. Past efforts using traditional coded-wire tagging could not answer those critically important questions. Research findings from the telemetry investigations indicate that smolt survival assumptions and models must incorporate these new conclusions to avoid misinterpretation of data and improve quantitative estimates of fish survival and movements (Vogel 2010a).

The first successful use of telemetry on juvenile salmon in the Central Valley was conducted by Natural Resource Scientists, Inc. on behalf of EBMUD in 1996 and 1997. At that time, the specific behavior of juvenile salmon in the Delta was largely unknown. The initial studies quickly determined that the fish did not move as a school, but instead, dispersed, exhibiting a wide range in migratory behaviors in the complex Delta environment. Salmon moved many miles back and forth each day with the ebb and flood tides and the side channels (where flow was minimal) were largely unused. Site-specific hydrodynamic conditions present at flow splits when the fish arrived had a major affect in initial route selection. Importantly, some of the salmon were believed to have been preyed upon based on very unusual behavior patterns (Vogel 2010a).

Subsequent, additional juvenile salmon telemetry studies were conducted by Natural Resource Scientists Inc. on behalf of the USFWS and CALFED in the north Delta (Vogel 2001, Vogel 2004). Triangulating radio-tagged fish locations in real time (Figure 61) clearly demonstrated

how juvenile salmon move long distances with the tides and were advected into regions with very large tidal prisms, such as upstream into Cache Slough and into the flooded Prospect and Liberty Islands (Figure 62). During the studies, it was determined that some radio-tagged salmon were eaten by predatory fish in northern Cache Slough, near the levee breaches into flooded islands (discussed below). Also, monitoring telemetered fish revealed that higher predation occurred in Georgiana Slough as compared to the lower Sacramento River (Figure 63). As discussed previously, past coded-wire tagging studies found that salmon released into northern Georgiana Slough were found to have a higher mortality rate than fish released downstream of the slough in the Sacramento River (Brandes and McLain 2001).

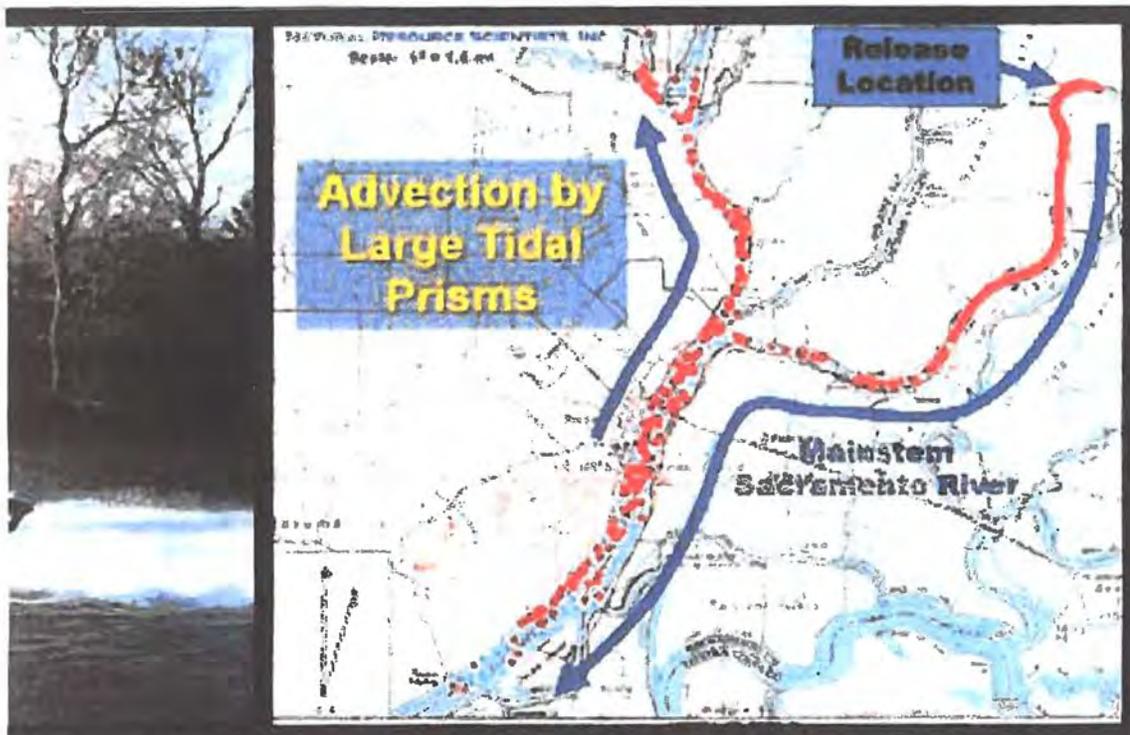


Figure 61. Left picture, mobile telemetry conducted in the north Delta. Photo by Dave Vogel.
 Figure 62. Right picture, telemetered locations of approximately 100 radio-tagged salmon smolts released in the lower Sacramento River near Ryde (data from Vogel 2001 and Vogel 2004).



Figure 63. Estimated mortality rate for groups of radio-tagged salmon released at two locations in the north Delta and locations where radio-tagged salmon smolts were detected to have been preyed upon (Vogel 2001, Vogel 2004).

More recently, a 2007 study conducted by releasing acoustic-tagged juvenile salmon in the San Joaquin River found 116 motionless juvenile salmon transmitters in the lower San Joaquin River near the Stockton Waste Water Treatment Plant and a nearby bridge (Figure 64) (Vogel 2007b). This was an all-time record for the largest number of dead radio- or acoustic-telemetered juvenile



ducted in the north Delta. Photo by Dave Vogel.
is of approximately 100 radio-tagged salmon smolts released in the

vegetation at some sites in the Delta and water clarity. Increased water clarity for sight predators such as black bass and striped bass would presumably favor predatory fish over prey (e.g., juvenile salmon). Fewer native fish species are found in *Egeria* stands compared to introduced fish species (Grimaldo and Hymanson 1999). Additionally, it has been hypothesized that high densities of *Egeria* in portions of the Delta may restrict juvenile salmon access to preferred habitats, forcing salmon to inhabit deep water or channel areas where predation risks may be higher (Grimaldo *et al.* 2000).

During recent years, there has been an emphasis to reclaim or create shallow, tidal wetlands to assist in re-creating the form and function of ecosystem processes in the Delta with the intent of benefitting native fish species (Simenstad *et al.* 1999). Among a variety of measures to create such wetlands, Delta island levees either have been breached purposefully or have remained unrepaired so the islands became flooded. A recent example is the flooding of Prospect Island which was implemented under the auspices of creating shallow water habitat to benefit native fish species such as anadromous fish (Christophel *et al.* 1999). Initial fish sampling of the habitat created in Prospect Island suggested the expected benefits may not have been realized due to an apparent dominance of non-native fish (Christophel *et al.* 1999). Importantly, a marked reduction of sediment load to the Delta in the past century (Shvidchenko *et al.* 2004) has implications in the long-term viability of natural conversion of deep water habitats on flooded Delta islands into shallow, tidal wetlands. The very low rates of sediment accretion on flooded Delta islands indicate it would take many years to convert the present-day habitats to intertidal elevations which has potentially serious implications for fish restoration (Nobriga and Chotkowski (2000) due to likely favorable conditions for non-salmonid fish species that can prey on juvenile salmon. Studies of the shallow water habitats at flooded Delta islands showed that striped bass and largemouth bass represented 88 percent of the individuals among 20 fish species sampled (Nobriga *et al.* 2003).

There have likely been significant adverse, unintended consequences of breaching levees in the Delta. There is a high probability that site-specific conditions at the breaches have resulted in hazards for juvenile anadromous fish through the creation of favorable predator habitats. The breaches have changed the tidal prisms in the Delta and can change the degree in which juvenile fish are advected back and forth with the tides (Figure 61; previously discussed). Additionally, many of the breaches were narrow which have created deep scour holes favoring predatory fish. Sport anglers are often seen fishing at these sites during flood or ebb tides. Breaching the levees at Liberty Island is an example (Figure 72 and 73). Recent acoustic-tagging of striped bass in this vicinity confirmed a high presence of striped bass (Figure 74, D. Vogel, unpub. data).



Figure 72. Liberty Island in the north Delta before and after flooding.



Figure 73. Liberty Island in the north Delta before and after flooding showing locations of narrow breaches in the levees.



Figure 74. Locations (squares) where predatory striped bass were acoustic-tagged with transmitters during the winter of 2008 – 2009 in the north Delta near Liberty Island (D. Vogel, unpublished data).

TABLE A-5
1976-77 Estimated Crop Et Values
Delta Service Area
(in inches)

Land Use Category	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Total Oct.-76-Sep-77	Oct. 77	Total Nov.-77-Oct.-77
Sacramento-San Joaquin Delta															
Irrigated Pasture	3.2	1.5	1.0	0.7	1.5	3.6	5.4	4.8	6.9	7.7	6.4	4.7	47.4	3.4	47.6
Alfalfa	3.2	1.5	1.0	0.7	1.5	3.2	4.9	4.4	6.5	7.5	6.5	4.9	45.8	3.4	46.0
Deciduous Orchard (Fruits & Nuts)	2.6	1.5	1.0	0.7	1.5	2.7	3.8	4.0	6.1	7.4	6.1	4.3	41.7	2.6	41.7
Tomatoes	2.4	1.5	1.0	0.7	1.5	1.9	2.2	2.6	4.0	8.2	6.0	2.3	34.3	1.9	33.8
Sugar Beets	2.4	1.5	1.0	0.7	1.5	1.9	2.2	3.7	7.6	8.3	6.4	4.4	41.6	2.4	41.6
Grain Sorghum (Milo)	2.4	1.5	1.0	0.7	1.5	1.9	2.2	2.0	5.9	7.3	4.3	2.5	33.2	1.9	32.7
Field Corn	2.4	1.5	1.0	0.7	1.5	1.9	2.2	2.3	5.7	6.9	5.1	2.6	33.8	1.9	33.3
Dry Beans	2.4	1.5	1.0	0.7	1.5	1.9	2.2	1.7	5.7	6.2	2.7	2.5	30.0	1.9	29.5
Safflower	2.4	1.5	1.0	0.7	1.5	1.9	2.5	4.6	8.7	7.7	4.4	2.5	39.6	1.9	39.1
Asparagus	2.4	1.5	1.0	0.7	1.5	1.9	2.2	1.0	3.5	7.7	6.4	4.7	34.5	2.4	34.5
Potatoes	2.4	1.5	1.0	0.7	1.5	1.9	2.2	1.7	4.3	7.4	5.5	2.8	32.9	1.9	32.4
Irrigated Grain	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	1.8	1.0	1.0	1.6	26.1	1.6	24.7
Vineyard	2.4	1.5	1.0	0.7	1.5	1.9	2.2	2.8	5.3	6.5	5.3	3.4	34.5	2.4	34.5
Rice	3.2	1.5	1.0	0.7	1.5	1.9	2.8	5.6	6.8	9.8	8.1	5.5	50.4	3.4	50.6
Sudan	2.4	1.5	1.0	0.7	2.0	4.3	4.7	4.8	6.9	7.7	4.9	4.7	46.6	2.4	46.6
Misc. Truck	2.4	1.5	1.0	0.7	1.5	1.9	3.2	4.6	6.7	7.4	5.2	3.7	39.8	1.9	39.3
Misc. Field	2.4	1.5	1.0	0.7	1.5	1.9	2.2	2.4	6.1	7.4	5.0	1.9	34.0	1.9	33.5
Double Cropped with Grain															
Sugar Beets	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	1.8	4.2	5.2	5.8	37.7	3.4	38.7
Field Corn	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	1.8	4.3	6.3	6.1	39.2	2.7	39.5
Grain Sorghum (Milo)	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	1.8	2.7	6.1	5.2	36.5	1.9	36.0
Sudan	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	3.6	7.7	4.9	4.7	41.6	1.9	41.1
Dry Beans	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	3.1	7.6	3.5	1.5	36.4	1.9	35.9
Tomatoes	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	2.3	6.6	6.0	5.2	40.8	1.9	40.3
Lettuce	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	4.1	7.4	5.3	4.9	42.4	2.4	42.4
Misc. Truck	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	2.3	6.6	6.0	5.2	40.8	2.4	40.8
Misc. Field	2.4	1.5	1.0	0.7	2.0	4.3	5.7	3.1	4.1	7.4	5.3	4.9	42.4	3.4	43.4
Fallow Lands 1/	2.4	1.5	1.0	0.7	1.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	14.0	1.0	12.6
Native Vegetation 2/	2.4	1.5	1.0	0.7	1.4	3.7	3.8	2.1	2.3	2.6	2.3	2.0	25.8	1.6	25.0
Riparian Veg. & Water Surface	4.6	2.4	1.4	0.8	1.9	4.5	7.4	6.6	9.7	11.8	9.7	7.0	67.8	4.3	67.5
Urban	1.6	0.8	0.6	0.7	1.0	1.0	1.9	2.4	2.4	2.5	2.4	1.9	19.2	1.6	19.2

1/ Applies also to nonirrigated grain.

2/ Applies also to nonirrigated orchards and vineyards

Metric conversion: inches times 25.4 equals millimetres

Exhibit 29-2

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

PUBLICATIONS OF THE
DIVISION OF WATER RESOURCES
EDWARD HYATT, State Engineer

SACRAMENTO - SAN JOAQUIN

WATER SUPERVISOR'S

REPORT

FOR YEAR

1931

By
HARLOWE M. STAFFORD
Water Supervisor

Under the supervision of
HAROLD CONKLING
Deputy State Engineer

August, 1932

TABLE 69

 UNIT CONSUMPTIVE USE OF WATER IN SACRAMENTO-SAN JOAQUIN DELTA**
 Acre-feet per Acre

Crop or Classification	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total Seasonal Use	Total Annual Use
Alfalfa	(.06)	(.08)	.10	.30	.40	.50	.65	.55	.50	.20	(.10)	(.07)	3.20	3.51
Asparagus	.05	.05	.05	.05	.08	.14	.40	.65	.55	.42	.12	.10	2.69	2.69
Beans	(.06)	(.08)	(.08)	(.16)	(.20)	.14	.24	.58	.37	(.09)	(.07)	(.05)	1.33	2.12
Beets	(.06)	(.08)	(.08)	.13	.32	.51	.61*	.53*	.20*	(.13)	(.10)	(.07)	2.30	2.82
Celery	(.04)	(.04)	(.04)	(.08)	(.10)	.10	.10	.20	.25	.30	.20	.05	1.20	1.50
Corn	(.04)	(.04)	(.04)	(.08)	(.10)	.24	.25	.24*	.40*	.10	(.10)	(.07)	2.13	2.50
Spuit	(.04)	(.04)	(.04)	.18	.32	.50	.57	.40	.23	.07	(.07)	(.05)	2.27	2.91
Coin and Hay	(.04)	(.04)	.07	.60	.23	.20	(.14)	(.23)	(.21)	(.14)	(.07)	(.05)	1.70	2.62
Onions	(.04)	(.04)	.08	.13	.27	.49	.43	.20	(.16)	(.13)	(.10)	(.07)	1.60	2.14
Pasture	.08	.10	.20	.25	.25	.25	.25	.20	.15	.10	.08	.08	2.16	2.16
Potatoes	(.06)	(.08)	(.08)	(.16)	.15	.38	.52	.30	.15	(.09)	(.07)	(.05)	1.90	2.09
Seed	(.06)	(.08)	(.08)	.10	.25	.50	.50	.50	.35	.10	(.10)	(.07)	2.30	2.69
Trunk	(.06)	(.08)	.10	.10	.25	.50	.45	.45	.30	.15	.10	(.07)	2.40	2.61
Trees	.16	.09	.30	.74	1.10	1.28	1.53	1.32	1.18	.98	.59	.36	9.63	9.63
Willows	.05	.03	.09	.22	.33	.38	.46	.40	.35	.29	.18	.10	2.88	2.88
Bare Land	.04	.04	.04	.08	.10	.13	.14	.13	.11	.09	.07	.05	1.02	1.02
Idle Land with Weeds***	.06	.08	.08	.16	.20	.26	.28	.24	.16	.13	.10	.07	1.82	1.82
Open Water Surfaces	.08	.13	.23	.34	.60	.76	.84	.78	.60	.33	.14	.08	4.91	4.91

NOTE: Figures shown in brackets () represent estimated consumptive use on cropped areas before planting and after harvest. (Evaporation from bare land, use by weeds, etc.).

* Includes estimated additional use by weeds during these months.

** These are the data as determined for and published in Bulletin No. 27 - "Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay" - Table 1.

*** Average for land below elevation 5.0 U.S.C. datum. Use on unfringed lands above elevation 5.0 is considered zero.

TABLE 74
USE OF WATER BY CAT-TAILS GROWN IN TANKS, NEAR CLARKSBURG,
RECLAMATION DISTRICT 999, 1931

TANK NO.	USE OF WATER - ACRE-FEET PER ACRE												YEAR
	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
2	0.22	0.22	0.58	1.08	2.28	2.28	2.96	2.51	1.66	0.91	0.43	0.23	15.36
3	0.21	0.20	0.49	1.12	1.94	2.11	2.51	1.92	1.36	0.83	0.51	0.22	13.42
4	0.20	0.21	0.52	1.30	2.51	2.78	3.34	2.78	1.90	1.04	0.54	0.29	17.41
5	0.23	0.25	0.50	1.15	1.98	1.83	2.04	1.82	1.28	0.76	0.37	0.13	12.34
6	0.22	0.24	0.60	1.44	2.80	2.77	3.51	—UNDER TEST FOR LEAKAGE—					
MEANS	0.22	0.22	0.54	1.22	2.30	2.35	2.87	*2.26	*1.55	*0.94	*0.46	*0.22	*14.63

*MEAN OF FOUR TANKS

TABLE 75
USE OF WATER BY TULE S GROWN IN TANKS, NEAR CLARKSBURG,
RECLAMATION DISTRICT 999, 1931

TANK NO.	USE OF WATER - ACRE-FEET PER ACRE												YEAR
	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	
7	0.21	0.23	0.54	1.32	3.02	2.88	4.35	—UNDER TEST FOR LEAKAGE—					
8	0.20	0.24	0.48	1.18	2.45	2.39	3.02	2.59	1.78	1.01	0.51	0.20	16.05
9	0.20	0.26	0.48	1.12	2.14	2.20	2.76	1.98	1.37	0.82	0.41	0.20	13.94
10	0.19	0.24	0.51	1.08	2.07	2.26	2.88	1.71	1.23	0.66	0.43	0.23	13.49
11	0.21	0.19	0.40	0.90	1.84	1.65	1.63	1.32	1.16	0.72	0.39	0.19	10.60
12	0.20	0.20	0.25	0.84	1.75	1.26	2.75	2.36	1.72	1.09	0.61	0.27	13.30
MEANS	0.20	0.23	0.44	1.07	2.21	2.11	2.90	*1.99	*1.45	*0.86	*0.47	*0.22	*13.48

*MEAN OF FIVE TANKS

TABLE 77
USE OF WATER BY CAT-TAILS AND TULE GROWN IN TANKS AT CAMP 3, KING ISLAND
1931

TANK NUMBER	PLANT	WATER SURFACE ABOVE GROUND SURFACE FEET	USE OF WATER - ACRE-FeET PER ACRE												COMPARATIVE PLANT SIZE (2)	
			JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC. (3)		YEAR (4)
1	CAT-TAILS	0.0	0.14	0.13	0.25	0.52	0.32	0.31	0.33	0.18	0.13	0.15	0.07		2.8	UNDERSIZE
2	CAT-TAILS	1.0	NO USABLE RECORD				0.72	0.82	0.92	0.82	0.67	0.53	0.26		6.2	UNDERSIZE
3	TULE	1.0	NO USABLE RECORD				0.33	1.13	1.32	1.16	0.80	0.51	0.19		8.0	NORMAL
4	TULE	0.0	0.17	0.15	0.45	0.58	1.00	0.88	0.88	0.71	0.53	0.15	0.07		5.7	UNDERSIZE

- (1) INCLUDES APRIL 29TH AND 30TH.
 (2) THE COMPARISON FOR SIZE IS WITH SURROUNDING PATCH PLANTS OF THE SAME KIND. PLANTS IN TANKS NUMBERS 1 AND 2 WERE UNDERSIZE ALL SEASON. PLANTS IN TANK NUMBER 4 WERE NORMAL SIZE AT BEGINNING OF SEASON.
 (3) HEAVY RAINS DERANGED CONDITIONS SO THAT NO RELIABLE RECORD FOR DECEMBER WAS OBTAINED.
 (4) ESTIMATED. CLOSELY FOR TANKS NUMBERS 1 AND 4. ROUGHLY FOR TANKS NUMBERS 2 AND 3.

- - 0 - -

TABLE 78
USE OF WATER BY TULE GROWN IN TANKS AT SIMMONS ISLAND, NEAR BAY POINT, 1931

TANK NO.	WATER SURFACE ABOVE GROUND SURFACE FEET	USE OF WATER - ACRE-FeET PER ACRE											NUMBER OF STALKS IN JULY*		
		JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.		DEC.	YEAR (4) FEB. - JULY*
1	1.0	0.11	0.15	0.23	0.28	0.38	0.48	0.61	0.48	0.43	0.21	0.11	(0.11)	3.58	11
2	0.0	(0.11)	(0.11)	(0.12)	0.14	0.94	0.80	0.69	0.52	0.36	0.22	0.11	(0.11)	4.23	19
3	1.0	(0.11)	(0.15)	(0.28)	0.34	1.01	0.87	0.84	0.67	0.60	0.46	0.29	(0.11)	5.73	35
4	0.0	(0.11)	(0.15)	(0.24)	0.29	0.96	0.89	0.78	0.59	0.54	(0.30)	0.14	(0.11)	5.10	30
MEANS		(0.11)	(0.14)	(0.22)	0.26	0.82	0.76	0.73	0.57	0.48	(0.30)	0.16	(0.11)	4.85	

NOTE: FIGURES IN PARENTHESES ARE ESTIMATED.
 * THERE WERE SOME NEW SPROUTS IN ALL TANKS IN JULY.



CALIFORNIA DEPARTMENT OF WATER RESOURCES

Modernizing Delta Conveyance Infrastructure Q&A

1. Why do we need modernized infrastructure in the Delta?

Rain and snowmelt from the Sierra Nevada through the Sacramento-San Joaquin Bay Delta supplies drinking water to 27 million people in Northern and Southern California and supports 750,000 acres of irrigated farmland. Water infrastructure in the Delta is highly vulnerable to earthquake and sea level rise. According to the United States Geological Survey, there's a 72% chance a 6.7 or greater magnitude earthquake occurring in the Bay Area by 2043 that could cause levees in the Delta to fail, crippling the state's ability to deliver clean water. As sea levels continue to rise, the Delta will be faced with increasing saltwater intrusion into the inner Delta, which threatens clean water supplies that flow through the Delta.

Clear, objective science shows us that these are real, serious threats. We need to take action now to upgrade Delta infrastructure, recognizing that this process will take years to make these improvements.

2. What is the impact of climate change on Delta water supplies?

The best and most recent scientific data have led the California Ocean Protection Council to recommend that projects with a lifespan beyond 2050 be built to withstand 10 feet of sea level rise by 2100. A reliable underground conveyance system is needed to move high flows from the northern portion of the Delta, which is over 15 feet above sea level, to the point that it can be exported to water systems in the Bay Area, Central Valley and Southern California. This will protect freshwater for use by 27 million Californians.

As sea levels continue to rise, the California Delta will be inundated with increasing water levels and salinity, which can dramatically alter and harm fragile ecosystems as well as water supply. The increase in sea level rise, combined with a projected shift in winter precipitation from snow to rain, will create massive challenges for the existing south Delta pumping facilities and the vulnerable levee system. Without proper upgrades and investments, the science clearly shows that Delta communities will be under grave threat from increased salinity that will contaminate their drinking and irrigation water, as well as catastrophic flooding risks. Vast expanses of Delta farmland and communities already sit below sea level. Climate change will dramatically increase the risks for these communities which, coupled with seismic risk, makes the situation urgent.

3. Why doesn't the state just invest more in local projects like recycling and desalination?

Under Governor Newsom's leadership, California is working to develop a broad new approach that focuses on securing safe and resilient water supplies, reducing flood risks, and restoring and maintaining healthy waterways. This broad water resilience portfolio will likely prioritize conservation, recycling, groundwater management, and much more, which will build the resilience of local water systems across the state. At the same time, the Sacramento and San Joaquin River systems—which rely on runoff from most of the Sierra Nevada mountain range—provide a critical water supply for much of the state. Planning a

future for California while not protecting these water supplies from growing risks is dangerous and not advisable.

4. What's happening with WaterFix?

Governor Newsom recently directed his state agencies to develop a portfolio approach to make California's water supplies climate resilient. This strategy will build local resilience across the state and is appropriately paired with a single tunnel, smaller capacity project. Under the Governor's direction, the state is formally withdrawing pursuit of the proposed twin-tunnel WaterFix project. The state is withdrawing all approvals made in compliance with the California Environmental Quality Act and the federal and California Endangered Species Acts, as well as the water rights petition in front of the State Water Resources Control Board. The state will begin environmental permitting, engineering and stakeholder engagement to pursue a single tunnel solution to modernize Delta conveyance.

5. What are the details of the new proposed conveyance project? What is the process for a new environmental review under CEQA?

The new approach to modernized Delta conveyance centers on a single tunnel, smaller capacity project. This new approach will allow us to develop a project that incorporates the latest in science and engineering, as well as updated information to minimize impacts. The Department of Water Resources (DWR) will begin a new environmental review process in compliance with CEQA and will ensure that process is open to public engagement. Local input and active engagement will be critical to ensuring a solution that meets the project objectives.

6. Will Delta communities be involved in this new approach?

Yes. Participation and collaborative problem solving will be critical to our success. The Newsom administration wants to engage with Delta communities to hear their ideas and concerns. The administration will also reach out to legislators, state agencies and other policymakers and continue a public dialogue that will allow any Californian engaged in water policy to hear the options and provide input. Our agencies are committed to making the public, especially the Delta community, a part of this new strategy to prepare the state for climate change.

There will also be many opportunities for public input as a part of the planning and environmental review process for Delta conveyance. Their voices, input and active engagement will be critical to ensuring a solution that will protect water supply reliability, but in a way that minimizes impact and cost and maximizes overall benefit.

7. What is the Delta Conveyance Authority and what is its role going forward?

The Delta Conveyance Design and Construction Authority (DCA) is a joint powers authority created by the public water agencies that have committed to design and construction of a modernized Delta conveyance project. As a public agency subject to the Brown Act, all of its meetings are open to the public and its materials are available for public review

DWR will oversee the planning effort and will be directly responsible for implementing the environmental compliance activities. The DCA will conduct engineering and design activities to support environmental planning, with oversight by DWR.

There is a significant amount of engineering and field work needed to support environmental planning and permitting. Examples of the work include land surveys to help map alternatives, geotechnical work and coordination with local communities.

Additionally, Governor Newsom is committed to a more transparent and collaborative process with Delta stakeholders to better communicate the impacts and to work together to explore new ideas for addressing these issues. This means doing more engineering work in the next few years than has been done in the past. As with all the work conducted by the DCA, this will require close management—with oversight by DWR—of budgets and schedules, invoice processing, systems development, risk management, document management and transparent reporting.

8. How will the state ensure that water supplies are protected for local communities, agriculture and threatened and endangered fish in the Delta?

DWR's ability to divert from the Delta is regulated by the State Water Resources Control Board (SWRCB), which sets parameters for protections of beneficial uses in the Delta. The department has met those parameters in all but the most extreme circumstances. The SWRCB's regulations are in the process of being updated—through the Water Quality Control Plan and the Voluntary Agreements—in order to better balance use of the Sacramento and San Joaquin rivers. Once finalized these standards will help govern how Delta conveyance and other infrastructure is managed.

9. Why is Delta conveyance important for disadvantaged communities in the state?

The State Water Project provides the most affordable supply of clean drinking water available in the state. Many communities served by the project have populations that are considered economically disadvantaged. The largest water purveyor in the State Water Project is the Metropolitan Water District of Southern California, where more than a third of its service area—and more than 6 million people—live in disadvantaged communities. Public water agencies must maintain affordable water rates for these families. At the same time, the state recognizes that the Delta region is home to disadvantaged communities as well, which need secure access to clean water supplies.

10. Is the federal government involved with this new project?

The Bureau of Reclamation will continue to be a partner in the coordinated operations of the Central Valley Project and the State Water Project and they will assess their interest in participating in the new proposed project in coming months. The federal fishery agencies have an important role to play in implementing oversight to ensure the project complies with the Endangered Species Act, as does the Army Corps of Engineers with regard to the Clean Water Act.

11. Is the state still addressing the co-equal goals required by the Delta Reform Act?

Yes. The Delta Reform Act, and the co-equal goals, will continue to guide efforts to modernize conveyance infrastructure in the Delta. The project's objectives are to provide a more reliable water supply while protecting, restoring, and enhancing the Delta ecosystem—including the minimizing effects on fish, reducing unnatural reverse flow conditions, and maintaining water quality standards. This will be consistent with the Delta Reform Act's directive that the coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

? Reduced
Reliance

12. Is the Newsom Administration open to innovative ideas?

Yes. Decades of study, coupled with updated understanding about sea level rise, make it clear that conveyance in the Delta must be modernized. At the same time, this new approach provides an opportunity to engage with stakeholders and directly address their concerns about Delta conveyance—specifically to avoid and minimize the impacts that concern Delta communities the most. There are four areas for innovation:

- First is in the development of the Water Resilience Strategy, where other water management innovations can complement Delta-specific strategies.
- Second is in opening a discussion to innovative ideas about how to protect Delta water quality and strengthen levee protection.
- Third is in advancing the engineering and design work on the proposed project to a point that we can work with Delta communities to ground-truth mitigation strategies to minimize and avoid potential impacts from construction and operation for issues like recreation, traffic and noise.
- And fourth is in seeking Delta residents' input on a Community Benefits Fund to support, protect and enhance the Delta as an evolving place.

13. How much does this change cost? Who pays for DWR's new planning effort and the assistance of the DCA?

Modernization of Delta conveyance will be funded by the public water agencies—and their ratepayers—who utilize and benefit from the conveyance infrastructure. It will not be funded through the state's general fund nor will it be funded by California's taxpayers. The cost of the project will be determined once a new cost estimate is developed. It will be significantly less expensive than the previously proposed project given its smaller single tunnel design, and therefore more affordable and feasible to implement.

No Tunnel Screening Discussion

Filter One – Meets Basic Project Objectives?

Filter 1

Climate Resiliency	<input checked="" type="checkbox"/>
Seismic Resiliency	<input checked="" type="checkbox"/>
Water Supply Reliability	<input checked="" type="checkbox"/>
Operational Resiliency	<input checked="" type="checkbox"/>

Filter 2

Avoids/lessens impacts	<input type="checkbox"/>
------------------------	--------------------------

- Alternatives that rely on water agencies to implement additional projects (such as water recycling, conservation, or desalination) provide alternate supplies instead of the SWP
- Alternate supplies do not meet the fundamental project purpose of enabling the SWP to continue to function through challenges such as climate change, sea level rise, and earthquake risk



State of California

FLOOD HAZARD MITIGATION PLAN

FOR THE SACRAMENTO-SAN JOAQUIN DELTA

Covering portions of Colusa, Glenn, Sacramento,
San Joaquin, Sutter, and Yuba Counties

Disaster Declaration

REDACTED

REDACTED

REDACTED

REDACTED

REDACTED

State of California

FLOOD HAZARD MITIGATION PLAN
FOR THE
SACRAMENTO-SAN JOAQUIN DELTA

Covering Portions of Contra Costa, Sacramento,
San Joaquin, Solano, and Yolo Counties

Disaster Declarations
FEMA-633-DR, FEMA-651-DR, FEMA-669-DR
FEMA-677-DR

Prepared by
Department of Water Resources
for
Office of Emergency Services

September 15, 1983

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State of California
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PART I. SUMMARY AND RECOMMENDATIONS

A summary of the State Hazard Mitigation Plan for the Sacramento-San Joaquin Delta is as follows:

A. Short-Term Mitigation Plan

1. By February 1, 1984, the State will give the U. S. Army Corps of Engineers a Letter of Intent to sponsor a federal-state flood control project.
2. The Department of Water Resources will request an increase in funding for the Delta Levee Maintenance Subventions Program from Tidelands Oil revenue beginning in 1984-85 and continuing until a major federal levee rehabilitation project can be implemented.
3. The Department of Water Resources, in cooperation with local districts, will use appropriate construction and maintenance standards for nonproject levees to upgrade these levees to the standards described in the "Short-Term Rehabilitation Plan".
4. The local districts will implement a levee inspection program and file a report by June 1 of each year with the Director of the Department of Water Resources for 1983-84 and 1984-85. The Department of Water Resources will develop a state levee inspection program and request funding for the program beginning in 1984-85.
5. The local districts should complete their annual levee maintenance by November 1.
6. The Department of Water Resources will develop a program to reevaluate land subsidence rates in the Delta and request funding to begin the study in the 1984-85 fiscal year.
7. The local districts should develop and file with the Office of Emergency Services (copy to the Department of Water Resources) an emergency response and evacuation plan by June 1, 1984.
8. The State of California should continue to request emergency declarations for federal assistance for serious levee failures and severe storm damage that occur prior to implementation of a federal-state-local flood control project.

B. Long-Term Mitigation Plan

The State intends to develop a comprehensive federal-state-local flood control project that would consider all islands in the Delta and to seek legislation to finance the nonfederal share.

PART II. INTRODUCTION

A. Background

On February 9, 1983, President Reagan determined that damage resulting from severe storms, flooding, high tides, and wave action in certain areas of California warranted a major disaster declaration under provisions of the Federal Disaster Relief Act of 1974 (Public Law 93-288). This declaration included damage resulting from storms and flooding that took place from November 27, 1982, through March 30, 1983. In a letter dated February 16, 1983, the Federal Emergency Management Agency (FEMA) outlined the terms of the FEMA-State Disaster Assistance Agreement for the major disaster designated FEMA-677-DR. This agreement was executed by the FEMA Regional Director and the Governor. By letter dated March 17, 1983, Amendment No. 1 was added to the agreement to include that portion of the Sacramento-San Joaquin Delta (see Figure 1) located within the counties of Contra Costa, Sacramento, and San Joaquin.

B. Requirement for a Plan

Section 406 of Public Law 93-288 requires, as a condition to receiving federal disaster aid, that repairs be done in accordance with applicable codes, specifications, and standards. It also requires the state or local government recipient of federal aid to evaluate the natural hazards of the area in which the aid is to be used and, if appropriate, take mitigating action.

C. Interagency Flood Hazard Mitigation Report

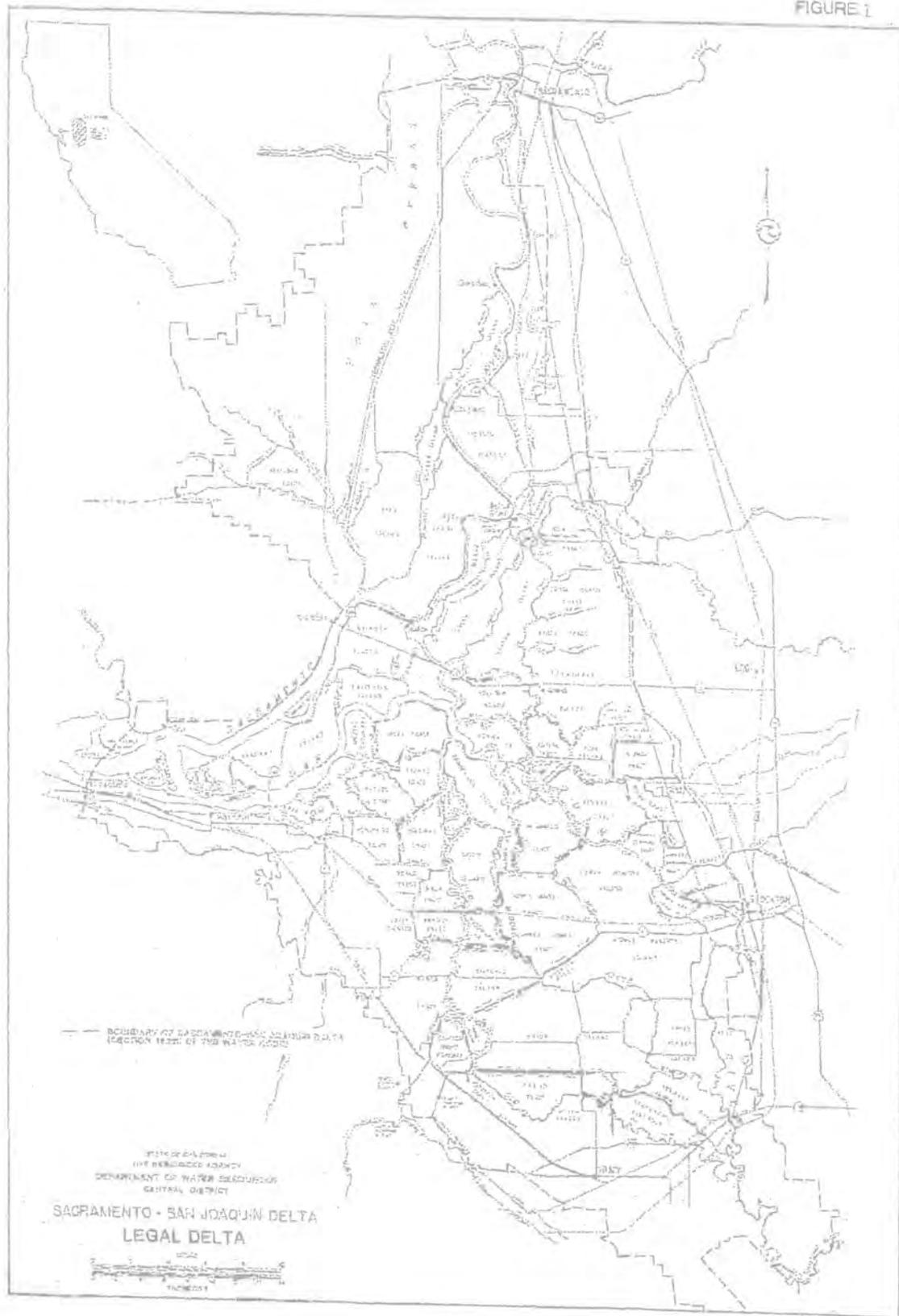
A Federal Interagency Flood Hazard Mitigation Report is prepared by the (Federal) Region IX Interagency Flood Hazard Mitigation Team within 15 to 30 days following each presidentially declared major flood disaster. A report covering the recent major disaster, FEMA-677-DR, was dated March 11, 1983. Supplement No. 1 to this report, dated March 24, 1983, made specific recommendations and provided a framework for a State Flood Hazard Mitigation Plan for the Sacramento-San Joaquin Delta.

D. Objective of This Plan

The objectives of this plan are to:

1. Follow up, in detail, recommendations of the Interagency Flood Hazard Mitigation Report.

FIGURE 1



2. Recommend hazard mitigation alternatives for local, state, and federal agencies.
3. Establish immediate and long-term planning frameworks for implementation of hazard mitigation efforts.

E. Purpose of This Plan

The purpose of this plan is to implement the requirements of Section 406 and the requirements of Amendment No. 1 to the FEMA-State Agreement. Amendment No. 1, Paragraph 10(b), states in part:

"The State ... will prepare and submit, not later than August 1, 1983, to the Regional Director for concurrence, a comprehensive hazard mitigation plan for the entire Sacramento-San Joaquin Delta area. This plan shall address state, local, private and federal activities and interests as they currently exist, are currently being developed, or are planned. This plan shall also identify major hazard mitigation measures to be taken for each district (applicant), by whom, sources of funding, and schedules for accomplishment. Such measures shall include: (1) establishment of applicable codes, specifications and standards for new construction, repair, and maintenance; (2) upgrading of levees and other related facilities to applicable codes, specifications, and standards; (3) periodic inspections, reports, and follow-up of all levee and related facilities; and (4) correction of maintenance deficiencies."

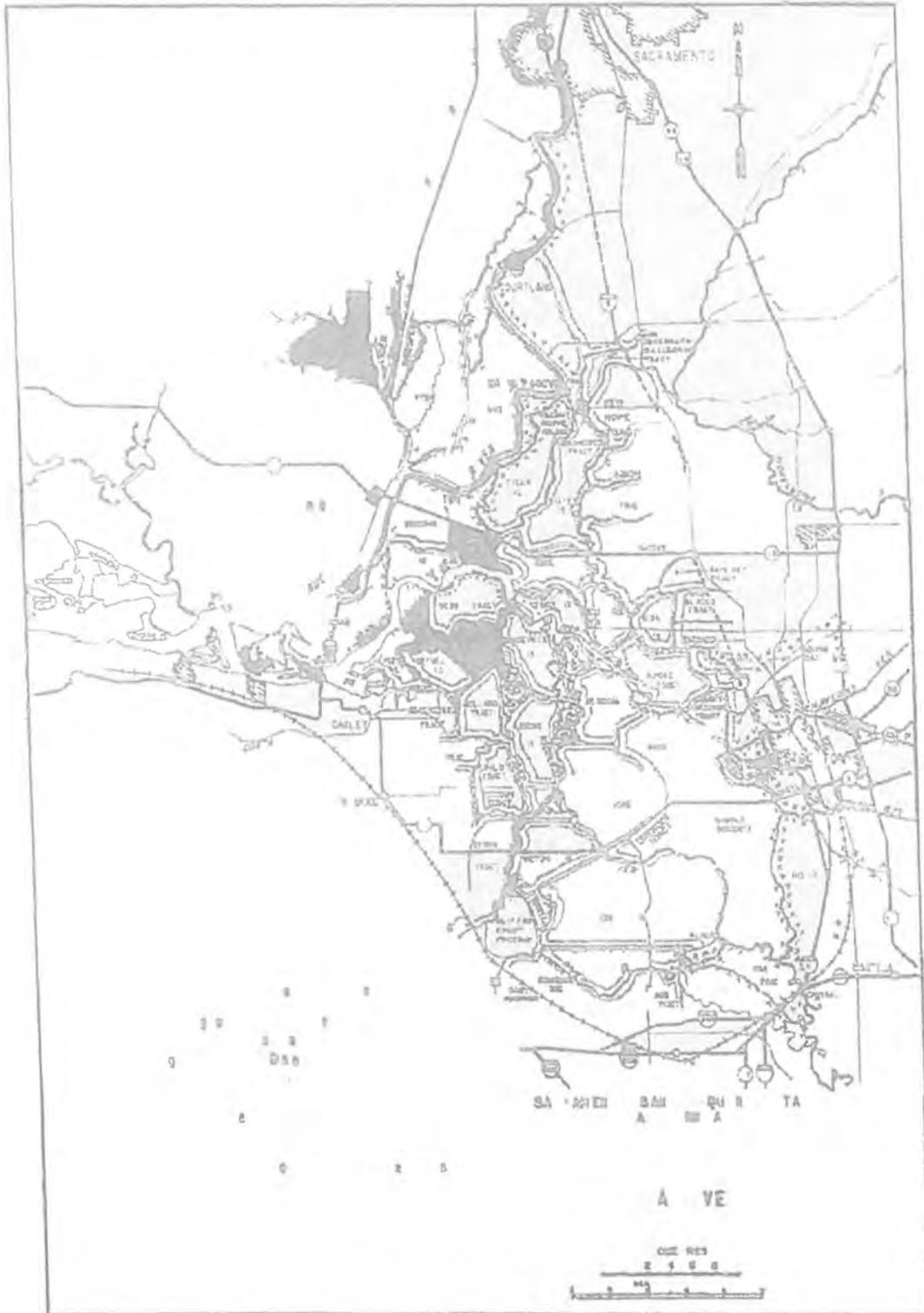
Amendment No. 1, Paragraph 10(b), further states:

"It is understood that one plan will be submitted which will incorporate the requirements of Section 406 of the Act and which will also satisfy the requirements for major disaster declarations FEMA-633-DR, FEMA-651-DR, FEMA-669-DR, and FEMA-677-DR."

This mitigation plan fulfills these requirements for both nonproject and direct agreement levees in the Delta (see Figure 2).

F. Flood Hazard Mitigation

Flood hazard mitigation is a management strategy in which current actions and expenditures to reduce the occurrence or severity of potential flood disasters are balanced with potential losses from future floods. Flood hazard mitigation can reduce the severity of the effects of flood emergencies on people and property by reducing the cause or occurrence of the hazard, reducing exposure to the hazard, or reducing the effects through preparedness, response, and recovery measures.



Flood hazard mitigation includes such actions as:

- ° Minimizing probability of flood occurrence (e.g., restoration of damaged dams and levees, dam safety measures).
- ° Improving structures and facilities at risk (e.g., flood-proofing, restoring damaged public facilities to meet applicable codes and specifications).
- ° Identifying hazard-prone areas and standards for prohibited or restricted use (e.g., flood plain regulations, structural and nonstructural floodproofing, hazard mitigation plans).
- ° Providing loss recovery and relief (e.g., insurance, disaster grants and housing, low interest loans).
- ° Providing hazard warning and population protection (e.g., procedures for warning, emergency public information, direction and control, protective measures, shelter, relocation, training).
- ° Considering opportunities for sharing the cost of levee improvements in connection with water transfer plans (see Appendix A).

G. Hazards

Since 1980, levee failures have occurred on 12 of about 60 Delta islands (see Figure 3). Factors that contribute to levee failures include: instability of the levee section and foundation materials; subsidence; rodent burrows; erosion from wind waves and boat wakes; inadequate height (freeboard); seismic activity; and seepage.

Specific locations of levee instability and foundation weakness are difficult to identify because weak areas are not readily apparent from visual inspections. Beaver dens often are not apparent until a portion of the levee collapses. Erosion is more readily apparent and can be corrected if identified. Increased moisture from seepage through and under levees, which reduces the shear strength of the soils and thereby contributes to instability of the levees, may or may not be apparent. It is suspected that, in some areas, dredging soil from the channels as a source of material for bolstering levees has contributed to increased instability, subsidence, and seepage.

Flooding of islands can have several adverse impacts, including temporary detriments to water quality due to ocean water intrusion, increased loss of water by evaporation, increased seepage on islands adjacent to the flooded areas, loss of agricultural land, damage to urban and recreational developments, and fish and wildlife losses.

PART III. GOVERNMENTAL AND REGULATORY STRUCTURES

A. General

The existing governmental structure could provide necessary assurances to implement a Delta levees mitigation plan, both on a short-term and long-term basis. However, development of a Delta-wide reclamation district with authority to collect revenues, set maintenance standards, provide assurances, set priorities, and carry out maintenance would facilitate completion of a comprehensive Delta levees rehabilitation plan.

B. Local Districts

Essentially all of the islands and tracts in the Delta have an organized district to administer levee maintenance and restoration. Reclamation and levee districts currently have authority to raise funds from three major sources:

1. The districts are empowered under specific Water Code sections to create and update assessment rolls of the lands within their boundaries on which the governing boards can periodically levy assessments.
2. Water Code sections also allow the governing boards of reclamation districts to establish a schedule of charges and fees for services and benefits provided by the districts.
3. Those districts that use county assessment rolls to levy special taxes for levee maintenance continue to receive an allocation under the post-Proposition 13 tax collection by the county, which includes not only property revenues but also state subventions.

Until 1980, funds made available for levee maintenance and restoration from these sources had been relatively small -- less than \$1 million per year. Because of the many levee failures since 1980, the local districts have been assessed up to their capability to pay. In fact, because many districts are in debt for money borrowed to repair and restore their levees, their funding capabilities may not be sufficient to accomplish the flood hazard mitigation obligations requested by FEMA.

C. Counties and Cities

The Delta area includes land in five counties: Contra Costa, Sacramento, San Joaquin, Solano and Yolo. These counties are members of a Delta Advisory Planning Council (DAPC); the

objective is to provide a unified county position with regard to Delta matters. All five counties are participating in the National Flood Insurance Program.

Counties have the necessary authority to control land use. This authority has been exercised to control urban development in the Delta. Under this plan, counties would continue to exercise land use control as part of their general plan.

A number of cities are located on the periphery of the Delta, including Sacramento, Tracy, Rio Vista, Pittsburg, and Antioch. Their involvement with the nonproject levees in the Delta is minimal. Isleton and the western portion of Stockton are within the Delta and are protected by nonproject levees. The cities, like the counties, have authority to control land use, and all are participating in the National Flood Insurance Program.

D. State of California

Many state agencies have regulatory powers covering the Delta area. The two principal agencies involved in flood control activities are The Reclamation Board and the Department of Water Resources. Other state agencies with vested interests in the Delta include, but are not limited to: Department of Boating and Waterways; Department of Fish and Game; Department of Parks and Recreation; State Lands Commission; and the State Water Resources Control Board, including the Central Valley and San Francisco Bay Regional Water Quality Control Boards.

The Office of Emergency Services administers funds made available under the Natural Disaster Assistance Act, which have been used for flood damage repair in the Delta.

E. Federal Government

Many federal agencies are involved and have some regulatory powers concerning the 700 miles of navigable waterways in the Delta. The principal federal interests in the Delta are with the following agencies: U. S. Army Corps of Engineers; U. S. Bureau of Reclamation; U. S. Department of Commerce, including the National Marine Fisheries Service, U. S. Fish and Wildlife Service, and the U. S. Coast Guard.

The Federal Emergency Management Agency (FEMA) administers disaster relief funds, made available under Public Law 93-288, which have been used for repair of flood damage in the Delta.

PART IV. SHORT-TERM MITIGATION PLAN

A. Policy

Water Code Section 12981 declares State policy to preserve the Delta in essentially its current configuration. Many bills (summarized in Appendix B) have been introduced during the current legislative session to reaffirm or modify this policy. Action on these bills will give legislative direction concerning activities in the Delta.

Rehabilitation of levees around individual islands is still the approach desired by most Delta interests. When practical, this course of action should be pursued.

A two-prong program is needed to reduce levee failures: rehabilitation of levees by adding materials; and improved maintenance of existing levees.

B. Maintenance

1. Responsibilities

The local districts are responsible for the expense and the work involved in correcting maintenance deficiencies. Each district should:

- a. Prepare a plan of annual levee maintenance by June 1 of each year describing planned maintenance work and a schedule for its accomplishment.
- b. Make a profile of the levee crown not less than every fifth year, or more often if determined necessary by the Board of Trustees of the district (i.e. following severe storms).
- c. Adopt an emergency response and evacuation plan to be put into effect when flooding is imminent.
- d. Complete annual levee maintenance by November 1 of each year.

2. Mitigation Actions

In general, district maintenance includes, but is not limited to:

- a. Controlling encroachments on the levee that might endanger the levee or hinder levee construction and maintenance.

- b. Exterminating burrowing rodents and filling their burrows with compacted material.
- c. Shaping the levee crown for proper drainage.
- d. Repairing minor slipouts, erosion, and subsidence of the levee section.
- e. Cleaning drain and toe ditches adjacent to the landside levee toe that intercept seepage.
- f. Minor repairing of revetment work or riprap that has been displaced, washed out, or removed.
- g. Repairing and shaping patrol and access roads.
- h. Controlling the weight and speed of vehicles using roads on levee crowns so as to not exceed the strength of the structural section.
- i. Cutting, removing or trimming vegetation such as weeds, brush, and trees to the extent necessary to maintain a safe levee.
- j. Removing debris and litter from the levee and berm where it interferes with levee maintenance.
- k. Inventorying and inspecting pipes and conduits through the levee (and gates on such facilities) to ensure that they are in working condition.
- l. Repairing and maintaining gates necessary to control vehicular traffic on the levees.

C. Rehabilitation

1. Policy

Short-term responsibility for levee rehabilitation remains with the local districts. The cost, however, will be shared by the state and federal agencies and possibly by other beneficiaries of the Delta. Until increased funding is available, the local districts will continue to use funds from their own revenues, the Delta Levee Maintenance Subventions Program, and federal and state disaster assistance programs to rehabilitate the Delta levees.

Dredging material for levee repair or restoration will not be permitted within 135 feet of the centerline of any levee below a depth of minus 35 feet mean sea level. (Ship channels will be considered separately.)

Materials used to repair or restore the levees must allow enough consolidation to minimize erosion during wave and tidal action and rain runoff. Districts will take and record soundings before dredging to be sure depths are adequate for the materials required.

2. Short-Term Levee Rehabilitation Plan

a. Local Districts

Local districts should:

- (1) Rehabilitate levees as rapidly as possible, considering engineering, fiscal, and environmental restraints, to the following minimum standards:
 - (a) Levees shall have 1 foot of freeboard above the flood expected once in 100 years. (It is important to recognize that 1 foot of freeboard at a 100-year flood does not mean 100-year flood protection. Common levee design practice calls for 3 feet of freeboard at project design flood. Also, the uncertainties of Delta levee foundations and unpredictability of Delta tide levels suggest that even with 3 feet of freeboard, the degree of protection would be far less than the design flood frequency.)
 - (b) The minimum crown width shall be at least 16 feet.
 - (c) Waterside slopes shall be at least 1.5 horizontal to 1 vertical, with revetment in areas where erosion has been a problem. The size of the revetment material shall be appropriate for the slope.
 - (d) Landside slopes shall be at least 2 horizontal to 1 vertical, with flatter slopes in the lower portion of the levee in areas where soil stability and seepage have been problems.
 - (e) The levees shall have all-weather access roads.
- (2) Prepare a plan for annual rehabilitation work by June 1 of each year describing rehabilitation work and a schedule for its accomplishment.

b. State of California

- (1) By February 1, 1984, the State will give the U. S. Army Corps of Engineers a Letter of Intent to sponsor a federal-state flood control project.
- (2) The Department of Water Resources will recommend to the State Legislature increased funding of the Delta Levee Maintenance Subventions Program to \$10 million per year from Tidelands Oil revenues, to begin in the 1984-85 fiscal year and continue until a federal-state flood control project is implemented. The Department will also recommend to the State Legislature that the cost sharing formula be changed so that the State would pay 75 percent and the local districts 25 percent of the cost of levee rehabilitation work done under the program.
- (3) The Department of Water Resources will request funding for an annual Delta levee inspection program to begin in the 1984-85 fiscal year. Until funds are made available for a state inspection program, the local district's engineer should make a joint inspection with district representatives and submit a summary of work to be completed for the year, present condition of the levees, mitigation measures to be performed the following year, and a reevaluation of natural hazards affecting the district. This summary report should be submitted to the Director of the Department of Water Resources by June 1 of each year.
- (4) By April 1984, the Department of Water Resources, working with representatives of local districts, will develop criteria for using soils from the channels as a source of material for bolstering levees. These criteria will reduce the hazard to levees due to this practice.
- (5) The Department of Water Resources will request funds in the 1984-85 fiscal year to initiate a program to reevaluate the rate of subsidence in the Delta.

PART V. LONG-TERM MITIGATION PLAN

A. Policy

The long-term mitigation plan is to implement a major levee rehabilitation project within 20 years. The State supports the concept of a System Plan as described in the Corps' Draft Feasibility Report, dated October 1982, and in the Department's Bulletin 192-82, Delta Levees Investigation, dated December 1982, with the understanding that the local districts may complete construction necessary to comply with federal flood control standards on some islands before a federal flood control project is implemented. All islands should be included in the System Plan for stage construction, as recommended in the Corps' plan.

B. Long-Term Levee Rehabilitation Plan

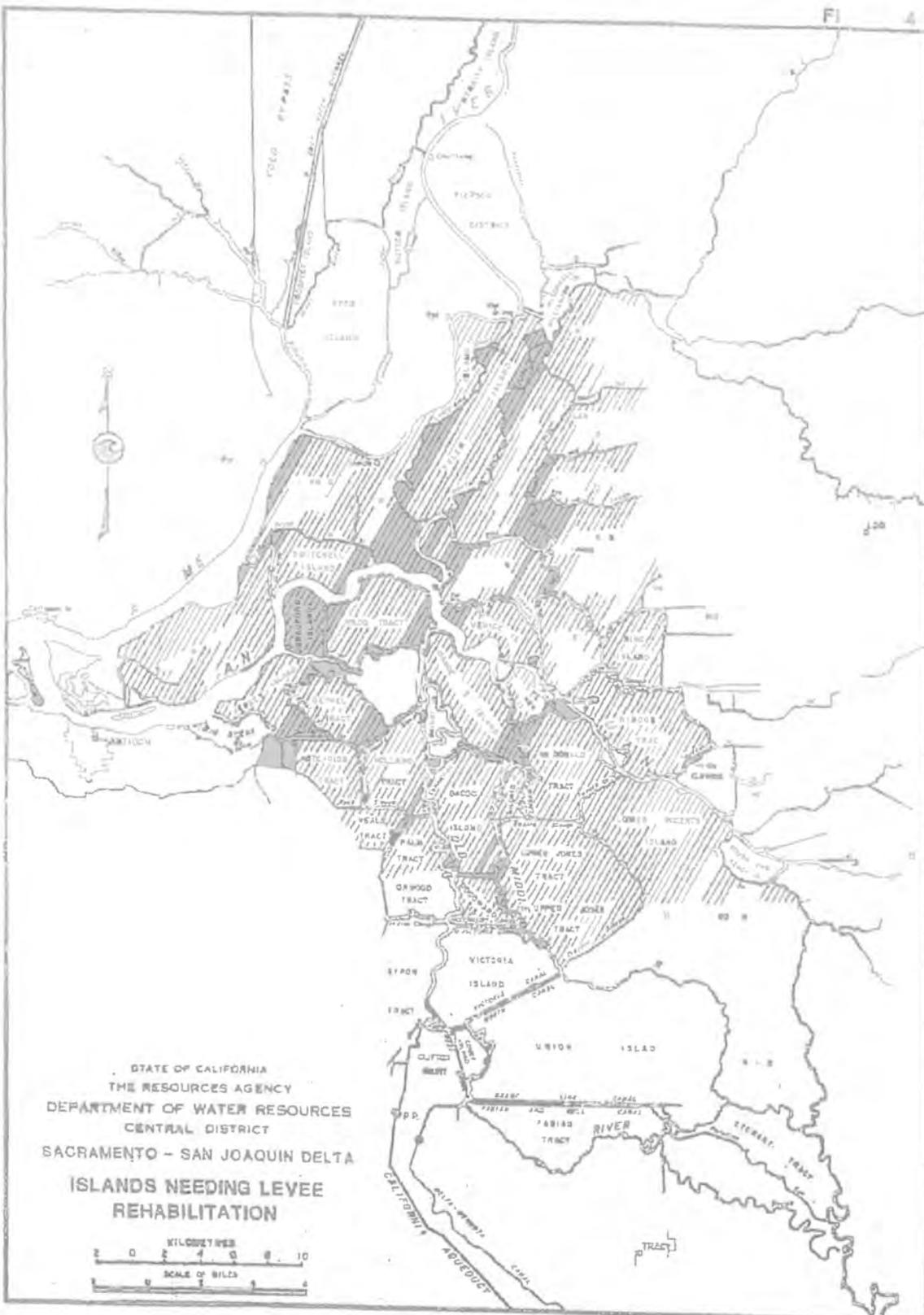
Based on current information, the following islands and tracts are considered to have the most urgent need of levee rehabilitation:

Andrus-Brannan	Hotchkiss	Rindge
Bacon	Jersey	Roberts, Lower
Bethel	Jones, Lower/Upper	Sherman
Bouldin	King	Staten
Brack	Mandeville	Terminus
Bradford	McDonald	Twitchell
Canal Ranch	Medford	Tyler
Dead Horse	Mildred	Venice
Empire	New Hope	Webb
Holland	Palm	Woodward

This list will probably change during the advanced planning stages of the project. (These tracts are shown in Figure 4.)

A joint state-federal levee rehabilitation project requires state legislative and congressional authorizations, funding for detailed planning, and funding for construction. Completion of these actions is expected to take from six to ten years. It is assumed that the funding would be at least 55 percent federal and that the nonfederal funding requirements would be shared 50 percent state and 50 percent local.

In some instances, individual districts have an insufficient economic base to provide even 15 to 20 percent of the cost of modernizing and protecting the island system. In these situations, consideration will be given to a greater State share of such costs, to be reimbursed from subsequent sale or transfer of property rights or value to the State. As an example, public acquisition of land for use in a wildlife management or



recreational program or acquisition of a flooded area for use as a reservoir as part of the State Water Project and Central Valley Project.

Cost sharing and funding must be resolved by the Congress and the State Legislature. The local share would be assigned to the individual districts in proportion to the cost to provide flood control to the island represented by the particular district.

PART VI. FUNDING SOURCES

A. General

All plans to preserve the Delta will require large increases in funding for levee rehabilitation.

B. Short-Term Levee Rehabilitation Plan

1. Local Districts

For the 1983-84 fiscal year, the local districts will continue to use their own revenues, supplemented by State contributions under the Delta Levee Maintenance Subventions Program (presently budgeted at \$1.5 million per year), and funds made available under the federal and state disaster assistance programs.

2. State of California

A number of legislative bills under consideration include proposals for increases in funding for the Delta Levee Maintenance Subventions Program. Pending action on these bills, the Department of Water Resources will recommend to the Legislature:

- a. An increase in funding for this program, beginning with the 1984-85 fiscal year, to a level of \$10 million per year from Tidelands Oil revenues; and
- b. A change in the formula for State participation to allow 75 percent State funds with 25 percent local matching funds to upgrade existing Delta levees.

3. Department of Water Resources

The Department of Water Resources will also request special language in a federal-state flood control project authorization that would allow credit to the State and to local districts for work done toward upgrading levees to federal standards before implementation of a federal-state-local flood control project.

C. Long-Term Levee Rehabilitation Plan

A U. S. Army Corps of Engineers report, "Draft Feasibility Report and Draft Environmental Impact Statement, Sacramento-San Joaquin Delta, California", October 1982, indicates federal interest in a Delta flood control project. Although the percentage of federal participation must be determined by the

Congress, the long-term mitigation plan for the Delta contemplates a federal-state-local sharing of costs for levee rehabilitation.

California has traditionally shared in the costs of federal flood control projects. The State is now contributing 75 percent and local flood control agencies are required to contribute 25 percent of the land, easement, and right-of-way costs of federal projects.

The federal government has traditionally paid 100 percent of the construction costs for flood control. Local agencies have been responsible for 100 percent of the cost of operating and maintaining flood control facilities. The Corps of Engineers' Draft Feasibility Report assumes the traditional federal-nonfederal cost sharing relationships.

Chapter 5 of the Emergency Delta Task Force report, dated January 12, 1983, also recommends a cost sharing plan that follows the traditional relationships, but it suggests that boating and commercial shipping should share in the nonfederal flood control costs. The report found that local districts are capable of raising from 15 to 20 percent of the necessary funds for levee rehabilitation projects. It is planned that the State and the local districts will equally share the nonfederal cost of a federal flood control project.

D. Nonfederal Funding

Without federal participation in a Delta levees flood control project, the state would be the logical level of government to implement a levee rehabilitation program. Special bond issues might be necessary to supplement the available Tidelands Oil and other State revenues to finance a long-term Delta levees rehabilitation project.

APPENDIX A

RELATIONSHIP OF DELTA LEVEES PLAN TO A WATER TRANSFER PLAN

The Delta is a point of diversion for both the Federal Central Valley Project and the State Water Project for exporting water to areas in California south and west of the Delta. The State's proposal for a Peripheral Canal to move water in an isolated channel across the Delta was rejected by the voters in June 1982. The State must now develop alternative methods for transferring water across the Delta. Some alternative Delta water transfer plans would require channel enlargements and levee setbacks in the South Fork Mokelumne River and channel enlargements near Clifton Court Forebay. To the extent that these enlargements and levee setbacks coincide with plans for levee rehabilitation, there would be an opportunity for cost sharing between the two projects.

In some areas, levee failures could be detrimental to water transfer operations. In these situations, cost sharing among various beneficiaries should be considered, up to an equitable amount of the benefits derived from the levee improvements.

APPENDIX B
LEGISLATIVE BILLS

<u>Bill and Author</u>	<u>Subject</u>
AB484 - Isenberg	Approve plan set forth in Bulletin 192-82
AB758 - Costa	Include New Hope Cross Channel in State Water Project Facilities
AB857 - Bradley	Immune State from liability in repairing Delta levees
AB1300 - Isenberg	Require exporters of water to enter into contracts with public agencies in Delta
AB1325 - Bradley	Prohibit expenditure for levee repair until cross-Delta water facilities are authorized
AB1607 - Waters	Approve Corps' System Flood Control Plan and authorize DWR to undertake work in advance of federal authorization
AB1612 - Waters	Require DWR to be project sponsor of federal flood control plan; request adoption of Modified System Plan
AB1712 - Johnson	Require plans compatible with Emergency Delta Task Force plan; appropriate \$10 million from ERF funds to DWR for program
AB1731 - Costa	Nonsubstantive change in Central Valley Project Act
AB2112 - Isenberg	Require DWR to develop and submit to Reclamation Board recommended levee reconstruction standards and establish a yearly levee inspection program
AB2124 - Campbell	Create Delta Levee Maintenance Fund and deposit a percentage of fishing and hunting license fees, vessel registration fees, and motor vehicle fuel license taxes attributable to vessels
SB15 - Ayala	Authorize additional State Water Project facilities; create a Delta Levee Maintenance Fund; allocate \$25 million from Long Beach Oil and Dry Gas revenues to the fund
SB834 - Nielson	Convey title to swamp and overflow lands to purchaser of land including berms and borrow pits

STATE OF CALIFORNIA
THE NATURAL RESOURCES AGENCY
CENTRAL VALLEY FLOOD PROTECTION BOARD
RESOLUTION NO. 2018-06 FOR
ACCEPTABLE OPERATION AND MAINTENANCE OF THE
STATE PLAN OF FLOOD CONTROL

BACKGROUND:

- A. **WHEREAS**, in 1911 the Legislature created the Reclamation Board. The Reclamation Board was given regulatory authority over the Sacramento Valley's levee system and levee maintaining agencies with the objectives of (1) assuring a logical, integrated system for controlling flooding along the Sacramento and San Joaquin Rivers and their tributaries in cooperation with the United States Army Corps of Engineers (USACE), (2) cooperating with various agencies in planning, constructing, operating, and maintaining flood control works, and (3) maintaining the integrity of the flood control system and designated floodways. In 1913 the Reclamation Board was given regulatory authority over the San Joaquin Valley's levee system and levee maintaining agencies. In 2007 the Legislature restructured the Reclamation Board and renamed it as the "Central Valley Flood Protection Board"; and
- B. **WHEREAS**, as the non-federal sponsor of the State-federal flood control system in California's Central Valley, the Central Valley Flood Protection Board (Board) has provided the federal government with assurances that the flood control system would be operated and maintained as prescribed by regulations of the Secretary of the Army that require compliance with the USACE Standard Operation and Maintenance (O&M) manuals for the Sacramento River Flood Control Project (1955) and for the Lower San Joaquin River Levees – Lower San Joaquin River and Tributaries Project (1959) pursuant to the authority in California Water Code Section 8617; and
- C. **WHEREAS**, pursuant to Section 3 of the Flood Control Act of 1936 and Section 103 of the Water Resources Development Act of 1986 (WRDA 86), non-Federal interests are required to pay 100 percent of the costs of operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) of structural flood damage reduction projects. In addition, the USACE has issued a policy guidance memorandum dated August 16, 2005 which states that a project is only eligible for reconstruction assistance from the USACE if a non-federal sponsor has performed adequate maintenance; and
- D. **WHEREAS**, the USACE has issued Engineering Regulation (ER) 1110-2-401, dated September 30, 1994 which defines "repair, replacement, and rehabilitation" for projects managed by non-federal sponsors. "Repair" is considered to entail those activities of a routine nature that maintain the project in a well-kept condition. "Replacement" covers those activities taken when a worn-out element or portion thereof is replaced. "Rehabilitation" refers to a set of activities as necessary to bring a deteriorated project back to its original condition; and

- E. **WHEREAS**, the legislature granted the Board jurisdiction and authority over the State Plan of Flood Control (SPFC) as denoted in California Water Code, including Section 8534, which requires the Board to enforce on behalf of the State the erection, maintenance and protection of the SPFC which in its judgment will best serve the interests of the State and Section 8608 which requires the Board to establish and enforce standards for the operations and maintenance of the SPFC; and
- F. **WHEREAS**, California Water Code Section 12642 states "In all cases where the Federal Government does not maintain and operate projects, it is the responsibility and duty of the county, city, state agency, or public district affected to maintain and operate flood control and other works, constructed pursuant to Chapters 1 and 2 of this part, after their completion and hold and save the State and the United States free from damages."; and
- G. **WHEREAS**, California Water Code Section 12828 states "Except where the co-operation required by the United States in addition to the costs of all lands, easements, and rights-of-way, has been authorized to be assumed by the State prior to March 12, 1946, the department shall not reallocate the funds allocated to it, nor shall the Reclamation Board expend any funds appropriated directly to it, for acquisition of property rights or contributions to the United States, for any project for which the Reclamation Board is directed to give assurances to the United States unless and until a public agency other than the Reclamation Board has either assumed the obligations of maintenance and holding the United States harmless from damages due to the construction of works, directly with the United States, or has by binding agreement with the Reclamation Board agreed to assume such obligations and to hold the State and the Reclamation Board harmless from any claims therefor..."; and
- H. **WHEREAS**, many local maintaining partners provided assurances to the Board and signed agreements with the Board for continued operation and maintenance prescribed by regulations of the Secretary of the Army for the flood control system in the Central Valley; and
- I. **WHEREAS**, in 2005, Hurricane Katrina caused portions of the federal levee system to fail in New Orleans, resulting in significant loss of life and property and subsequently, the USACE embarked upon a nationwide scrutiny of the federal levee system; and
- J. **WHEREAS**, after Hurricane Katrina, the people of California recognized the Sacramento-San Joaquin Valley as an area significantly at risk for similar devastation suffered by New Orleans and passed Proposition 1E, which provided \$4 billion for flood protection for the Central Valley, which has been utilized over the past 11 years to significantly improve the SPFC facilities in the Central Valley; and
- K. **WHEREAS**, the Central Valley Flood Protection Act of 2008 (2008 Act) directed that the Department of Water Resources (DWR) prepare a Central Valley Flood Protection Plan (CVFPP) to be adopted by the Board by July 1, 2012 (CWC § 9612(b)); and
- L. **WHEREAS**, DWR prepared a 2017 update to the CVFPP pursuant to the requirements of the 2008 Act. The 2017 update was adopted by the Board through Resolution of Adoption 2017-10 on August 25, 2017; and

M. WHEREAS, through Resolution of Adoption 2017-10, the Board stated the following:

- i. That in order to successfully implement the 2017 CVFPP Update, essential and adequate funding is necessary to continue to operate and maintain the flood system, that additional funding is required to correct identified deferred maintenance issues, and that further funding is essential to continue to make vital improvements to California's aging flood system.
- ii. That since the adoption of the 2012 CVFPP, the levee inspection reports provided by the USACE indicate severe levee maintenance deficiencies in over 90% of State Plan of Flood Control levee systems.
- iii. That it is committed to working with the local maintaining agencies to correct these operation and maintenance deficiencies in order to obtain or regain eligibility for the Public Law 84-99 Rehabilitation Program.
- iv. That it acknowledges the importance of all eight key policy issues identified in the 2017 CVFPP Update and will facilitate resolution of these interrelated policy issues with the understanding that the Board has identified funding and operation and maintenance of the flood system as the highest priorities to advance prior to the 2022 CVFPP Update.

N. WHEREAS, through multiple successful Coordinating Committee meetings, the Board has facilitated a discussion regarding the definitions of OMRR&R, including valuable participation by the USACE, maintaining agencies, and stakeholders.

NOW, THEREFORE THE BOARD FINDS:

1. That the above recitals are true and correct.
2. That this Resolution 2018-06 is being adopted by the Board as confirmation of the State's standards for OMRR&R for SPFC facilities. It is also intended to notify all interested parties that the Board will enforce its standards as necessary to fulfill its mandates pursuant to California Water Code and its federal assurances.
3. That the USACE requires that all SPFC facilities be operated and maintained in accordance with the Code of Federal Regulations, Title 33, Section 208.10 (33 CFR 208.10), with federal O&M manuals, in accord with ER 1110-2-401 and that all levee systems pass periodic inspections with acceptable ratings to be eligible for the federal Public Law 84-99 Rehabilitation Program.
4. That except as noted below, the State's priority and long-term goal is for maintaining agencies to substantially improve operation and maintenance practices to reach compliance with all requirements of applicable federal regulations and O&M manuals ensuring eligibility for the federal Public Law 84-99 Rehabilitation Program under current federal interim guidelines. The State does not believe that compliance with the USACE vegetation standards is appropriate or practical within the SPFC in light of

competing interests under the Endangered Species Act and therefore has promoted alternative levee vegetation objectives that require maintaining agencies to instead comply with the State's current levee vegetation management strategy.

5. That the obligation to perform routine operation and maintenance did not change with the addition of 33 U.S.C. 2213 from WRDA1986.
6. That the required operations and maintenance as identified in existing O&M manuals includes "repair, replacement, and rehabilitation" as described in ER 1110-2-401, but does not include reconstruction of a project or project segment that has reached the end of its design service life or is deficient due to a design or construction defect.
7. That many local maintaining agencies have advised the State that lack of sustainable funding is a major hurdle to adequately operate and maintain SPFC facilities.
8. That identifying and securing a sustainable funding source for operation and maintenance of the SPFC is a State priority.
9. That the State is committed to working with the maintaining agencies to correct operation and maintenance deficiencies that will reduce risk to the people and property of the Central Valley, and obtain, regain, and maintain eligibility for the federal Public Law 84-99 Rehabilitation Program.
10. That the State acknowledges the value of maintaining agencies and applauds those agencies which received acceptable ratings. The State appreciates those maintaining agencies that have developed and submitted System Wide Improvement Framework (SWIF) plans.
11. That the State encourages all other maintaining agencies currently not meeting federal Public Law 84-99 Rehabilitation Program eligibility criteria to develop, submit, and adhere to SWIFs as an initial phase to regain eligibility for the federal Public Law 84-99 Rehabilitation Program. As an interim phase of compliance with the requirements of 33 CFR 208.10 and federal O&M manuals, the maintaining agencies may address the unacceptable items identified in the USACE inspection reports that fall within the list of items used to determine Public Law 84-99 eligibility, currently described in the USACE memorandum dated March 21, 2014 with subject line "Interim Policy for Determining Eligibility Status of Flood Risk Management Projects for the Rehabilitation Program Pursuant to Public Law (P.L.) 84-99".
12. The Board will seek to update or execute assurance agreements with local maintaining agencies to standardize such agreements in a manner that explicitly recognizes operation and maintenance requirements include repair, rehabilitation, and replacement as defined in ER 1110-2-404.

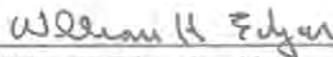
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**NOW, THEREFORE, BE IT RESOLVED, THAT THE BOARD ESTABLISHES
THE FOLLOWING POLICIES:**

- I. Maintaining agencies who have not received acceptable ratings from recent Department inspections, shall make every effort to receive "acceptable" ratings from annual Department inspections.
- II. Maintaining agencies shall make every effort to obtain or regain, and maintain, eligibility for the federal Public Law 84-99 Rehabilitation Program, including participating in the federal SWIF program as an initial phase while working toward an interim phase of compliance by addressing the unacceptable items within the USACE's list described in the USACE's interim policy.
- III. Maintaining agencies shall make every effort to comply with the State's long-term requirement of full compliance with 33 CFR 208.10 and federal O&M manuals consistent with the State's current levee vegetation management strategy.
- IV. Maintaining agencies that are unable to meet OMRR&R requirements shall seek necessary funding to comply with OMRR&R requirements or participate in the federal SWIF program.
- V. The State is committed to improving operation and maintenance of SPFC facilities in all areas. Where the State is required to perform OMRR&R, the State shall continue to obtain, regain, and maintain eligibility in the Public Law 84-99 Rehabilitation Program. The State shall also make every effort to address non-compliant encroachments systemwide.
- VI. The State will investigate all remedies available to it as authorized by California Water Code, in areas where local maintaining agencies are unable or unwilling to fund proper operation and maintenance practices in compliance with 33 CFR 208.10 and federal O&M manuals.

This resolution shall constitute the written decision of the Board in the matter of acceptable operation and maintenance of the State Plan of Flood Control.

PASSED AND ADOPTED by vote of the Board on Month XX, 2018



William H. Edgar, President



Jane Dolan, Secretary



**Technical Memorandum:
Delta Risk Management Strategy (DRMS) Phase 1**

**Topical Area:
Impact to Infrastructure
Final**

Prepared by:
URS Corporation/Jack R. Benjamin & Associates, Inc.

Prepared for:
California Department of Water Resources (DWR)

June 15, 2007

Topical Area: Impact to Infrastructure

7.2 Summary

The total estimated replacement costs for infrastructure assets within the Delta are summarized in Table 7-8 for the current (2005) and 2050 conditions, for MHHW and 100 year inundation levels. This table accounts for infrastructure assets that could be damaged as a result of levee breaching and island flooding (see Section 1.2). The costs are based on the results presented in Tables 7-1, 7-2, 7-4 and 7-5.

Table 7-8 Comparison of Total Replacement Costs of Delta Infrastructure - Current and 2050^a

Inundation Level	Current (2005) ^c	2050	Cost Ratio: 2050/Current
Within Mean Higher High Water (MHHW) Limits ^b	\$6.7 billion	\$8.5 billion ^e	1.3
Within 100-year Flood Limits ^{b,c}	\$56.3 billion	\$67.1 billion ^e	1.2

^a Costs in this table are for infrastructure assets and their contents that could be damaged as a result of levee breaching and island flooding.

^b See Section 4.1.2 and Figure 4-1 for limits of inundation.

^c Flood plain limits were developed from FEMA Flood Insurance Rate Maps.

^d Costs are in 2005 dollars.

^e Costs are in 2005 dollars; not escalated to 2050.

As indicated in Table 7-8, the total replacement cost of assets within the 100-year flood limits significantly exceeds (about 8 times) these costs for assets within the MHHW limits. The reason for this large difference is explained by referring to Figure 4-1. This figure shows that the 100-year flood event has the potential to inundate major urban areas such as Sacramento and Stockton that have a large inventory of infrastructure assets. However, the MHHW limits do not extend to these large urban areas. Smaller towns and rural/agricultural areas mainly fall within the MHHW limits. The largest differences between damages for the 100-year flood event and other events would be for infrastructure that is located near the edge of the floodplain in urban areas (areas with topographic relief).

Table 7-8 also indicates that over the next 50 years, the total replacement cost of assets could increase by about 20 to 30 percent within the MHHW limits and the 100-year flood plain limits. Likewise, the overall damage repair costs of assets as a result of levee failure are also expected to increase over the next 50 years due to the (1) increase in the amount of infrastructure assets as a result of population growth, (2) Delta water level rise due to climate change, and corresponding increase in MHHW and 100-year flood levels, and (3) decrease in island elevation levels due to subsidence. The increase in water levels, coupled with the decreasing island elevations, would increase the amount of inundation of Delta assets in the future. The damage would therefore increase, resulting in greater future repair costs and repair times.

The repair costs for infrastructure assets will be based on the number of island failures and resulting inundation, and the repair costs will vary from island to island. For both current and 2050 conditions, the overall results of the repair and replacement costs presented in the asset tables indicate that the repair costs due to inundation could be on

Topical Area: Impact to Infrastructure

the order of 30 percent (for MHHW) and 50 percent (for the 100-year food) of the asset replacement costs, considering all Delta islands and tracts.

7.3 Limitations

As stated in Section 1.2, we consider damage to infrastructure assets that could result from levee breaching and island flooding. Infrastructure assets that would not be damaged by levee failure (e.g., pumping plants and power plants) are beyond the scope of the TM.

As stated in Section 3, because some asset types lack attribute information, it was not always possible to estimate asset costs from the GIS data. In these cases, there is insufficient definition of quantitative attributes to evaluate reliable replacement and repair costs and assumptions had to be made so that damage loss could be estimated. Also, some assets were not available in the GIS database. Further characterization of the Delta infrastructure assets would reduce the uncertainty in the damage estimates.

Because of the lack of information on repair times (due to the absence of historic experience), especially for multi-island failures, judgment was used to estimate repair times.

8. References

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Clarksburg Fire Protection District

www.clarksburgfire.specialdistrict.org

Telephone: (916) 744-1700

P.O. Box 513

Clarksburg, CA 95612

October 20, 2020

Via Email to: Zachary.M.Simmons@usace.army.mil

TO: United States Army Corps of Engineers

Re: Scoping Comments to Environmental Impact Statement for Construction of Proposed
Delta Conveyance Project

Attn: USACE, Sacramento District

Dear United States Army Corps of Engineers:

This letter is written to provide scoping comments to the Notice of Intent to Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project, the application of which is the California Department of Water Resources ("NOI"). These comments are submitted by the Clarksburg Fire Protection District, a Special Independent District, organized under the laws of the State of California ("Clarksburg Fire" or the "District").

Organized in 1946, the mission of Clarksburg Fire is to provide fire protection for all properties, structures and residents of the District, to participate in beneficial mutual aid agreements with neighboring fire districts (including one or more districts in Sacramento County) as well as with County, State, and Federal agencies, and to provide first response services in the event of accident or medical emergency within the District ("**Mission of Clarksburg Fire**"). Clarksburg Fire responded to 263 calls in 2019. As an example of the accomplishment of the Mission of Clarksburg Fire, on October 27, 2019, a high-wind event, 19 of the District's firefighters responded to 25 discrete calls answering and arriving on-scene to provide emergency responses to a wide array of requests for help. The District draws from time-to-time from water located in the Sacramento River and in the sloughs and canals running through the District.

The service district and geographical area over which Clarksburg Fire has responsibility covers approximately 33,000 acres in the southern portion of Yolo County and is generally described as the land, improvements and residents marked by Babel Slough Road on the north, the Yolo County line on the south, the Sacramento River on the east, and the Sacramento Deep Water Ship Channel on the west (the "**District Area**"). A map of the District Area is enclosed with these comments and this review.

Clarksburg Fire owns three parcels of real property located at 52910 Clarksburg Avenue, Clarksburg, County of Yolo, California 95612 (mailing address above) and also described as Yolo County Assessor's Parcel Numbers 043-240-013, 043-240-014, and 043-240-036 ("**Clarksburg Fire District Property**"). Located on the Clarksburg Fire District Property are

TO: UNITED STATES ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
Re: Scoping Comments to Notice of Intent to Prepare of Environmental Impact
Statement for Construction of the Proposed Delta Conveyance Project
October 20, 2020
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two buildings: the main fire station (originally built in 1948 and since remodeled and updated) and the fire annex.

Clarksburg Fire receives funding and support from a share of property taxes collected within the District (which requires maintenance of property values and assessments), from a Proposition 218 benefit assessment, from developmental impact fees, and from grants, members of the Clarksburg Community and the North Delta in general. The District also needs, enjoys and endeavors to maintain and keep the support of the people of the Clarksburg District and the North Delta.

In existence and functioning continuously for nearly 75 years, Clarksburg Fire is an essential part of the cultural and historical fabric of the Clarksburg community, and provides essential support as part of the cultural and rural neighborhood values of the Delta (ref. Public Resource Code § 85054). In addition to fulfilling the Mission of Clarksburg Fire, through the firefighters' association the District supports public dinners, two annual parades (4th of July and Christmas) and other community support activities.

Clarksburg Fire is an interested party. It is anticipated that the Delta Conveyance Project, as proposed, will affect the operations and maintenance of Clarksburg Fire, its mission, and its ability to accomplish its mission.

The proposed Delta Conveyance Project as described in the NOI ("**Project**") presents a series of substantial direct and indirect effects, including environmental effects, and cumulative effects both on the Clarksburg Fire, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property.

The buildings on the Clarksburg Fire District Property are vulnerable to the effects of the heavy construction pounding and other consequences anticipated to be employed to construct the Project. As an example of a direct impact, it appears from the NOI that the heavy construction methods required for the construction of the Project could cause damage, including permanent damage, to the buildings and improvements on the Clarksburg Fire District Property.

As an example of the indirect impact and socioeconomic negative effect of the Project, the District will suffer substantial disruptions, or cessations, in operation because of the Project through increased traffic, increased noise, disruption in well water operations and availability, septic and wastewater operations and availability, and on the use of the Clarksburg Fire District Property as an historical District and operation within and as part of the Clarksburg Community, the Delta Community and California.

In connection with the comments above, the following, without limitation, need to be **fully analyzed** in your Draft Environmental Statement:

- Construction methods must be analyzed, and alternative construction methods must be utilized, as demonstratable mitigation, which will not damage the Clarksburg Fire District Property and its ability to accomplish the Mission of the Clarksburg Fire District in any significant way.
- Impact on the Project's impact on the District, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property.

TO: UNITED STATES ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
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- The impacts on the zoning and land uses authorized by law on the parcels where the Clarksburg Fire District Property is located, including complete description and analysis of all land use conflicts and mitigation for each land use conflict.
- The impacts on the continued and future support of the District, on the Mission of Clarksburg Fire and on Clarksburg Fire Property from the Clarksburg Community and the North Delta, including the impacts of any de-population in the District, the Clarksburg Community and/or the North Delta, and on the economies of these areas, as a result of the construction, operations, and management of the Project.
- Whether, and how or how-not, the Project will benefit the District, support the Mission of Clarksburg Fire, the Clarksburg Community and North Delta.
- Whether, and how or how-not, alternative locations for the proposed intakes, and all other proposed components of the Project, would lessen impacts on the District, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property than the currently proposed northernmost proposed intake.
- Show how sites, other than each of the three proposed intakes, considered by the Fish Facilities Technical Team were determined to be less impactful on the District, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property.
- Show how visual and noise disturbance, as well as construction-related impacts to the District, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property will be minimized.
- Substantive consultation, including disclosure and discussion of all alternatives and mitigation measures for the Project, with local Clarksburg Community land use agencies and advisory bodies as applied to the District, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property.
- State and analyze changes in the District, on the Mission of Clarksburg Fire and on Clarksburg Fire District Property caused by the Project, including, without limitation, changes in community cohesion, a reduction of opportunities for maintaining face-to-face relationships, and disruptions of the functions of Clarksburg Community and North Delta community organizations and gathering places, such as the Clarksburg Fire District.
- Whether, and how or how-not, traffic patterns and changes caused by the Project will impact the District, the Mission of Clarksburg Fire and the Clarksburg Fire District Property.
- Whether, and how or how-not, the Project will cause a decline in property values in the District, the Clarksburg Community and the North Delta¹.
- Whether, and how or how-not, the Project will cause blight and property abandonment in the District, the Clarksburg Community and North Delta.
- Whether the Project will invest in public facilities and infrastructure throughout the District, the Clarksburg Community and North Delta to mitigate the impacts of the Project.
- Whether, and how or how-not, the Project will enhance and protect the District, the Mission of Clarksburg Fire and on Clarksburg Fire District Property, the Clarksburg Community and the North Delta.

¹ The District notes that property values in part contribute to the fiscal sustainability of the District through the assessments on property within the District related to the share of property taxes collected by the District for its operations.

TO: UNITED STATES ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
Re: Scoping Comments to Notice of Intent to Prepare of Environmental Impact
Statement for Construction of the Proposed Delta Conveyance Project

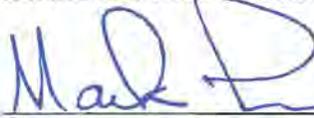
October 20, 2020

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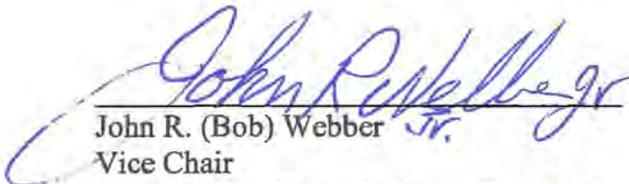
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- State and analyze the socioeconomic impacts of the Project on the District, on the Mission of Clarksburg Fire, on Clarksburg Fire District Property, and on the Clarksburg Community and the North Delta.
 - Whether, and how or how-not, the Project (including its construction, operation and maintenance) would conflict with the District, on the Mission of Clarksburg Fire and on the Clarksburg Fire District Property.

Each of the above are considered significant, material, important and substantial, as related to the District, to the Mission of Clarksburg Fire and to the Clarksburg Fire Property.

Please contact me if you have any questions or would like further explanation.



Mark Pruner
Chair, Board of Fire Commissioners/Directors
Cell: (916) 204-9097
Email: mpruner@prunerlaw.com



John R. (Bob) Webber Jr.
Vice Chair
Board of Fire Commissioners/Directors



Joe Gomes
Member
Board of Fire Commissioners/Directors
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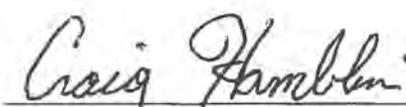
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Steve Pylman
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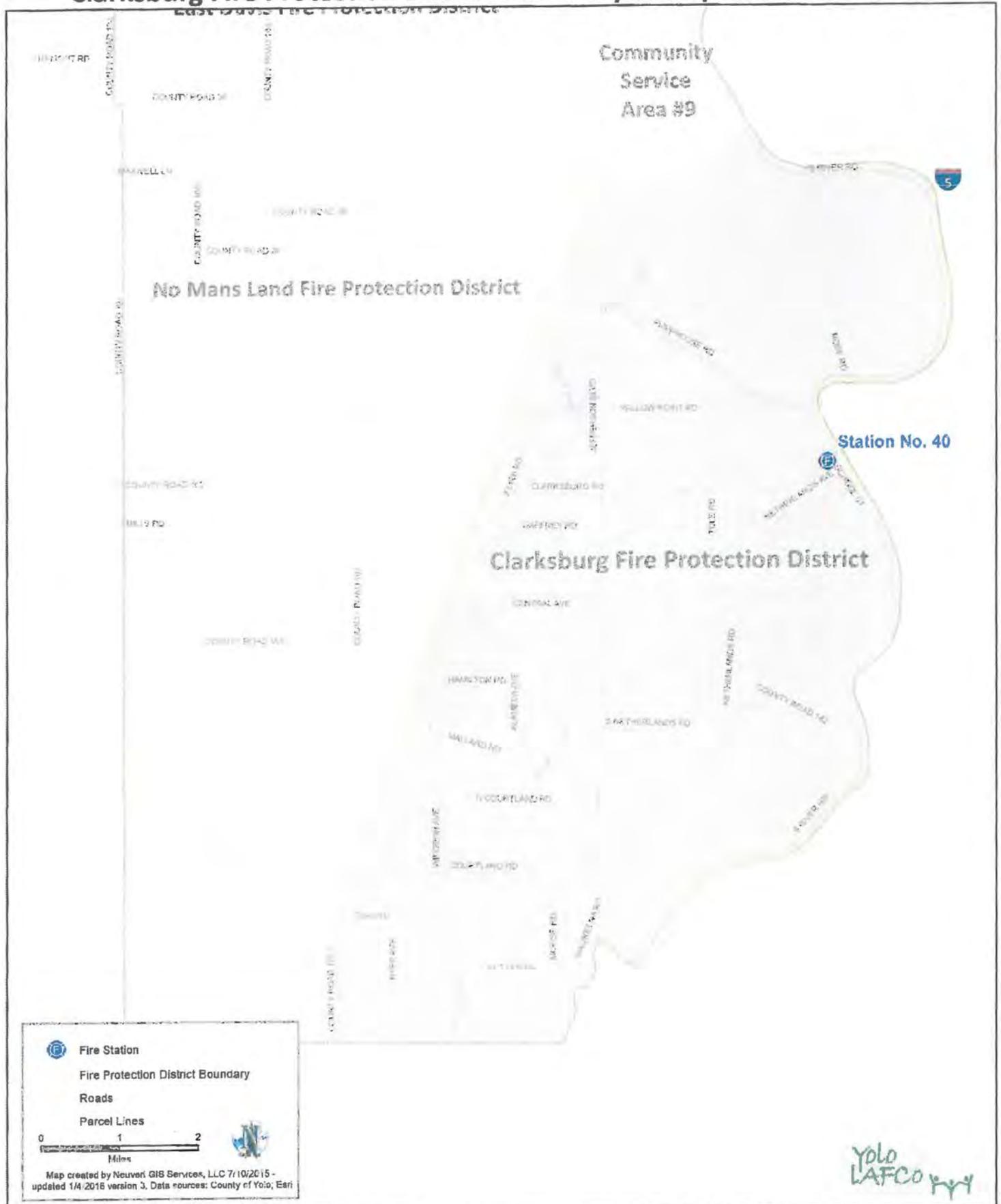
Richard Bagby
Secretary/Assistant Fire Chief
Board of Fire Commissioners/Directors
Email: rbagby@citlink.net



Craig Hamblin
Fire Chief
Email: chfire@msn.com

Enclosure

Clarksburg Fire Protection District Boundary and Sphere of Influence*



* Note: Sphere of Influence is coterminous with boundary

Adopted by Yolo LAFCo

Department of
Conservation and
Development

Water Agency

30 Muir Road
Martinez, CA 94553

Phone: 925-674-7824

Contra Costa County

John Kopchik
Director



October 20, 2020

Via Email: Zachary.M.Simmons@usace.army.mil

United States Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814

Re: Contra Costa County Comments on the Notice of Intent to Prepare a Draft Environmental Impact Statement for the Delta Conveyance Project

Dear Mr. Simmons:

This letter is written on behalf of the County of Contra Costa (“County”) and the Contra Costa County Water Agency (“Water Agency”), we appreciate the opportunity to comment on the project described in the US Army Corps of Engineers’ August 20, 2020 Notice of Intent (“NOI”) of Environmental Impact Statement (“EIS”) for the Delta Conveyance Project (“Project”).

The eastern portion of Contra Costa County is located within the Delta and the County’s entire northern border is bounded by waterfront that flows from the Delta to the Bay. Thus, Contra Costa County is an integral part of the Bay-Delta region and the future of this nationally significant resource substantially influences the future of the County. Restoring the health of the Delta also protects the Bay which is linked to the long-term success of the County as a whole.

A healthy Delta requires enough water supply of good quality along with habitat to maintain healthy populations of fish and other native aquatic, terrestrial and avian species, both migratory and year-round. A healthy Delta would protect people and property (through

strong levees, comprehensive emergency response and a water supply of good quality). A healthy Delta would promote economic health of the region and sustain agriculture (managed for habitat and food production), recreation activities (recreational fishing, boating, camping, hiking) and commerce (industry, ports, shipping and commercial fishing).

With this in mind, the Draft EIS for the Delta Conveyance Project should, at a minimum, comprehensively analyze the following:

1. A full range of alternatives including a through Delta Conveyance (no tunnel), improving existing facilities and levees with a smaller conveyance system and a realistic evaluation of the No Project alternative.
2. A full range of the water quality impacts and Delta Operations and Bay & Delta Water Quality with focus on:
 - a. Presenting modeling data and disclosure of environmental impacts in a form that is usable and useful for decision makers and the public
 - b. Using the full historical period, 1922-2019, in the analysis of the water quality impacts from the proposed project
 - c. Mitigating any significant water quality impacts of the proposed project including the potential buildup of contaminants in south and central Delta
3. Impacts to the East Contra Costa Groundwater Subbasin from constructing the Southern Forebay.
4. Impacts to the planned development of commercial solar facilities within eastern Contra Costa County and within the project area.
5. Impacts to the permanent increase in Vehicle Miles Traveled and the corresponding mitigation.
6. Impacts to the creation of permanent roadway maintenance obligations and corresponding mitigation.

As part of the County's NOI comments please refer to the memos from the County's Public Works Department, Transportation Engineering, dated March 23, 2020 and from the Contra Costa County Flood Control District dated March 4, 2020, attached. The comment memos from Transportation Engineering and Flood Control District were prepared for the Notice of Preparation released by DWR for preparation of an EIR under CEQA but have merit and may be useful to the Corps.

As with past isolated conveyance projects, the County and Water Agency will continue to participate in the process of the Delta Conveyance Project by attending hearings and submitting written comments. Please add my email Ryan.Hernandez@dcd.cccounty.us to the interested parties list for all future notices.

October 20, 2020

Page 3

Thank you for considering Contra Costa County's and Contra Costa County Water Agency's preliminary comments. Please feel free to contact my office with any questions about these comments at (925) 674-7824.

Sincerely,



Ryan Hernandez, Manager
Contra Costa County Water Agency

Att: Contra Costa County Public Works Department Memo Dated March 23, 2020
Contra Costa County Flood Control District Memo Dated March 4, 2020

Cc: John Kopchik, Director Conservation and Development
Stephen M. Siptroth, Deputy County Counsel



Memo

March 23, 2020

TO: Ryan Hernandez, Department of Conservation and Development
FROM: Mary Halle, Senior Civil Engineer, Transportation Engineering
SUBJECT: Delta Conveyance Project NOP Comments

The Transportation Engineering Division of the Contra Costa County Public Works Department has reviewed the Notice of Preparation (NOP) for the Delta Conveyance Project (DCP). We understand that the document is a notice of preparation for an environmental impact report for the proposed construction of an aqueduct with two potential routes.

Both potential routes would deliver water to the area designated as the "Pumping Plant, Southern Forebay, and South Delta Conveyance" (herein referred to as the South Delta facilities). The South Delta facilities are located in an area beginning east of Discovery Bay near Indian Slough, continuing southwesterly to the existing pumping plants in the Byron area. The Central Tunnel Corridor includes a segment that appears to enter Contra Costa County near the BNSF Railway, continuing in a southerly direction to where it meets the South Delta facilities. The Eastern Tunnel Corridor does not appear to enter Contra Costa County; it appears to meet the South Delta facilities in San Joaquin County. The proposed project is predominantly located within unincorporated Contra Costa County.

Transportation & Traffic Engineering provides the following comments:

1. The proposed project represents a variety of impacts to the area as it relates to land use planning in an agriculturally rich area, drawdown of groundwater and related subsidence, and potentially adverse impacts to the transportation network, both temporary and permanent. The remaining comments do not imply that we support the project, but if an environmental study of the project continues forward, we expect that the following will be addressed within the DEIR document.
2. The relocated Byron Highway and the traffic circle appear to conflict with the SR239 project. The Environmental Impact Report (EIR) should address this apparent conflict. It is important to note the desire to have grade separated intersections with the railroad. Grade separation at all major roadway intersections should also be studied.

3. The NOP is necessarily vague as it is issued in the preliminary phases of the project. The information provided in the NOP is not sufficient to determine specific impacts, however information provided in the mapbook at <https://www.dcdca.org/pdf/2020-03-11-MapBook.pdf> shows considerable road realignment of Byron Highway and the construction of a traffic circle at the intersection of Byron Highway and Armstrong Road. The County is a partner with the Contra Costa Transportation Authority (CCTA) and Caltrans to develop the State Route 239 (SR239) project, which includes the Vasco Road-Byron Highway Connector. SR239 is a legislatively adopted but unconstructed route in the state highway system between State Route 4 (SR4) in Brentwood to Interstate 580 west of Tracy in San Joaquin County. It is the intent that when the project is complete, it will become the new SR239. The DEIR for the Delta Conveyance must recognize SR239 as an approved project and address potential impacts to SR239.
4. Caltrans does not allow longitudinal utility encroachments in the state highway right-of-way. Utility encroachments at interchanges could impact whether the State will adopt the Byron connector as a future state route. The EIR should address the need to coordinate the location of the project facilities with the appropriate agencies.
5. The proposed project is located near the Byron Airport. The project shall comply with any Federal Aviation Administration (FAA) regulations and requirements for construction in proximity to the airport and assure that the project is compatible with current usage and future expansion currently under consideration at the Byron Airport.
6. DWR should include the County early in the planning and design process to coordinate this project with the County's adjacent capital improvement projects. California Department of Water Resources (DWR) must address any impacts that could potentially increase costs or constrain the County's future capital road improvements.
7. The DEIR should address impacts to local roads during the construction phase and how this impact will be mitigated.
8. The proposed project may also affect Byron Airport's Habitat Management Lands and lands that are part of the East Contra Costa County Habitat Conservancy's Preserve System. These lands are conserved for the conservation of habitat for State and Federal special status species. The EIR should address the need to prevent permanent and temporary impacts to these lands.

9. The DEIR should identify how the proposed realignment of Byron Highway will be completed while maintaining circulation and viability of local businesses during the construction phase.
10. Byron Highway is designated as "J4" by Caltrans as a route of regional significance and heavy commerce. The DEIR should address this fact and impacts to trucking and regional commerce and conveyance of goods and services.
11. Please provide an exhibit to identify the relationship of the proposed pipeline, pump, intake, forebay layout etc. in relation to county roadways to evaluate the compatibility of the facilities to existing and ultimate roadway needs.
12. The DEIR should include construction phasing for the Byron Highway Road Improvement that includes traffic impact analyses for each phase of construction. If detours are considered for any phase of construction, the detour routes shall be STAA Truck accessible for the detour routes to be viable.
13. The southern end of the haul route will utilize a segment of Byron Highway that is under the jurisdiction of Contra Costa County. The DEIR should analyze truck volume (50 - 150 trucks per day) impacts for each phase of construction. In addition to truck volume impact, the trucks entering Byron Highway shall be cleaned to ensure that debris from the trucks is not carried onto Byron Highway. Using existing rail lines as an alternative to truck hauling should be considered to lessen the construction traffic impacts to Byron Highway.
14. There is not enough detail at this time to evaluate impacts to existing traffic during and after construction, at this NOP level. However, these impacts shall be thoroughly addressed in the DEIR. Degradation of the roadway surface and traffic impacts shall be fully mitigated post-construction.
15. It should be noted, that Camino Diablo has been closed to trucks over 7 tons. This cannot be identified as a haul route.

MH:et:

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c: S. Kowalewski
J. Fahy
N. Wein
M. Sen
S. Gospodchikov
T. Rie
J. Stamps



Interoffice Memo

DATE: March 4, 2020
TO: Ryan Hernandez, DCD—Community Development Division
FROM: Joe Smithonic, Flood Control District *JS*
SUBJECT: Department of Water Resources Delta Conveyance Project
FILE: 3045-06 (various APNs), Delta Conveyance

The Contra Costa County Flood Control and Water Conservation District (FC District) has reviewed the Notice of Preparation (NOP) of Environmental Impact Report, dated January 15, 2020, for the Department of Water Resource's Delta Conveyance Project, partially located in Contra Costa County. We appreciate the opportunity to coordinate on the Draft Environmental Impact Report (DEIR) for this project to address potential adverse impacts to Contra Costa County communities and FC District property and drainage facilities. We submit the following comments for incorporation into Contra Costa County's collaborative response:

1. The DEIR should include a map of the project area and show the extent of the impacted areas within Contra Costa County.
2. We request that the DEIR provide a map of the watersheds where the project is located, including watershed boundaries within Contra Costa County, and FC District drainage area boundaries.
3. The Hydrology Section should identify and show all existing watercourses, tributaries, and man-made drainage facilities within and around the project site that could be impacted by this project within Contra Costa County. The discussion should include an analysis of the capacity of the existing watercourses. If improvements or work within the natural watercourses is proposed, the DEIR should discuss the scope of improvements.
4. The Hydrology Section should quantify the amount of runoff that would be generated by the project and discuss how the runoff entering and originating from the site would be distributed between the natural watercourses, the detention basins (if proposed), and the man-made drainage facilities. The DEIR should discuss the adverse impacts of the runoff from the project site to the existing drainage facilities and drainage problems in the downstream areas.
5. We recommend that the DEIR address the design and construction of storm drain facilities to adequately collect and convey stormwater entering or originating within the project area to the nearest adequate man-made drainage facility or natural watercourse, without diversion of the watershed, per Title 9 of the Contra Costa County Ordinance Code. The DEIR should discuss all proposed on-site and off-site drainage improvements and include maps or drawings for the improvements.

6. Construction of new roads to serve the proposed project may result in altered drainage patterns and may increase stormwater runoff due to additional impervious surfaces. New culverts may be needed to convey the additional stormwater, which concentrates the flow, but may potentially cause erosion, if not mitigated. The DEIR should address the impacts of new conveyance facilities, including erosion, from newly concentrated flows resulting from the project and its ancillary facilities and propose mitigation measures including new culverts, channel widening, erosion protection, energy dissipaters, and vegetation restoration within Contra Costa County.
7. The proposed pumping plant, southern forebay, and central tunnel corridor shown on Figure 1 of the NOP appear to be located within Contra Costa County limits near unincorporated Byron and Discovery Bay. The central tunnel corridor extends northerly near the outer edge of Contra Costa County limits. The southern portion of the project is partially located in Drainage Area 45 (DA 45) and partially in Drainage Area 110 (DA 110). These drainage areas define the watersheds for the East County Delta Drainages and Brushy Creek watersheds. The DEIR should discuss how the project would impact these drainage areas.
8. The FC District owns several properties and operates major drainage facilities in east Contra Costa County including channels and reservoirs for Marsh Creek, Sand Creek, Dry Creek, Deer Creek, and Kellogg Creek. If the project and its proposed facilities impact the capacities and operation of FC District facilities, or if the project needs access to any FC District property, the DEIR should note that a Contra Costa County Drainage and/or FC District Encroachment Permit might be required. At a minimum, the DEIR should list the FC District as an agency to notify.
9. The DEIR's analysis of adverse impacts should include potential drainage impacts caused by all construction activities including tunneling, dredging, construction of new conveyance facilities and access roads, and storage of borrow material. Tunneling may create an abundance of excess material that may require off-site storage, and the DEIR should analyze the changes in drainage patterns and flows caused by both temporary and permanent storage of excavated materials.
10. When the DEIR analyzes impacts in Contra Costa County, the Hydrology Section of the DEIR should include a study that uses Contra Costa County's hydrology method (HYDRO6) for unincorporated areas impacted by the project. Other commonly accepted hydrology methods were developed using runoff patterns of other regions that do not accurately model the Pacific Coast storm patterns experienced in Contra Costa County. The runoff results of other methods have proven to be significantly less than field observations of local storms made by the FC District and the United States Army Corps of Engineers (USACE).
11. If detention basin facilities are proposed, the DEIR should include a discussion of the basin design information (i.e., capacity, sizes of inlet and outlet structures, routing, etc.). A discussion of how maintenance of these facilities would be performed and funded should also be included.

12. The DEIR should address the impacts of this project's runoff due to the increase in duration (length of time) of flows and the effect on creeks and channels downstream of the project. Whereas detention basins are capable of mitigating peak flows to pre-project levels, they increase the duration (length of time) of flows in the downstream watercourses, which saturate the channel banks and increase the potential for stream and channel erosion.
13. DA 45 and DA 110 have inadequate maintenance funding. The construction of this project should not result in added costs or reduction of revenue for Contra Costa County or the FC District. As one of the mitigation measures for the adverse drainage impacts of this project, this project should be required to identify a perpetual funding source for maintenance of the drainage area facilities required to serve the project and its ancillary facilities, such as access roads and fuel stations.
14. The DEIR should discuss how the project would comply with the current NPDES (National Pollutant Discharge Elimination System) requirements under the Stormwater Management and Discharge Control Ordinances and the C.3 Guidebooks for the project's various local jurisdictions.
15. We recommend the project sponsors request that the appropriate environmental regulatory agencies, such as the USACE, the State Department of Fish and Wildlife, and the State Regional Water Quality Control Board, explore the permits, special conditions, and mitigation that may be necessary for construction within the project area.
16. Portions of the project are situated in a Special Flood Hazard Area (SFHA) designated by the Federal Emergency Management Agency (FEMA) as Zone A or Zone AE. In addition, the project area incorporates areas designated by FEMA as "Areas with Reduced Flood Risk due to Levee." The DEIR should also analyze potential adverse impacts on nearby levees due to construction activities.
17. The DEIR should discuss the impacts of grading in a floodplain and whether a Conditional Letter of Map Revision will be required.
18. The proposed intake locations between Courtland, Hood, and Clarksburg would reroute a portion of flows from the Sacramento River south to the Clifton Court Forebay, which may result in decreased flows through the Delta. The reduction in flows could result in increased sedimentation throughout the Delta tributaries in the eastern regions of Contra Costa County, which in turn could increase water surface elevations and create additional flood hazards. East Contra Costa County already has multiple areas designated as SFHAs, so the DEIR should include a thorough analysis on increased risks of flooding in all impacted tributaries along the eastern Contra Costa County limits.
19. The DEIR should consider the effects of anticipated rising sea levels on the Delta tributaries and cumulative effects with the Delta Conveyance Project due to the diversion of water out of the delta. Sea level rise in the delta could lead to increased frequency, duration, and extent of flooding, shoreline erosion, and increased salinity intrusion further

into the delta. Adapting to Rising Tides, a program of the San Francisco Bay Conservation and Development Commission, is currently modeling effects of rising water surface elevations between 12 inches and 83 inches in eastern Contra Costa County during this century. The DEIR should address the impacts of the project with cumulative impacts from rising tides in the Delta and eastern Contra Costa County and propose mitigation measures.

20. Contra Costa County and the FC District should be included in the review of all drainage facilities that have a region-wide benefit, that impact region-wide facilities, or that impact FC District-owned facilities. The FC District is available to provide technical assistance during the development of the DEIR, including hydrology and hydraulic information and our HYDRO6 method, under the FC District's Fee-for-Service program. In addition, the FC District can provide copies of drainage area maps, upon request.

We appreciate the opportunity to coordinate our comments on the NOP for the Delta Conveyance Project. If you have any questions, please contact me by phone at (925) 313-2348 or by e-mail at Joe.Smithonic@pw.cccounty.us.

JS:cw

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c: Brian Balbas, Chief Engineer
Allison Knapp, Deputy Chief Engineer
Tim Jensen, Flood Control
Michelle Cordis, Flood Control
Teri E. Rie, Flood Control



October 20, 2020

Mr. Zachary Simmons
U.S. Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922
Via email: Zachary.M.Simmons@usace.army.mil

Subject: Contra Costa Water District Comments on Delta Conveyance Notice of Intent

Dear Mr. Simmons:

Thank you for the opportunity to provide comments on the Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for construction of the Proposed Delta Conveyance Project. Contra Costa Water District (CCWD) serves water from its intakes in the Sacramento-San Joaquin Delta for residential, commercial, and industrial uses in eastern and central Contra Costa County. CCWD relies on diversions from the Delta and recycled water for 100% of its water supply. As such, CCWD has a vital interest in the environmental effects of the Delta Conveyance Project.

In March 2016, the California Department of Water Resources (DWR) and CCWD reached a mutually beneficial agreement to address impacts of any new Delta conveyance facility on CCWD's facilities, water quality, and water supply. In recognition that DWR had not decided whether or on what conditions to approve DWR's previously proposed Bay Delta Conservation Plan/California WaterFix Project (BDCP/CWF), the March 2016 settlement agreement contemplated that its provisions would remain in effect for any "amendment, modification, supplement or replacement" of the BDCP/CWF. The agreement identifies the components and parameters of the BDCP/CWF that would constitute a "Conforming Action Alternative," which includes a facility to convey water from one or more new water diversion intakes located along the Sacramento River to the State and/or Federal pumping facilities in the south Delta ("Conveyance Facility"). The facilities proposed in the Delta Conveyance Project are consistent with the Conforming Action Alternative in the settlement agreement.

As illustrated in proposed Delta Conveyance Project maps¹, the Delta Conveyance Project will be constructed in the vicinity of CCWD's Delta water supply intakes and potentially cross under a key CCWD pipeline. The March 2016 settlement agreement will ensure that CCWD's facilities will be protected during construction.

¹ https://www.spk.usace.army.mil/Portals/12/siteimages/001_PN_Enclosures_201900899.pdf?ver=2020-08-21-124716-517

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The agreement also provides for mitigation that is responsive to actual Delta Conveyance Project operations, not tied to a specific project capacity. Operation of the Conveyance Project would cause water quality impacts at CCWD's Delta intakes and affect CCWD's ability to fill Los Vaqueros Reservoir. To compensate for these impacts, the agreement requires that a portion of CCWD's water supply will be conveyed to CCWD's system from a higher quality source. The water to be conveyed will be a portion of CCWD's existing water supply; CCWD will not receive any new water. The amount of water to be conveyed to CCWD will be determined by the operation of the Delta Conveyance Project in any given year.

Pursuant to the March 2016 settlement agreement, DWR identified construction and operation of Interconnection Facilities – facilities to convey water from the BDCP/CWF conveyance system to CCWD's water supply system – as mitigation measures in the Final EIR/EIS for the BDCP/CWF and included an evaluation of the environmental effects of such mitigation in the Final EIR/EIS. As the Delta Conveyance Project is the replacement of the BDCP/CWF, CCWD anticipates that DWR again will identify construction and operation of the Interconnection Facilities as mitigation measures in the Delta Conveyance Project Draft EIR and will include an evaluation of the environmental effects of such mitigation in the EIR. Since the March 2016 settlement agreement between DWR and CCWD commits DWR to design and construct the Interconnection Facilities associated with Delta Conveyance, the U.S. Army Corps of Engineers (USACE) should include an evaluation of the environmental effects regarding construction of the Interconnection Facilities in the Delta Conveyance Project EIS. CCWD staff are available to assist in this assessment.

I have attached a copy of the March 2016 settlement agreement between DWR and CCWD and welcome the opportunity to meet with you to discuss the environmental review for the Draft EIS. If you have any questions, please do not hesitate to get in touch with me at (925) 688-8079 or dsereno@ccwater.com.

Sincerely,



Deanna Sereno
Senior Policy Advisor

DS:wec

Attachment

**AGREEMENT FOR MITIGATION OF IMPACTS
TO CONTRA COSTA WATER DISTRICT FROM CONSTRUCTION AND
OPERATION OF BAY DELTA
CONSERVATION PLAN/ CALIFORNIA WATERFIX**

This Agreement for Mitigation of Impacts to Contra Costa Water District (“CCWD”) from Construction and Operation of the Bay Delta Conservation Plan / California WaterFix (this “Agreement”), by and between CCWD and the California Department of Water Resources (“DWR” and, together with CCWD, each a “Party” and, collectively, the “Parties”), is made as of the reference date of March 24, 2016. Capitalized terms not otherwise defined in this Agreement shall have the meanings set forth in Section 12.

RECITALS

- A. WHEREAS**, DWR and the United States Bureau of Reclamation (“Reclamation”) together have prepared a 2013 Draft Environmental Impact Report / Environmental Impact Statement (“DEIR/S”) and a 2015 Partially Recirculated Draft Environmental Impact Report / Supplemental Environmental Impact Statement (“2015 RDEIR/SDEIS”) for a project titled the Bay Delta Conservation Plan (“BDCP”), which includes Action Alternative 4A, called the California WaterFix (“CWF”) (collectively, “BDCP/CWF”);
- B. WHEREAS**, the BDCP/CWF includes as one of its components a facility to convey water from one or more water diversion intakes located along the Sacramento River (“Northern Intakes”) to the State and/or Federal pumping facilities in the south Delta (“Conveyance Facility”);
- C. WHEREAS**, in addition to the Conveyance Facility, the CWF includes the following components and parameters:
1. maximum diversion of a total of up to 9,000 cubic feet per second from a total of one or more new Northern Intakes;
 2. requirements to allow sufficient flow to bypass the new Northern Intakes and remain in the Sacramento River as specified in Table 4.1-2 of the 2015 RDEIR/SDEIS and Table 3-16 in the DEIR/S;
 3. continued use of existing State and Federal intakes in the south Delta to minimize water quality degradation by refraining from diverting from the Northern Intakes above a low-level pumping quantity of 300 cubic feet per second per intake during the months of July, August, and September of each calendar year unless the rate of diversions from the South Delta channels are at least approximately 3,000 cubic feet per second;
 4. coordinated operation of the State Water Project and Federal Central Valley Project facilities to: (i) meet the Delta outflow requirements in place as of the effective date of this Agreement as specified in State Water Resources Control Board Water Rights Decision 1641 (“D-1641”) Table 3 at pp. 183-187 and in the

United States Fish & Wildlife Service December 2008 Biological Opinion on the Effects of Long Term Coordinated Operations of the Central Valley and State Water Project on Delta Smelt and its Designated Critical Habitat, Reasonable and Prudent Alternative Component 3 at pp. 282-283 and Action 4 in Attachment B: (ii) the Rio Vista flow requirements in place as of the effective date of this Agreement as specified in D-1641 Table 3 at p. 184, and (iii) the additional Rio Vista flow requirements for at least 3,000 cubic feet per second from January to August of each calendar year, as specified in the 2015 RDEIR/SDEIS Table 4.1-2 at p. 4.1-9; and

5. up to 305 total acres of tidal wetland restoration located at Sherman Island, Cache Slough and the North Delta, where such restoration is required as mitigation for impacts of the BDCP/CWF and provided that tidal wetland restoration located at Sherman Island will not exceed 59 acres unless DWR demonstrates to CCWD's satisfaction that the tidal wetlands restoration mitigation will cause no adverse net water quality impacts at CCWD's intakes at any time;

- D. WHEREAS**, CCWD submitted comments on the 2015 RDEIR/SDEIS expressing its position that the BDCP/CWF would result in significant water quality, water supply and construction-related impacts to CCWD and its customers, and that the 2015 RDEIR/SDEIS was inadequate in other respects. Among other comments, CCWD expressed its concerns that construction of the BDCP/CWF could damage CCWD Facilities on and near Victoria Island; and that operation of the BDCP/CWF could cause salinity, algae and other contaminants to increase at CCWD's intakes. Increased salinity, algae and other contaminants at CCWD's intakes in turn could (a) adversely affect the quality of water delivered to CCWD's customers; (b) prevent CCWD from diverting water from one or more of its intakes during periods of degraded water quality; and (c) increase CCWD's water supply, energy and infrastructure costs due to changes in the timing of CCWD's diversions, periodic changes in the intakes used by CCWD to access water meeting CCWD's water quality objectives, and replacement of some or all of CCWD's water supply.
- E. WHEREAS**, DWR and Reclamation have filed a joint water rights petition before the State Water Resources Control Board ("**State Board**") that seeks to add three new points of diversion and/or points of re-diversion to specified water rights permits for the State Water Project and Central Valley Project in connection with the CWF ("**CWF Change of Point of Diversion**"). The State Board has bifurcated its proceedings on the CWF Change of Point of Diversion into multiple parts, and CCWD has filed a protest to the petition ("**Water Rights Protest Claims**").
- F. WHEREAS**, Reclamation has participated in informal consultation on the CWF under Section 7(a)(2) of the Endangered Species Act, 16 U.S.C. § 1536(a)(2), with the U.S. Fish & Wildlife Service and National Marine Fisheries Service and to that end has made available a working draft Biological Assessment for the CWF, which is anticipated to result in a final Biological Assessment and a Biological Opinion that will be critical to how the CWF will be operated.

- G. WHEREAS**, absent an enforceable and binding agreement to mitigate impacts of the BDCP/CWF to CCWD and its customers and to fully offset increased costs to CCWD resulting from operation of the BDCP/CWF, CCWD has threatened to commence litigation arising under the California Environmental Quality Act (“CEQA”), National Environmental Policy Act, California Water Code, Federal and State Endangered Species Acts, and other statutes and regulations to challenge actions and final decisions by DWR, Reclamation and other permitting agencies regarding the BDCP/CFW.
- H. WHEREAS**, without admitting to any liability arising from CCWD’s alleged harms above in Recital D, DWR desires to settle the Parties’ disagreements in lieu of litigation and to ensure that the BDCP/CWF provides the mitigation under CEQA, and resolves CCWD’s water right protest as a legal user of water, the Parties have agreed on measures to, among other things, (i) mitigate the impacts identified under CEQA of the BDCP/CWF, if approved, on CCWD and its customers, and (ii) fully offset any increased costs to CCWD and its customers resulting directly or indirectly from the BDCP/CWF, if approved, all as more fully set forth in this Agreement.
- I. WHEREAS**, the Parties recognize that DWR has not decided whether or on what conditions to approve the BDCP/CWF as a project under CEQA, and the Parties intend that, except with regard to the mitigation measures that must be implemented to address impacts to CCWD and its customers if DWR approves the BDCP/CWF, this Agreement in no way affects the independent judgment to be exercised and findings required to be made by DWR or CCWD under CEQA in the event the BDCP/CWF, is approved and implemented.
- J. WHEREAS**, this Agreement is intended to protect CCWD and its customers in the event that DWR approves and implements the BDCP/CWF; by entering into this Agreement CCWD does not endorse or otherwise support approval and implementation of the BDCP/CWF.
- K. WHEREAS**, DWR will benefit from CCWD’s withdrawal of its water rights protest prior to DWR’s selection of an action alternative and approval of the BDCP/CWF and prior to approval of the water rights petition, incidental take permits and other permits and approval that will govern construction and operation of the BDCP/CWF; therefore, this Agreement is intended to bind DWR and its successors and assigns to comply with the terms of this Agreement including but not limited to conveyance of Qualifying Water to CCWD in the amounts specified by this Agreement, regardless of the physical features, components or operational parameters approved and permitted for the BDCP/CWF and regardless of whether CCWD exercises its right to comment upon, oppose or challenge actions, approvals and permits for an alternative or project modification that both (i) deviates from the components and parameters specified in Recital C, above and (ii) has the potential to harm water quality at CCWD’s intakes.
- L. WHEREAS**, operation of the BDCP/CWF could adversely affect CCWD in a manner that is not addressed by this Agreement if the BDCP/CWF is approved, permitted or modified in a manner that deviates from the project components and parameters specified in Recital C, above; accordingly, this Agreement is not intended to prevent CCWD from

commenting on, opposing, or challenging any action, permit or approval that both (i) deviates from the project components and parameters specified in Recital C, above (b) has the potential to harm water quality at CCWD's intakes.

M. WHEREAS, the Parties recognize that to fully implement this Agreement, other agreements, permits and approvals are contemplated including but not limited to: an agreement between CCWD and the East Bay Municipal Utility District ("**EBMUD**") to allow water to be conveyed to CCWD through EBMUD's Freeport Intake ("**Freeport Intake**") and the interconnection between EBMUD's Mokelumne Aqueduct and CCWD's Los Vaqueros Pipeline; State Board approval of a water rights petition to identify the Freeport Intake as a point of diversion for water diverted pursuant to CCWD's Los Vaqueros water right; State Board approval of a water rights petition to identify the new Northern Intakes as points of diversion for water diverted pursuant to CCWD's Los Vaqueros water right; a Warren Act Contract between CCWD and Reclamation for conveyance through the Folsom South Canal of water diverted at the Freeport Intake under the Los Vaqueros water right; and cooperation from Reclamation with regard to implementation of CCWD's water supply contract with Reclamation in a manner that is consistent with the terms of this Agreement.

N. WHEREAS, two of CCWD's customers, the City of Antioch ("**Antioch**") and the City of Brentwood ("**Brentwood**"), as well as the East Contra Costa Irrigation District ("**ECCID**"), which supplies water to CCWD and to Brentwood, have submitted comments on the 2015 RDEIR/SDEIS expressing their concerns that they could be adversely affected by the BDCP/CWF in a manner that would not be fully addressed by mitigation of impacts to CCWD; two of these agencies (Antioch and ECCID) have existing agreements with DWR to address water quality at their intakes, and complete mitigation for water quality impacts to all of its customers and partners is important to CCWD; therefore, this Agreement requires DWR to contact each of these agencies and, if agreeable to these agencies, to commence negotiations regarding potential impacts to these agencies beyond the impacts to CCWD that are addressed by this Agreement, it being understood that this Agreement is not intended to address potential impacts of the BDCP/CWF to Antioch, ECCID or Brentwood except to the extent such impacts are indirectly addressed as a practical matter by the CEQA mitigation measures provided for in this Agreement to mitigate the impacts of the BDCP/CWF on CCWD.

NOW, THEREFORE, THE PARTIES MUTUALLY AGREE AS FOLLOWS:

1. EFFECTIVENESS, CEQA REVIEW AND TERM OF AGREEMENT

1.1 Effective Date. This Agreement shall be effective as of the date that it is executed by both Parties, except to the extent expressly provided below in subsection 1.1.1.

1.1.1 CCWD's obligations under Section 5.1 of this Agreement shall become effective only if, after completing CEQA review of the BDCP/CWF, DWR selects and approves a BDCP/CWF action alternative that does not deviate from the components and parameters of the CWF that are described in Recital C above (a "**Conforming Action Alternative**").

1.1.2 The Parties agree and acknowledge that DWR must complete CEQA review before it can construct, operate or use the BDCP/CWF. In conducting its CEQA review, DWR reserves all of its rights, powers and discretion under CEQA with regard to the BDCP/CWF, including, to the extent permitted under applicable law, but without limiting any of DWR's obligations under this Agreement, (i) the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; (ii) the authority to deny approval of the BDCP/CWF based on any significant environmental impact that cannot be mitigated; and (iii) the authority to approve the BDCP/CWF notwithstanding any significant environmental impact that cannot be mitigated, if DWR determines that these impacts are outweighed by the project's social, economic or other benefits. CCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by CCWD on whether and how to approve any connection to or use of any Conveyance Facility that is part of the BDCP/CWF. Notwithstanding the discretion identified in this Section, if DWR approves the BDCP/CWF or any modification to the BDCP/CWF, DWR shall implement the terms of this Agreement.

1.1.3 The Parties further agree and acknowledge that DWR also must complete CEQA review before it can construct, operate or use any Interconnection Facilities. Pursuant to this Agreement, DWR will identify construction and operation of the Interconnection Facilities as mitigation measures in the Final EIR/EIS for the BDCP/CWF, and will include an evaluation of the environmental effects of such mitigation in the Final EIR/EIS for the BDCP/CWF. In conducting its CEQA review, DWR reserves all of its rights, powers and discretion under CEQA with regard to the Interconnection Facilities, including, to the extent permitted under applicable law, but without limiting any of DWR's obligations under this Agreement, (i) the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; (ii) the authority to deny approval of the Interconnection Facilities based on any significant environmental impact that cannot be mitigated (in which case DWR also must deny approval of the associated Conveyance Facility); and (iii) the authority to approve the Interconnection Facilities notwithstanding any significant environmental impact that cannot be mitigated, if DWR determines that these impacts are outweighed by the project's social, economic or other benefits. CCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by CCWD on whether and how to approve any operation or use of the Interconnection Facilities. Notwithstanding the discretion identified in this Section, if DWR approves the BDCP/CWF or modifications to the BDCP/CWF,

DWR shall implement the terms of this Agreement including but not limited to the duty to construct the Interconnection Facilities.

- 1.2 Term. Unless this Agreement is earlier terminated by mutual written agreement of the Parties, this Agreement shall remain in effect for the entire duration that the BDCP/CWF and/or any amendment, modification, supplement or replacement thereof is in operation, including, without limitation, during any lapse thereof or any cessation of use of any Conveyance Facility that is later followed by the design, construction, operation or use of the same or a new or modified Conveyance Facility. For the avoidance of doubt, this Agreement shall be effective from and after the effective date hereof, including, without limitation, at any such time that is prior to the design, construction, operation or use of any Conveyance Facility; provided, however, this Agreement will automatically terminate if all of the following occur: (i) DWR permanently withdraws its CWF Change in Point of Diversion application; (ii) for a period of twenty (20) years following execution of this Agreement, DWR does not receive State Board approval for a CWF Change in Point of Diversion or any other change in point of diversion for a Conveyance Facility; and (iii) for a period of twenty (20) years following execution of this Agreement, DWR does not commence construction of the Conveyance Facility.

2. CONSTRUCTION OF CONVEYANCE FACILITY AND INTERCONNECTION FACILITIES

2.1 Provisions Applicable to the Design, Construction and Maintenance of the Conveyance Facility and the Interconnection Facilities.

2.1.1 Coordination between CCWD and DWR regarding Design, Construction, and Maintenance Schedules. DWR shall coordinate with CCWD on the schedules for design, construction and maintenance of the portion of the Conveyance Facility located on or beneath Victoria Island, San Joaquin County (“**Conveyance Facility on Victoria Island**”) and the Interconnection Facilities (as defined in Section 2.3.1).

- (a) DWR shall provide a detailed schedule to CCWD for completion of design of the Conveyance Facility and Interconnection Facilities. DWR shall include as part of the design schedule sufficient time to enable completion of the review and comment periods provided by this Agreement prior to advertising the Conveyance Facility and Interconnection Facilities for bid and construction.
- (b) No later than one hundred twenty (120) days prior to the commencement of construction of the Conveyance Facility on Victoria Island or Interconnection Facility, whichever occurs first, and no later than ninety (90) days prior to the commencement of construction or other ground-disturbing

activities associated with maintenance of the Conveyance Facility on Victoria Island, DWR shall provide to CCWD a detailed proposed construction schedule for each facility, including the proposed scope of construction or maintenance activities, proposed dates for such construction or maintenance, construction or maintenance activities (including dewatering as described in Section 2.2.2), a schedule of typical equipment and materials and the proposed construction contractor. CCWD shall provide written comments on the proposed construction or maintenance schedules to DWR within thirty (30) days of CCWD's receipt of each proposed schedule. DWR agrees to implement all CCWD comments except to the extent implementation of one or more comments would cause substantial delay in designing, constructing or maintaining the Conveyance Facility on Victoria Island or Interconnection Facilities or would result in a substantial increase in construction or maintenance costs. To the extent DWR objects to any of CCWD's written comments, within fifteen (15) days of DWR's receipt of said comments, DWR shall notify CCWD in writing of its objection and the Parties shall meet and confer in good faith to resolve the dispute. If the Parties cannot resolve the dispute within twenty-one (21) days of DWR's written notice of objection, the matter may be submitted by either Party to arbitration pursuant to Section 7 of this Agreement.

- (c) The schedule specified in Section 2.1.1(b), above, may be changed by the Parties by mutual consent.

2.1.2 Review of Documents. Unless noted otherwise in this Agreement or unless revised by the Parties by mutual written agreement, the following review and comment process shall apply:

- (a) Any review or approval of documents by CCWD contemplated by this Agreement, including but not limited to review of project designs, technical studies, third party contracts, and contractor submittals, shall be completed within fifteen (15) working days of receipt of those documents by CCWD from DWR. If CCWD has comments on a document, CCWD shall provide such comments to DWR in writing.
- (b) Within fifteen (15) working days of receipt of said comments, DWR shall notify CCWD in writing to the extent DWR objects to any of CCWD's written comments, and the Parties shall meet and confer in good faith to resolve the dispute.

- (c) If the Parties cannot resolve the dispute within twenty-one (21) working days of DWR's written notice, the matter may be submitted to arbitration pursuant to Section 7 of this Agreement.
- (d) If CCWD does not return comments to DWR within fifteen (15) working days of CCWD's receipt of contractor submittals, DWR will respond to the contractor submittals within the timeframe stipulated in the construction contract and will not delay response waiting for CCWD comments.

2.1.3 CCWD Review of Third Party Contracts. CCWD shall have the right to review construction, maintenance and similar contracts between DWR and third parties relating to the Conveyance Facilities within 1,000 feet of the easement for CCWD's Middle River Pipeline on Victoria Island and relating to the Interconnection Facilities (each a "Third Party Contract"). In furtherance of the foregoing, DWR shall provide CCWD with drafts of each Third Party Contract in a timely manner such that CCWD can review and provide comments on such drafts. DWR shall consider all such comments in good faith; provided that, to the extent any provisions of such Third Party Contracts conflict with the terms of this Agreement, DWR shall not include them in the final contracts without the written consent of CCWD. Unless otherwise agreed to by CCWD, each Third Party Contract will contain provisions acceptable to CCWD relating to the conduct of the construction or maintenance at or affecting any CCWD Facility, including, without limitation, compliance with CCWD's environmental, health and safety programs, and the right of CCWD to require DWR to halt construction activities that could cause material damage to CCWD's property, inspection and other rights.

2.1.4 Reimbursement of CCWD Costs for Review and Coordination. Promptly upon written notice thereof from CCWD, including a reasonably detailed description of such costs, DWR shall reimburse CCWD the cost of any CCWD staff time or third-party consultant costs relating to review of documents including but not limited to project designs, technical studies, third party contracts, and contractor submittals; pre-construction and post-construction inspections; reasonable observation and inspection during construction and maintenance; or any other activities to implement this Agreement relating to design, construction and maintenance of the Conveyance Facility on Victoria Island and Interconnection Facilities.

2.1.5 Avoidance of Western Area Power Administration Facilities. Construction and maintenance of the Conveyance Facility on Victoria Island and Interconnection Facilities has the potential to impact Western Area Power Administration facilities that provide power to the CCWD Facilities on or near Victoria Island (the "**WAPA Facilities**"), including

power lines and towers. DWR shall implement measures which in the reasonable opinion of CCWD are sufficient to protect the WAPA Facilities from potential damage when siting, constructing and maintaining the Conveyance Facility on Victoria Island and Interconnection Facilities, including with respect to access roads and Western Area Power Administration right-of-ways.

- 2.1.6** Continued Access to CCWD Facilities. DWR shall ensure that CCWD has free and safe access to CCWD Facilities at all times during construction and maintenance of the Conveyance Facility and Interconnection Facilities.
- 2.1.7** Pre-Construction and Post-Construction Inspections. Prior to the commencement of construction of the Conveyance Facility on Victoria Island or the Interconnection Facilities, whichever occurs first, CCWD shall conduct a pre-construction inspection of those CCWD Facilities that could be affected by construction of the Conveyance Facility on Victoria Island and the Interconnection Facilities. Following completion of construction of the Conveyance Facility on Victoria Island and the Interconnection Facilities, CCWD shall conduct a post-construction inspection of those same CCWD Facilities to determine whether damage to those CCWD Facilities occurred as a result of construction activities.
- 2.1.8** Damage to CCWD Facilities and Access Roads. Upon written notice from CCWD describing such costs in reasonable detail, DWR shall promptly reimburse CCWD for all costs incurred by CCWD due to damage caused by construction and maintenance of the Conveyance Facility on Victoria Island and the Interconnection Facilities, including but not limited to the costs of repair or replacement of CCWD Facilities. In addition, DWR shall repair or replace any access roads and levees damaged by construction and maintenance of the Conveyance Facility on Victoria Island and the Interconnection Facilities. If DWR fails to immediately repair or replace said access roads and levees, CCWD shall have the option of conducting such repairs or replacement and DWR shall promptly reimburse CCWD for the costs of such repair or replacement, upon written notice from CCWD describing such costs in reasonable detail.
- 2.1.9** Loss of Water Supply. Any loss of CCWD water supply directly or indirectly caused by (i) construction or maintenance by DWR or its third party contractors of the Conveyance Facility, (ii) construction or maintenance by DWR or its third party contractors of any other component of the BDCP/CWF, or (iii) construction or maintenance by DWR or its third party contractors of the Interconnection Pump Station; or (iv) construction by DWR or its third party contractors of the Interconnection Pipeline and Interconnection Valve, shall be the

responsibility of DWR, and may be recouped through delivery of the same amount of water to CCWD via the interconnection between the East Bay Municipal Utility District (“**EBMUD**”) Mokelumne Aqueduct and CCWD’s Los Vaqueros Pipeline at DWR’s sole expense, or in another manner reasonably satisfactory to CCWD and at DWR’s expense.

2.1.10 Levee Subsidence. The Parties shall work in good faith to establish a set of protocols, protective measures and monitoring to address potential levee subsidence associated with construction and maintenance of the Conveyance Facility on Victoria Island and the Interconnection Facilities. Construction of the Conveyance Facility on Victoria Island or the Interconnection Facilities shall not commence until such protocols and protective measures are established to the Parties’ mutual satisfaction.

2.1.11 Hazardous Materials. DWR shall use, store and dispose of Hazardous Material to be used to construct the facilities described in Section 2 of this Agreement by DWR or DWR’s Related Parties only in compliance with any and all applicable federal, state or local environmental health or safety laws, statute, ordinance, rule, regulation or requirement (“**Environmental Laws**”). DWR shall, at DWR’s sole cost and expense, promptly undertake such removal or remedial action as may be required by Environmental Law with regard to any non-de minimis violation of any Environmental Law with regard to any Hazardous Material used by DWR or DWR’s Related Parties. “**Hazardous Material**” shall mean any asbestos-containing materials, petroleum, explosives, toxic materials, or any other substances regulated as hazardous wastes, hazardous materials, hazardous substances, or toxic substances under any Environmental Laws, including but not limited to any substance, pollutant or contaminant listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601, et seq., and the regulations promulgated pursuant to the Act.

2.2 Provisions Relating to the Conveyance Facility on Victoria Island.

2.2.1 Victoria Island Safe Haven Shaft. DWR shall notify CCWD in writing in the event DWR determines that a safe haven shaft is required in conjunction with sub-surface construction and tunneling on Victoria Island. Prior to the construction of any safe haven shaft, DWR shall provide CCWD engineering drawings and data, specifications, materials, maps, hydrologic data and seismic studies relating to such shaft and such other information as may be reasonably requested by CCWD in order to review and evaluate DWR’s proposal. The location and design of such shaft shall be coordinated with CCWD pursuant to the process described in Section 2.1.2 of this Agreement.

- 2.2.2** Dewatering. DWR shall ensure that it designs and implements dewatering in conjunction with the construction and maintenance of pipelines/tunnels, shafts and other components of the Conveyance Facility to prevent damage to the CCWD Facilities that may result from dewatering. The minimum amount of dewatering necessary to implement construction and maintenance shall be effectuated only upon (i) a written settlement monitoring and corrective action plan coordinated between and executed by the Parties with direct input by CCWD regarding allowable settlement trigger points, and (ii) the placement of instrumentation on the CCWD Facilities at a site to be mutually agreed by the Parties, at DWR's sole expense, for the monitoring of settlement.
- 2.2.3** Dewatering Discharge. DWR shall neither cause nor permit any dewatering that takes place pursuant to Section 2.2.2 to have an adverse impact on the CCWD Facilities or water quality.
- 2.2.4** Restrictions on Parking and Stockpiling. DWR shall ensure that no construction and maintenance equipment shall park on or over CCWD Facilities and no construction and maintenance material shall be stockpiled on CCWD-owned property or within CCWD easements without CCWD's prior written authorization. DWR shall ensure that equipment and materials hauling activities over CCWD Facilities do not result in excessive loading, and DWR shall submit calculations and measures to reduce loads, such as trench plates, to CCWD for review and approval in advance of commencing any equipment and materials hauling activities over CCWD Facilities.
- 2.2.5** Tunnel Design to Avoid Ground Settlement. The design of the Conveyance Facility tunnels on Victoria Island shall be based on DWR's geotechnical analysis and shall include measures sufficient to avoid ground settlement within 1,000 feet of the easement for CCWD's Middle River Pipeline. CCWD shall have the right to review such geotechnical analysis, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement. CCWD shall provide to DWR levels of ground settlement that can be tolerated at CCWD Facilities, to be included in the design documents used for bidding and construction of the Conveyance Facility on Victoria Island.

2.3 Design and Construction of the Interconnection Facilities.

- 2.3.1** DWR Obligation to Design and Construct Interconnection Facilities. To ensure the Secondary Method for conveying water to CCWD, as described further in Section 3.3 of this Agreement, is available for conveyance of Qualifying Water, as defined in Section 3.4 of this

Agreement, DWR shall design and construct the “**Interconnection Facilities.**”

- (a) Unless modified by mutual written agreement of the Parties, the Interconnection Facilities shall consist of the following facilities: (i) a direct connection to the Conveyance Facility, pumping station, and appurtenant facilities (collectively “**Interconnection Pump Station**”) on Victoria Island with capacity to convey Qualifying Water to CCWD’s Old River Pipeline at a normal operating capacity of 150 cubic feet per second, and with sufficient pressure for the water to reach CCWD’s Existing Transfer Pump Station while the Old River Pipeline is operating at a total flow rate of up to 320 cubic feet per second; (ii) a pipeline and appurtenant facilities with a normal operating capacity of 150 cubic feet per second to convey the water from the Interconnection Pump Station on Victoria Island to CCWD’s Middle River Pipeline (“**Interconnection Pipeline**”), (iii) a valve between the Interconnection Pipeline and CCWD’s Middle River Pipeline (“**Interconnection Valve**”); and (iv) all instrumentation and communication equipment needed for CCWD to remotely monitor all Interconnection Facilities and operate all CCWD-owned facilities.
- (b) DWR shall design and construct the Interconnection Facilities in coordination with CCWD. DWR shall provide CCWD engineering drawings and data, specifications, materials, maps, hydrologic data and seismic studies relating to the Interconnection Facilities and such other information as may be reasonably requested by CCWD in order to review and evaluate DWR’s proposal. The location and design of such Interconnection Facilities shall be coordinated with CCWD pursuant to the process described in Section 2.1.2 of this Agreement.
- (c) Prior to the commencement of construction of the Interconnection Facilities, DWR and CCWD may consider and mutually agree to increase the Interconnection Facilities’ normal operating capacity to 250 cubic feet per second, with responsibility for the costs associated with the increased capacity to be determined during negotiation of such mutual agreement. Further, during design of the Interconnection Facilities, DWR and CCWD may consider and mutually agree to a different design for the Interconnection Facilities under which the Interconnection Pipeline conveys water to CCWD’s Old River Pipeline from a new pump station connected to the Conveyance Facility at the Subdivided Clifton Court Forebay. The amount of mitigation water to be conveyed in any year is specified in

Section 3.6 and 3.7 and would be the same regardless of the size or capacity of the Interconnection Facilities.

- (d) As part of its CEQA review for the BDCP/CWF, DWR shall evaluate the Interconnection Facilities, including a capacity of 250 cubic feet per second. The Interconnection Facilities are intended as a mitigation measure to be included in the Final EIR/EIS for the BDCP/CWF. The Parties recognize that, if after DWR completes the Final EIR/EIS and approves the BDCP/EIR, DWR later elects to pursue an alternative design for the Interconnection Facilities that differs from the design selected by DWR at the time DWR certifies the Final EIR/EIS and approves the BDCP/CWF, additional CEQA review may be required. Further, this Agreement does not obligate DWR to pay the cost of CEQA review if CCWD later proposes to modify the Interconnection Facilities after they have been constructed.
- 2.3.2** Interconnection Facilities Design to Include Liquefaction Analysis. The design of the Interconnection Facilities shall include a liquefaction analysis that (i) evaluates potential impacts of liquefaction, and (ii) describes mitigation measures to protect the Interconnection Facilities, the appurtenant structures and the connection point between the Interconnection Facilities and the CCWD Facilities. CCWD shall have the right to review such liquefaction analysis, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement.
- 2.3.3** Interconnection Facilities Design to Reflect Differential Settlement and Flexibility of Connections. The design of the Interconnection Facilities shall (i) evaluate and address potential differential settlement, and (ii) incorporate flexible connections between CCWD Facilities and the Interconnection Facilities to account for long-term settlement, seismic motion and/or sea level rise impacts. CCWD shall have the right to review such differential settlement analysis, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement.
- 2.3.4** CCWD Design Review. Design of the Interconnection Facilities that may affect one or more existing CCWD Facilities is subject to review by a third party of CCWD's choice and at DWR's expense as part of the value engineering or peer review process for BDCP/CWF. CCWD shall be invited as a participant of any Value Engineering workshops held in conjunction with the Interconnection Facilities design.
- 2.3.5** Design Standards. The Interconnection Facilities shall be designed using the current standards for design criteria and the current seismic loading and performance requirements including site-specific seismic

use criteria at the time of design and construction for a critical facility. All electrical and mechanical equipment shall be designed to ensure immediate post-earthquake functionality following the maximum credible earthquake for the site. The design as completed by DWR shall be sealed by an overall Engineer of Responsible Charge and the appropriate discipline engineers utilized on the project, with all registered engineers being so registered in the State of California. The design shall be completed using the professional standard of care for such projects within California. CCWD shall have the right to review all design documents, including a detailed surge analysis demonstrating that CCWD Facilities will be protected from any potentially damaging operations, during the design preparation and prior to issuance of the final design for the Interconnection Facilities.

2.3.6 Costs. DWR shall secure fee title or permanent easements for, and design and construct all components of the Interconnection Facilities, in each case at its sole cost.

2.3.7 Interconnection Pump Station. After completion of construction of the Interconnection Facilities, DWR shall own, operate and maintain the Interconnection Pump Station. DWR shall inspect the Interconnection Pump Station at least once per year per all manufacturers' recommended maintenance schedules for corrosion, coatings, safety, drainage, security, electrical and mechanical functionality, structural and geotechnical performance, and any other conditions necessary to ensure reliable and safe facility operation. DWR shall promptly provide the results of such inspections to CCWD. DWR shall be responsible for repairing and replacing all components of the Interconnection Pump Station at its sole cost so that it is capable of operating in good condition and at its design capacity at all times.

2.3.8 Interconnection Pipeline and Interconnection Valve. After completion of construction of the Interconnection Pipeline and Interconnection Valve, DWR shall transfer ownership of the Interconnection Pipeline and Interconnection Valve to CCWD and CCWD shall be responsible for operation and maintenance of the Interconnection Pipeline and Interconnection Valve.

- (a)** DWR shall retain the fee title or easement for the real property on which the Interconnection Pipeline and Interconnection Valve are located, but shall ensure that CCWD has full and complete access to the Interconnection Pipeline and Interconnection Valve for the purposes of inspecting, maintaining and replacing such Interconnection Pipeline and Interconnection Valve. Alternatively DWR may elect to transfer the fee title or easement for the Interconnection Pipeline and Interconnection Valve to CCWD.

- (b) CCWD shall regularly inspect the Interconnection Pipeline and Interconnection Valve, and shall promptly provide the results of such inspections to DWR. CCWD shall be responsible for repairing and replacing all components of the Interconnection Pipeline and Interconnection Valve so that they are capable of operating in good condition and at their design capacity at all times; provided, however, that DWR shall be responsible for repairing and replacing at its sole cost all components of the Interconnection Pipeline and Interconnection Valve that are defective due to construction or latent defects.

2.3.9 Interconnection Pipeline Easement. The Interconnection Pipeline shall be constructed in an easement dedicated to its purpose. DWR shall ensure that all easements for the Interconnection Pipeline and Interconnection Valve provide the ability for CCWD to access such facilities without undue burden or delay and without prior written approval, in order to operate, maintain, renew, replace or install facilities and appurtenances. DWR shall provide all easements and land agreements to CCWD for its review in advance of finalizing such easements and land agreements. The pipeline shall be designed by DWR to pressures and flow rates as approved by CCWD. The connection of the Interconnection Pipeline to CCWD Facilities shall be as approved and coordinated by CCWD.

2.3.10 Victoria Island Pump Station. The location of a pump station on Victoria Island, if needed to transfer flows from the Conveyance Facility to the CCWD Facilities, shall be subject to approval by CCWD. In requesting approval from CCWD for the location of a Victoria Island Pump Station, DWR shall provide CCWD prior to the construction of the pump station design with engineering drawings and data, power supply design, specifications, materials, maps, hydrologic data, seismic studies and any other information reasonably requested by CCWD in order to properly evaluate DWR's proposal. CCWD shall have the right to review such documents pertaining to the pump station, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement.

2.3.11 Elevation of Equipment Associated with Interconnection Facilities. DWR shall ensure that any shafts, permanent pumping equipment or permanent electrical equipment associated with the Interconnection Facilities shall be located on or accessed from a finished grade consistent with U.S. Army Corps of Engineers criteria for flood protection and levee breach, and sufficient for protection in the event of sea level rise as identified at the time the design is completed and for the design life of the Interconnection Facilities, assumed for purposes of this provision to be 50 years.

- 2.3.12** Restrictions on Parking and Stockpiling. DWR shall ensure that no construction and maintenance equipment shall park on or over CCWD Facilities and no construction material shall be stockpiled on CCWD-owned property or within CCWD easements without CCWD's prior written authorization. DWR shall ensure that equipment and materials hauling activities over CCWD Facilities do not result in excessive loading, and DWR shall submit calculations and measures to reduce loads, such as trench plates, to CCWD for review and approval in advance of commencing any equipment and materials hauling activities over CCWD Facilities.
- 2.3.13** Control of Connections and Valves. All connections and valves at the CCWD Facilities shall be solely controlled and operated by CCWD.
- 2.3.14** Selection of Construction Contractor. The procedure for selection of a contractor for the construction of the Interconnection Facilities contemplated by this Agreement shall conform with then-applicable State law with regard to public works contracts.
- 2.3.15** Construction Observation Rights. CCWD shall have access to the construction site and the right to reasonably observe and comment on construction at all times during the construction of the Interconnection Facilities. Specific points of connection and coordination with CCWD Facilities shall be scheduled as part of the construction schedule and a detailed connection plan provided by DWR to CCWD a minimum of 90 days prior to the connection occurring to allow sufficient time to review, comment and accept the connection plan by CCWD. DWR shall provide CCWD all construction contractor submittals for review, and shall provide as-built documents as well as operations and maintenance manuals for all equipment to be owned and operated by CCWD.
- 2.3.16** Testing Plans. CCWD and DWR shall jointly develop multiple startup and testing procedures for the Interconnection Facilities and any pumping equipment and movement of water through the Interconnection Facilities once they have been accepted for testing and operations by both Parties.
- 2.3.17** Operational Date. The Interconnection Facilities shall be fully operational no later than the first day of operation of any Conveyance Facility.
- 2.3.18** Instrumentation. DWR shall as part of the design and construction of the Interconnection Facilities incorporate SCADA systems into its facility that can communicate with and be controlled by CCWD using a mutually agreed upon platform and communication protocols.

2.3.19 Operation, Maintenance, Repair, and Replacement of the Interconnection Facilities. DWR shall at its expense obtain all permits and other approvals necessary for the operation, maintenance, repair, and replacement of the Interconnection Facilities. DWR shall provide CCWD with copies of all permits issued and other approvals necessary for the Interconnection Facilities, including all necessary CEQA compliance documents. CCWD and DWR may only operate the Interconnection Facilities valves that they own. The Parties shall coordinate operations of their separate facilities with the operation of the Interconnection Facilities. Water supplied through the Interconnection Facilities shall be measured upstream of the point of interconnection by the flow meters located at the Interconnection Pump Station, which will be calibrated as needed to the mutual satisfaction of both Parties. The expense of calibration shall be shared equally by both Parties. The Parties shall schedule a meeting in advance of operation and confirm at that meeting the procedures by which the Interconnection Facilities shall be operated to deliver water. Each Party shall be given unrestricted access to its respective Interconnection Facilities at all times without prior notice. DWR and CCWD agree neither party has the right or obligation to operate or maintain the other party's Interconnection Facilities. Each party shall have the sole responsibility for the security of its respective property at all times. Each Party shall have responsibility for operating, maintaining, and repairing its respective Interconnection Facilities. Each Party may operate, repair or replace any of the physical works of the other's Interconnection Facilities with the prior written agreement of the other Party. Either Party may perform or contract for work on its own property, including its easement(s) or right(s) of way, in regard to its own Interconnection Facilities. The other Party shall cooperate with such work, conduct its own operations in such a manner as not to cause any unnecessary delay or hindrance, and adjust and coordinate its work so as to permit proper completion of all work in the area.

2.3.20 Future Agreements. The Parties may enter into separate, future agreements concerning the use of the Interconnection Facilities for purposes beyond the scope of this Agreement, with costs associated with such use to be determined in corresponding agreements.

3. CEQA MITIGATION OF CCWD WATER QUALITY AND SUPPLY IMPACTS BY CONVEYANCE OF WATER TO CCWD FROM AN ALTERNATE HIGH-QUALITY SOURCE

3.1 Conveyance of Mitigation Water. To mitigate for water quality and water supply impacts arising from the water quality impacts to CCWD from the construction, operation or use of any Conveyance Facility, DWR shall convey water to CCWD (i) meeting the water quality requirements of Section 3.4 of this Agreement, (ii) in the minimum amounts specified in Section 3.6 of this Agreement and

(iii) according to the schedule specified in Sections 3.7 and 3.8 of this Agreement. The method of conveying the water to CCWD shall be as specified in Section 3.2 or Section 3.3 of this Agreement, and the cost of conveying the water shall be borne by DWR as specified in Section 3.5 of this Agreement. CCWD shall identify whether the water conveyed to it by DWR is: (a) water diverted pursuant to CCWD's CVP Contract Supply, provided that it is within CCWD's then current allocation and schedule; (b) water diverted under CCWD's Los Vaqueros water right, provided that it is within the amount and season then authorized in the LV Water Right Permit and providing the Delta is then in surplus conditions; (c) transfer water purchased by CCWD, provided that CCWD has purchased the transfer water and obtained all necessary permits and approvals, or (d) or any combination of (a), (b) or (c). This Agreement does not increase the total amount of water that CCWD otherwise would be entitled to divert pursuant to its CVP Contract Supply, Los Vaqueros water right, or any water transfers. This Agreement also does not change any existing approval process for identification, scheduling, or allocation of water diverted pursuant to CCWD's CVP Contract Supply, Los Vaqueros water right, or any water transfers. Water conveyed to CCWD pursuant to this Agreement may be used as CCWD deems appropriate in its sole discretion.

3.2 Primary Method of Conveyance. The primary method of conveying the water described in Section 3.1 ("**Primary Method**") shall be through EBMUD's Freeport Intake and the interconnection between EBMUD's Mokelumne Aqueduct and CCWD's Los Vaqueros Pipeline.

3.2.1 CCWD will use reasonable efforts to enter into a separate agreement with EBMUD under which the Freeport Intake and CCWD interconnection with EBMUD's Mokelumne Aqueduct could be used to convey water to CCWD pursuant to this Agreement (such separate agreement, the "**CCWD/EBMUD Use Agreement**").

3.2.2 The Parties acknowledge that delivery of water to CCWD via the Freeport Intake and interconnection between CCWD and EBMUD's Mokelumne Aqueduct may be constrained by EBMUD's scheduling or other requirements imposed by EBMUD or regulatory agencies.

3.3 Secondary Method of Conveyance. The secondary method of conveying the water described in Section 3.1 ("**Secondary Method**") shall be through the Interconnection Facilities described in Section 2.3.1.

3.3.1 The Secondary Method shall be used if (i) DWR determines the Primary Method is impractical for scheduling or financial reasons, (ii) no CCWD/EBMUD Use Agreement is then in effect, or (iii) EBMUD determines that capacity at the Freeport Intake is not then available.

3.4 Water Quality Requirements. Regardless of whether the Primary Method or Secondary Method is used, the water to be conveyed to CCWD pursuant to this

Agreement shall, to the extent feasible, contain a maximum of 30 mg/L chlorides and a maximum of 4 mg/L total organic carbon (“Qualifying Water”). DWR shall maintain a water quality station at the Subdivided Clifton Court Forebay (if the Interconnection Pump Station is located at the Clifton Court Forebay), or at the Intermediate Forebay (if the Interconnection Pump Station is located on Victoria Island), to monitor chloride and total organic carbon and report the daily data in real-time on the California Data Exchange Center (“CDEC”) or a similar future database mutually acceptable to the Parties. If data is not available to determine whether Qualifying Water is available, CCWD shall have the sole discretion to determine whether to accept delivery of the water to be conveyed to CCWD pursuant to this Agreement. Prior to the conveyance of water to CCWD through either the Primary Method or the Secondary Method, the Parties shall evaluate existing conditions for concentrations of chlorides and organic carbon and may, by mutual agreement, amend this Agreement to modify the amount of chlorides or total organic carbon authorized for, and acceptable to, CCWD as Qualifying Water.

3.5 Costs of Conveyance to CCWD’s Existing Transfer Pump Station. Regardless of whether the Primary Method or Secondary Method is used for conveyance of water to CCWD, DWR shall bear all costs associated with conveyance to CCWD of the quantity and quality of water required by this Agreement (including, without limitation, all associated energy costs). If the Primary Method is used to convey water to CCWD, DWR shall pay EBMUD the amount charged by EBMUD for conveyance of the water from the Freeport Intake to CCWD Facilities at a pressure sufficient to lift the conveyed water to CCWD’s Existing Transfer Pump Station. If the Secondary Method is used to convey water to CCWD, DWR shall pay the costs associated with conveyance through the Conveyance Facility and from the Interconnection Pump Station to the Interconnection Valve at a pressure sufficient to lift the conveyed water to CCWD’s Existing Transfer Pump Station.

3.6 Water Conveyance to Be Scaled. The annual amount of Qualifying Water to be conveyed to CCWD shall be scaled to actual BDCP/CWF operations in each water year as follows.

3.6.1 The annual amount of Qualifying Water to be conveyed by DWR to CCWD shall be determined by the fraction of Unimpaired Sacramento River Runoff that is exported from the Delta by the CVP and SWP, in conjunction with the fraction of those exports diverted at the northern intakes, as described in the following table. Based on the BDCP modeling for the 2013 DEIR/DEIS and 2015 RDEIR/SDEIS and taking into account replacement of the requirements of the 1967 Agreement between DWR and CCWD pertaining to CCWD’s Mallard Slough Intake, the quantity of Qualifying Water to be conveyed by DWR to CCWD is expected to range between 2 and 50 thousand acre-feet (“TAF”) per water year. Exhibit A attached hereto sets forth examples of the application of the methodology set forth in this Section 3.6 and

Section 3.7 for determining the annual amount of Qualifying Water to be conveyed by DWR to CCWD in a given water year.

Annual Amount of Water to be Conveyed [TAF]

		Northern Exports / Total Exports							
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Total Exports / Sacramento River Runoff	0	2	2	5	5	5	5	5	5
	0.1	2	8	9	10	11	13	16	18
	0.2	5	10	13	15	17	20	23	26
	0.3	5	15	19	23	27	32	37	42
	0.4	5	19	25	31	37	43	49	50
	0.5	6	23	31	42	47	50		

Green shading represents the operating range in the BDCP modeling for the 2013 DEIR/DEIS and 2015 RDEIR/SDEIS. The darker the shading, the more often the operations are expected to occur.

3.6.2 If more Northern Exports or Total Exports are taken by DWR and/or Reclamation in a water year than are shown in the table in subsection 3.6.1 above, DWR and CCWD shall meet and confer to attempt to determine, by mutual agreement, an appropriate amount of Qualifying Water to be conveyed by DWR to CCWD in the next water year to mitigate water quality impacts to CCWD that occurred during the water year. If such mutual agreement cannot be reached within thirty (30) days after the end of such water year, then the minimum annual amount of Qualifying Water to be conveyed by DWR to CCWD in the next water year shall be 50,000 acre feet.

3.7 Initial Mitigation Conveyance to CCWD. In order to create a positive water balance in the Los Vaqueros Reservoir and to mitigate initial impacts of BDCP/CWF operations, DWR shall convey 30,000 acre-feet of Qualifying Water to CCWD before the beginning of the first planned full water year of operation of any part of the BDCP/CWF that could affect CCWD’s intake water quality. For the purposes of this Section 3.7, parts of the BDCP/CWF that could affect CCWD’s intake water quality include but are not limited to: the Conveyance Facility and other BDCP/CWF project components or BDCP/CWF permit conditions that could result in a substantial change to Delta hydrodynamics. Subsequently, the annual amount of Qualifying Water to be conveyed to CCWD shall be calculated in arrears in accordance with Section 3.6 after September 30th of each water year and shall be conveyed to CCWD by September 30th of the following water year.

3.8 Coordination of Scheduled Conveyance. The Parties shall collaborate to schedule Qualifying Water conveyance from DWR to CCWD pursuant to this Agreement.

- 3.8.1** The Parties agree to continue their current practice of regular operational coordination meetings.
- 3.8.2** After September 30th but no later than October 31st of each water year, DWR shall provide written notice to CCWD regarding the quantity of Qualifying Water that DWR must convey to CCWD based on application of the methodology specified in Sections 3.6 and 3.7 to conditions that occurred during the water year then most recently ended. To the extent CCWD objects to DWR's calculation of the annual amount of Qualifying Water to be conveyed, and within sixty (60) days of receipt of said notice, CCWD shall notify DWR in writing of its objection and the Parties shall meet and confer in good faith to resolve the objection. If the Parties cannot resolve the dispute within twenty-one (21) days of CCWD's written notice of objection, the matter may be submitted by either Party to arbitration pursuant to Section 7 of this Agreement.
- 3.8.3** Not later than seven (7) days after written notice from CCWD to DWR, DWR shall commence delivery of Qualifying Water to CCWD in the quantity requested by CCWD in such notice (a "**Conveyance Request**") and shall maintain delivery to CCWD at a rate of at least 150 cubic feet per second until the requisite amount of Qualifying Water is fully delivered to CCWD unless (i) a corresponding amount of Qualifying Water is not then available from both (A) the Primary Method due to EBMUD's refusal or inability to convey the requisite quantity of Qualifying Water and (B) the Secondary Method due to restraints or restrictions imposed by applicable regulatory authorities having jurisdiction over operation of the Conveyance Facility that fully prevent the conveyance of any water through the Conveyance Facility from the Northern Intakes, or (ii) the full amount of Qualifying Water to be delivered by DWR to CCWD for such water year under this Agreement already has been conveyed to CCWD. If DWR fails to commence conveyance to CCWD of the requisite amount of Qualifying Water requested by CCWD pursuant to this Section 3.8.3 within seven (7) days after its delivery of a Conveyance Request or fails to maintain delivery to CCWD at the requisite rate until the requisite amount of Qualifying Water is fully delivered to CCWD, and such conveyance by DWR is not then excused due to the circumstances described under the preceding clauses (i) and (ii), then, upon further written notice from CCWD to DWR, the Parties shall meet and confer in good faith to resolve the matter. If the Parties cannot resolve the matter within five (5) days of CCWD's written notice, the matter may be submitted by either Party to arbitration pursuant to Section 7 of this Agreement.

3.8.4 If at any time DWR is unable to convey the requisite quantity of Qualifying Water that is requested by CCWD pursuant to the preceding subsection 3.8.3 due to the circumstances described in clause (i) thereof, then DWR shall convey such requisite quantity of Qualifying Water to CCWD on the first date that is acceptable to CCWD on which the circumstances described in clause (i) of subsection 3.8.3 no longer apply.

3.8.5 DWR may deliver more Qualifying Water to CCWD than required for a given water year upon the written concurrence of CCWD. Upon CCWD's written concurrence, and upon the negotiation of terms in a separate agreement, the excess Qualifying Water delivered during a given water year may be credited against the amount of Qualifying Water that DWR is required to deliver for the subsequent water year.

3.9 Remedy for DWR Failure to Deliver Required Water. This section 3.9 does not apply if a Force Majeure event described in Section 3.10 prevents DWR from conveying Qualifying Water. In any other event if DWR fails to convey the full amount of Qualifying Water required to be conveyed to CCWD under Sections 3.6 and 3.7 of this Agreement within a given water year, despite CCWD's timely scheduling of delivery of such water and its ability to accept such water, the Parties shall meet and confer to attempt to resolve that year's water deficit by mutually agreeable and reasonable means. If the Parties cannot reach agreement within thirty (30) days after the conclusion of said water year and the failure to convey Qualifying Water within said water year was not due to an excusable event as defined in Sections 3.8.3(i)(A) and (B), which event prevented DWR from conveying the full amount of Qualifying Water to CCWD by the end of said water year, DWR shall pay CCWD, no later than thirty (30) days after the conclusion of said water year, an amount equal to twice what it would have cost to convey the water deficit for said water year through the Freeport Intake and the interconnection between EBMUD's Mokelumne Aqueduct and CCWD's Los Vaqueros Pipeline, as determined by CCWD, acting reasonably and in good faith, and set forth in a written notice to DWR. As a further remedy, DWR shall, not later than September 30th of the following water year, also convey 30,000 acre-feet of Qualifying Water for delivery to the Los Vaqueros Reservoir; provided, however, that if the Los Vaqueros Reservoir cannot then accommodate 30,000 acre feet of water, then DWR shall convey so much of such 30,000 acre feet of Qualifying Water as the Los Vaqueros Reservoir can then accommodate, with the remainder conveyed in in the next succeeding water year or, if the Los Vaqueros Reservoir cannot accommodate the remainder in such next succeeding water year, then at the earliest time as the Los Vaqueros Reservoir can accommodate such remainder. DWR shall have no obligation under this Section 3.9 if DWR fails to convey the full amount of Qualifying Water required to be conveyed to CCWD under Sections 3.6 and 3.7 of this Agreement within a given water year because either (i) CCWD fails to request and schedule delivery of such water, or (ii) CCWD informs DWR that it is not able to accept delivery of such water.

3.10 Force Majeure. If, due to Force Majeure as defined herein below, DWR is prevented from conveying the full amount of Qualifying Water required within a given water year to CCWD through both the Primary Method and the Secondary Method, DWR's payment of the remedy required under Section 3.9 shall be excused for the particular water year in which the Force Majeure conditions prevented such conveyance. However, DWR shall be required to convey the full amount of Qualifying Water required to be conveyed to CCWD pursuant to Section 3.6 of this Agreement within one water year of cessation of the Force Majeure conditions that prevented conveyance. "Force Majeure" shall include war; acts of terrorism; insurrection; strikes or lock-outs not caused by, or outside the reasonable control of, the Party claiming Force Majeure; riots; earthquakes; fires; floods; levee failure; casualties; acts of the public enemy; epidemics; quarantine restrictions; or litigation that fully enjoins required performance. If either Party is rendered wholly or partly unable to timely perform its obligations under this Agreement because of a Force Majeure event, that Party shall be excused from the performance affected by the Force Majeure event (but only to the extent so affected); provided that (i) the Party affected by the Force Majeure event, as soon as reasonably practicable after obtaining knowledge of the occurrence of the claimed Force Majeure event, gives the other Party prompt oral notice, followed by a written notice reasonably describing the Force Majeure event, (ii) the suspension of or extension of time for performance is of no greater scope and of no longer duration than is required by the Force Majeure event and (iii) the Party affected by such Force Majeure event uses all reasonable efforts to mitigate or remedy its inability to perform as soon as reasonably possible.

3.11 Evaluation and Adoption of Mitigation Measures. The following sections of this Agreement shall be adopted by DWR as CEQA mitigation measures to address the adverse environmental effects of the BDCP/CWF or any alternative thereto, upon CCWD and its customers: Sections 2.3.1, 3.1, 3.2, 3.3, 3.3.1, 3.4, 3.5, 3.6, 3.6.1, 3.6.2, 3.7, 3.8, 3.8.1, 3.8.2, 3.8.3, 3.8.4 and 3.8.5. The Final Environmental Impact Report for the BDCP/CWF shall identify such mitigation measures and evaluate the construction, operational and cumulative impacts of such mitigation measures.

4. EFFECT OF THIS AGREEMENT ON THE 1967 AGREEMENT BETWEEN DWR AND CCWD

4.1 Effect of this Agreement on 1967 DWR-CCWD Agreement. When DWR commences annual conveyance of water to CCWD pursuant to this Agreement, this Agreement shall replace and supersede the 1967 Agreement between CCWD and DWR ("**1967 Agreement**") regarding payment for the effect of State Water Project operation on water quality at CCWD's Mallard Slough intake, a copy of which is attached hereto as Exhibit B. Until DWR commences annual conveyance of water to CCWD pursuant to this Agreement, the 1967 Agreement shall remain in full force and effect and DWR shall continue to make the payments to CCWD specified by the 1967 Agreement.

5. CCWD'S NON-OPPOSITION TO BDCP/CWF

5.1 No Challenge to Environmental Document or Project Approval for Conforming Action Alternative. CCWD's Board of Directors shall not take a formal Board action in opposition to the approval of any Conforming Action Alternative. Board members are not prohibited from discussing the BDCP/CWF as individuals and with other organizations. If DWR and Reclamation approve any Conforming Action Alternative, CCWD shall not file a legal challenge to the Final Environmental Impact Report/Environmental Impact Statement for the Conforming Action Alternative, or assert any related cause of action or voluntarily join any related lawsuit as a petitioner. By no later than five (5) days after the effective date of this Agreement CCWD shall submit to DWR a letter stating that the full and complete implementation of this Agreement will address the concerns expressed in CCWD's comment letters regarding the effects that operation of a Conforming Action Alternative would have on water quality at CCWD's intakes and the potential for damage to CCWD Facilities caused by construction of a Conforming Action Alternative.

5.2 No Protests of Water Right Petitions for Conforming Action Alternative.

5.2.1 Effective upon the effective date of this Agreement, CCWD hereby releases, to the fullest extent permitted by applicable law, DWR from any and all Water Rights Protest Claims which CCWD now has or has ever had against DWR with respect to the CWF Change of Point of Diversion. For the avoidance of doubt, this release shall not include claims to enforce the terms of this Agreement.

In connection with the release contained in the preceding paragraph, CCWD waives all rights it has or may have under any applicable law, statute or ordinance, as well as under any other common law principles of similar effect, which prohibits the waiver of unknown claims, including California Civil Code Section 1542, which provides as follows:

A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor.

5.2.2 In furtherance of the foregoing, CCWD shall file a letter with the California State Water Resources Control Board to withdraw its water rights protest to the CWF Change of Point of Diversion, and any materials submitted by CCWD in connection with such protest by no later than five (5) days after the effective date of this Agreement.

- 5.3** CVP Cost Allocation Negotiations or Challenges. Except with regard to the Water Rights Protest Claims waived in section 5.2, this Agreement shall have no effect on CCWD's right to negotiate with, or bring potential claims against, Reclamation regarding cost allocations or water supply allocations for CVP water. Further, this Agreement shall have no effect on CCWD's right to negotiate with, or bring claims against, CVP contractors regarding cost allocations for CVP water.
- 5.4** Non-Project Restoration. This Agreement shall have no effect on CCWD's right to comment on, or bring potential claims against, any wetlands restoration project beyond the up to 305 acres of tidal wetlands restoration located at Sherman Island, Cache Slough and the North Delta that is required as mitigation for impacts of the CWF, of which no more than 59 acres of tidal wetlands restoration would be constructed at Sherman Island unless DWR demonstrates to CCWD's satisfaction that the tidal wetlands restoration mitigation will cause no adverse net water quality impacts at CCWD's intakes at any time. The Parties recognize that the BDCP as originally proposed included more than 305 acres of wetlands restoration; however, wetlands restoration beyond the up to 305 acres needed to mitigate impacts of the Conveyance Facility is not part of the CWF, and CCWD does not waive any right to comment on, oppose or challenge approval of such wetland restoration program or projects, nor does CCWD waive any right to comment on, oppose or challenge approval of wetland restoration program or projects exceeding 59 acres at Sherman Island unless DWR demonstrates to CCWD's satisfaction that the tidal wetlands restoration mitigation will cause no adverse net water quality impacts at CCWD's intakes at any time.
- 5.5** Future Projects. Except as specified in Section 5.1, this Agreement shall have no effect on CCWD's right to comment on, oppose, or bring claims against, any future project including, without limitation, a future project or project change that deviates from the Conforming Action Alternative or any future changes to any water quality control plan.

6. DWR'S NON-OPPOSITION TO CCWD PROJECTS AND ENCOURAGEMENT OF STAKEHOLDER SUPPORT

- 6.1** Los Vaqueros Water Right Petition - Freeport Intake Point of Diversion. The Parties recognize that for DWR to convey to CCWD water diverted pursuant to CCWD's Los Vaqueros water right through the Primary Method for conveyance, the Freeport Intake must be added as a point of diversion on CCWD's Los Vaqueros water right, and other approvals may be needed. DWR shall support a water right petition filed by CCWD to add the Freeport Intake as a point of diversion on CCWD's Los Vaqueros water right to be used to convey to CCWD up to the amount of water necessary to implement this Agreement, and DWR shall support any other related approvals needed to convey CCWD's water to CCWD through the Primary Method for conveyance.

- 6.2** Los Vaqueros Water Right Petition - Intakes for Conveyance Facility. The Parties recognize that for DWR to convey to CCWD water diverted pursuant to CCWD's Los Vaqueros water through the Secondary Method for conveyance, the Northern Intakes that will be used for any Conveyance Facility must be added as points of diversion on CCWD's Los Vaqueros water right, and other approvals may be needed. DWR shall support a water right petition filed by CCWD to add the Northern Intakes as points of diversion on CCWD's Los Vaqueros water right to be used to convey to CCWD up to the amount of water necessary to implement this Agreement, and DWR shall support any other related approvals needed to convey CCWD's water to CCWD through the Secondary Method for conveyance. The water right petitions described in Sections 6.1 and 6.2 are hereafter collectively referred to as the "**LV Water Right Petitions**".
- 6.3** LV Water Right Petitions - Conveyance Facility Users. DWR acknowledges that the changes to CCWD's Los Vaqueros water right as contemplated by the LV Water Right Petitions are essential for full implementation of this Agreement. Therefore, DWR shall require SWP contractors who participate in the Conveyance Facility, as a condition to use of the Conveyance Facility, to agree not to oppose the LV Water Right Petitions. Nothing in this Agreement would bind SWP contractors from protesting or objecting to other CCWD applications to the State Water Resources Control Board that are not necessary to implement this Agreement or that request changes to quantities of water beyond the amount that is necessary to implement this Agreement.
- 6.4** Index for Measurement of Old and Middle River Flow Requirements. DWR shall collaborate with CCWD to advocate for the use of an index for measurement of compliance with requirements for net flow in the Old and Middle Rivers, such as those in the 2008 U.S. Fish and Wildlife Biological Opinion and 2009 National Marine Fisheries Service Biological Opinion on the operations of the State Water Project and Central Valley Project, that allows diversions at CCWD's screened intakes while preserving protections for fish, provided that there is no injury to DWR's use of its water right permits.
- 6.5** Encouragement of Stakeholder Support for Regional CCWD Water Supply Reliability Projects. DWR, in collaboration with CCWD, shall facilitate discussions with the State Water Project and Central Valley Project contractors and other appropriate stakeholders on the following future regional water supply projects: (i) the enlargement of CCWD's 160,000 acre foot Los Vaqueros Reservoir, and (ii) the Bay Area Regional Desalination Project, including any water rights petitions filed for that project.
- 6.6** Antioch. DWR will within thirty (30) days following the effectiveness of this Agreement contact Antioch, which has an existing agreement with DWR to address water quality at Antioch's intakes, and, if Antioch agrees, DWR will enter into and diligently pursue negotiations with Antioch regarding potential additional impacts to water quality (and, in turn, water quantity of suitable quality) at Antioch's intakes due to the BDCP/CWF.

- 6.7** East Contra Costa Irrigation District. DWR will within thirty (30) days following the effectiveness of this Agreement contact ECCID, which has an existing agreement with DWR to address water quality at ECCID's intakes, and, if ECCID agrees, DWR will enter into and diligently pursue negotiations with ECCID regarding potential additional impacts to water quality (and, in turn, water quantity of suitable quality) at ECCID's intakes due to BDCP/CWF.
- 6.8** Brentwood. DWR will within thirty (30) days following the effectiveness of this Agreement contact the City of Brentwood, which serves ECCID water and is dependent on ECCID's existing agreement with DWR to address water quality at ECCID's intakes, and, if Brentwood agrees, DWR will enter into and diligently pursue negotiations with Brentwood regarding potential impacts to water quality (and, in turn, water quantity of suitable quality) affecting Brentwood due to BDCP/CWF.

7. ARBITRATION OF DISPUTES ARISING UNDER THIS AGREEMENT

- 7.1** Any controversy or claim arising out of or relating to this Agreement shall be resolved as provided in this Section 7, except to the extent expressly provided elsewhere in this Agreement or if equitable relief is sought by CCWD pursuant to Section 11.8. The Parties shall first negotiate in good faith to resolve the dispute. In the event the Parties are unable to resolve the dispute within thirty (30) days, such dispute shall be settled by final and binding arbitration pursuant to the commercial arbitration rules of the American Arbitration Association ("AAA"), except to the extent the remaining provisions of this Section 7 conflict with those rules, in which case the provisions of this Section 7 shall control. To the extent allowed by the arbitrator, any arbitration shall comply with the following:
- 7.1.1** The place of arbitration shall be within the City and County of San Francisco, California;
 - 7.1.2** The Parties shall agree on a single arbitrator. If the Parties cannot agree on a single arbitrator within ten (10) days following submission of the dispute to arbitration, then the Parties shall each appoint one person who together will select a third person. The three persons shall constitute the arbitration panel to hear and resolve the matter submitted to it.
 - 7.1.3** Written notice of the referral to arbitration will be given within five (5) business days by the referring Party to the other Party setting out the issues for resolution, the Party's position with regard to such issues, the dollar amount involved (if any) and the remedy sought. The other Party will respond within ten (10) business days of receipt of such notice by giving the referring Party notice of any counterclaims, the Party's position with regard to all issues, the dollar amount involved (if any) and the remedy sought;

- 7.1.4** The arbitration will commence within sixty (60) calendar days of the referral before the persons appointed above under subsection 7.1.3;
- 7.1.5** All documents, materials and information in the possession of each Party that are in any way relevant to the issues in dispute will be made available to the other Party forthwith hereunder. Each Party will be entitled, on an expedited basis, to propound written discovery and to obtain testimony of witnesses by deposition to the same extent as a civil litigant in a suit filed in the Superior Court under the then-prevailing California Code of Civil Procedure. To the extent possible, the arbitrators will not be bound by the rules of civil procedure or evidence and will consider such writing and oral presentations as reasonable business persons would use in the conduct of their day-to-day affairs, and may require the Parties to submit some or all of their case by written declaration or such other manner of presentation as the arbitrators may determine to be appropriate;
- 7.1.6** The decision of the arbitrators will be in writing and, upon the request of either Party, the arbitrators shall specify the factual and legal basis for the award;
- 7.1.7** In rendering the award, the arbitrators shall determine the rights and obligations of the Parties according to the laws of the State of California. The Parties acknowledge that by agreeing to arbitration, they are giving up the right to a jury trial;
- 7.1.8** During the arbitration process, the costs of arbitration, including any administration fees, arbitrators fees and costs for the use of facilities during the hearings, shall be borne equally by the Parties to the arbitration;
- 7.1.9** A decision of the arbitrators will be final and binding and the arbitrators may require remedial measures and injunctive or other equitable relief as part of any award; provided, however, that the arbitrators shall not have the power to alter, amend, modify or change any of the terms of this Agreement or to grant any remedy that is otherwise prohibited by the terms of this Agreement or not available in a court of law. The arbitrators may award legal fees and costs (including arbitration costs) to the prevailing party; and
- 7.1.10** Reference to arbitration must be made within two (2) years of the act, omission or occurrence giving rise to the referral.

8. INDEMNIFICATION

- 8.1.1** DWR shall indemnify CCWD and its Related Parties (each such Person being called an “Indemnitee”) against, and hold each Indemnitee harmless from, any and all losses, claims, damages, obligations,

liabilities and related expenses (including the fees, charges and disbursements of any counsel for any Indemnitee), incurred by, claimed, alleged or asserted against any Indemnitee by any Person (including DWR), arising out of, in connection with, or as a result of (i) the execution or delivery of this Agreement, or any agreement or instrument contemplated hereby, the performance by the Parties hereto of their respective obligations hereunder or thereunder or the consummation of the transactions contemplated hereby or thereby, (ii) the construction, operation or maintenance of the BDCP/CWF including but not limited to any Conveyance Facility; (iii) the construction, operation or maintenance of the Interconnection Pump Station; (iv) the construction of the Interconnection Pipeline or Interconnection Valve, (v) relating to crops, crop losses, livestock or structures, (vi) the use or release of Hazardous Material in, on, under or about the properties and facilities described in Section 2 of this Agreement directly or indirectly caused by DWR or DWR's Related Parties, (vii) the violation by DWR or DWR's Related Parties of any Environmental Law, (viii) the assertion by any Governmental Authority that there has been a violation by DWR or DWR's Related Parties of any Environmental Law, or (ix) any actual or prospective claim, litigation, investigation or proceeding relating to any of the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by CCWD, and regardless of whether any Indemnitee is a party thereto; provided that such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities or related expenses are determined by a court of competent jurisdiction by final and non-appealable judgment to have resulted from the gross negligence or willful misconduct of such Indemnitee. DWR's obligations under this Section 8 shall survive the termination of this Agreement.

- 8.1.2** CCWD shall indemnify DWR and its Related Parties (each such Person being called an "Indemnitee") against, and hold each Indemnitee harmless from, any and all losses, claims, damages, obligations, liabilities and related expenses (including the fees, charges and disbursements of any counsel for any Indemnitee), incurred by, claimed, alleged or asserted against any Indemnitee by any Person (including CCWD) as a result of (i) the operation or maintenance of the Interconnection Pipeline or Interconnection Valve or (ii) any actual or prospective claim, litigation, investigation or proceeding relating to the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by DWR, and regardless of whether any Indemnitee is a party thereto; provided that such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities or related expenses are determined by a court of competent jurisdiction by final and non-appealable judgment to have resulted from the gross negligence or willful misconduct of such

Indemnitee. CCWD's obligations under this Section 8 shall survive the termination of this Agreement.

9. REPRESENTATIONS AND WARRANTIES

Each Party represents and warrants to the other Party as follows:

9.1 Due Authorization and Enforceability. Such Party has full power, right and authority to execute, perform and deliver this Agreement and all other documents and agreements executed or to be executed by such Party in connection with the transactions contemplated hereby and thereby and to consummate the transactions contemplated hereby and thereby. The execution and delivery by such Party of this Agreement and each other document and agreement contemplated hereby, the performance by such Party of its obligations hereunder and thereunder, and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary governmental, agency or other action by such Party. This Agreement constitutes, and each other document and agreement to be executed by such Party in connection with the transactions contemplated hereby when so executed and delivered will constitute, a valid and binding obligation of such Party, enforceable in accordance with its terms, except (i) as limited by applicable bankruptcy, insolvency, reorganization, moratorium, and other laws of general application affecting enforcement of creditors' rights generally, and (ii) as limited by laws relating to the availability of specific performance, injunctive relief, or other equitable remedies.

9.2 No Conflicts. Such Party has made, obtained or been granted all approvals, consents, filings, registrations, notices, waivers and exemptions required to be obtained by it under any applicable law and regulation with respect to its execution and delivery of this Agreement and all other ancillary documents and agreements in connection with the transactions contemplated hereby and with respect to its performance of its obligations hereunder and thereunder and the consummation of the transactions contemplated hereby and thereby. The execution and delivery of this Agreement and all other documents and agreements executed or to be executed by such Party and the consummation by it of the transactions contemplated hereby or thereby will not conflict with or result in any breach or violation of any of the terms and conditions of, or constitute (or with notice or lapse of time or both constitute) a default under or a violation of, any statute, regulation, order, judgment or decree applicable to such Party, or any instrument, contract or other agreement to which such Party is a party or to which any of its assets may be bound or subject.

10. TRANSFER OF CONVEYANCE FACILITY OR INTERCONNECTION FACILITIES BY DWR

10.1 No Transfer Without Consent. DWR shall not assign, license, transfer or otherwise dispose of any of its right, title or interest in any Conveyance Facility or the Interconnection Facilities to any other Person without the prior written

- 11.3** Counterparts and Serial Signatures. This Agreement may be signed by the Parties in different counterparts and the signature pages combined to create a document binding on each and all Parties. Signatures delivered by electronic means shall be binding. Notwithstanding the preceding sentence, either Party may rescind its signature at any time prior to the date the Agreement has been fully executed by the Parties and this Agreement shall not be binding upon such rescinding Party. A Party that elects to rescind its signature pursuant to this Section 11.3 shall do so by providing written notice to the other Party in compliance with Section 11.2 of this Agreement.
- 11.4** Governing Law. This Agreement shall be governed and construed under the laws of the State of California.
- 11.5** Severability. If a court of competent jurisdiction finds any provision of this Agreement to be illegal, invalid, or unenforceable as to any circumstance, such finding shall not make the offending provision illegal, invalid, or unenforceable as to any other circumstance. If feasible, the offending provision shall be considered modified so that it becomes legal, valid, and enforceable. If the offending provision cannot be so modified, it shall be considered deleted from this Agreement. Unless otherwise required by law, the illegality, invalidity, or unenforceability of any provision of this Agreement shall not affect the legality, validity, or enforceability of any other provision of this Agreement.
- 11.6** Successors and Assigns. This Agreement shall be binding upon the Parties hereto, as well as their respective successors and assigns. Neither Party may assign this Agreement in whole or in part without the prior written consent of the other Party, and any such attempted assignment without such prior written consent shall be void ab initio. Nothing in this Agreement, expressed or implied, shall be construed to confer upon any Person (other than the Parties and their respective successors and assigns permitted hereby) any legal or equitable right, remedy or claim under or by reason of this Agreement.
- 11.7** Survival. All covenants, agreements, representations and warranties made in this Agreement shall survive the execution and delivery of this Agreement.
- 11.8** Equitable Relief. Notwithstanding anything expressed or implied to the contrary in this Agreement, each Party acknowledges that a breach or threatened breach of its obligations under this Agreement would give rise to irreparable harm to the other Party, for which monetary damages would not be an adequate remedy, and hereby agrees that in the event of a breach or a threatened breach by either Party of any such obligations, the non-breaching Party shall, in addition to any and all other rights and remedies that may be available to it in respect of such breach, be entitled to equitable relief, including a temporary restraining order, an injunction, specific performance and any other relief that may be available from a court of competent jurisdiction (without any requirement to post bond).

12. DEFINITIONS

As used in this Agreement, the following capitalized terms have the following meanings:

“**CCWD Facilities**” means all water storage and conveyance facilities and infrastructure of any kind owned, leased or licensed by CCWD, whether now existing or hereafter arising and wherever located.

“**CVP**” means the Central Valley Project, which is the federal water management facility in California operated by Reclamation.

“**CVP Contract Supply**” means water supplied to CCWD pursuant to its contract with Reclamation to receive water from the CVP.

“**Delta**” means the inland river delta and estuary in Northern California known as the Sacramento - San Joaquin River Delta.

“**Existing Transfer Pump Station**” means CCWD’s transfer pump station near Brentwood, California, and any modification or replacement thereof in whole or in part.

“**Freeport Intake**” means EBMUD’s water intake facility and pumping plant located on the Sacramento River, upstream from Freeport, California, and any modification or replacement thereof in whole or in part.

“**Intermediate Forebay**” means the forebay that DWR will construct within the North Delta that will receive water from each of the Northern Intakes before providing gravity flow through the Conveyance Facility.

“**Governmental Authority**” means the government of the United States of America or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government.

“**Los Vaqueros Pipeline**” means the pipeline extending between the Contra Costa Canal and Los Vaqueros Reservoir, and any modification or replacement thereof in whole or in part.

“**Los Vaqueros Reservoir**” means CCWD’s water storage reservoir in Contra Costa County accessible from North Vasco Road with a storage capacity as of the date of this Agreement of approximately 160,000 acre feet of water.

“**LV Water Right Permit**” means State Water Resources Control Board Water Right Permit 20749, and any modification or replacement thereof.

“**Middle River Pipeline**” means the existing buried pipeline that transports water from CCWD’s Middle River Intake to the Old River Pipeline, and any modification or replacement thereof in whole or in part.

“**Northern Exports**” means the total water diversion at the intakes for any Conveyance Facility, including diversions by DWR, Reclamation and any successors in interest thereto.

“**Northern Intake**” means the water intake facility or facilities, inclusive of any pumping plant, at the northern end of any Conveyance Facility.

“**Old River Pipeline**” means the existing buried pipeline that transports water from CCWD’s Old River Intake to CCWD’s Existing Transfer Pump Station.

“**Person**” means any natural person, corporation, limited liability company, trust, joint venture, association, company, partnership, Governmental Authority or other entity.

“**Related Parties**” means, with respect to any Person, the directors, officers, employees, agents, trustees, administrators, managers, advisors, representatives, contractors, invitees, permittees and licensees of such Person.

“**Subdivided Clifton Court Forebay**” means the separate section of Clifton Court Forebay that will receive water from the Conveyance Facility.

“**SWP**” means the State Water Project, which is the state water management facility in California operated by DWR.

“**Total Exports**” means the total water pumped into the Delta Mendota Canal, the California Aqueduct, and any other facility to convey water to the Bay Area, the Central Valley and Southern California from CVP and SWP facilities in the South Delta (including, without limitation, water diverted from the Northern Exports into the Clifton Court Forebay).

“**Unimpaired Sacramento River Runoff**” means the sum of Unimpaired Runoff in million acre-feet at Sacramento River above Bend Bridge, Feather River at Oroville (inflow to Lake Oroville), Yuba River near Smartville, and the American River below Folsom Lake. “**Unimpaired Runoff**” represents the natural water production in a river basin, unaltered by upstream diversions, storage, or export of water to or import of water from other basins.

IN WITNESS WHEREOF, the Parties have executed this AGREEMENT as of the day and year first written above.

Dated: 3/18/16

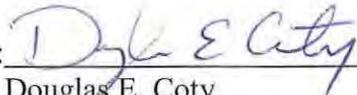
CONTRA COSTA WATER DISTRICT

By: 
Jerry Brown
General Manager

Approved As To Form:

Dated: March 17, 2016

BOLD, POLISNER, MADDOW, NELSON & JUDSON

By: 
Douglas E. Coty
General Counsel, Contra Costa Water District

Dated: 3/24/16

CALIFORNIA DEPARTMENT OF WATER RESOURCES

By: 
Mark Cowin
Director

Approved As To Form:

Dated: 3/24/16

By: 
Spencer Kenner
Chief Counsel, Department of Water Resources

EXHIBIT A
EXAMPLES OF APPLICATION OF METHODOLOGY IN SECTION 3.6 AND 3.7

		Annual Amount of Water to be Conveyed [TAF]							
		Northern Exports / Total Exports							
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Total Exports / Sacramento River Runoff	0	2	2	5	5	5	5	5	5
	0.1	2	8	9	10	11	13	16	18
	0.2	5	10	13	15	17	20	23	26
	0.3	5	15	19	23	27	32	37	42
	0.4	5	19	25	31	37	43	49	50
	0.5	6	23	31	42	47	50		

EXAMPLE OPERATIONS UNDER TERMS 3.6 and 3.7

Year of CWF Operation (Water Year)	Period of CWF Operation	Total Exports / Sacramento River Runoff	Northern Exports / Total Exports	Amount of Water Wheeled
1 (partial water year)	June - September	0.3	0.1	Initial 30 TAF per Term 3.7
2	October - September	0.3	0.3	15 TAF based on Year 1 operations
3	October - September	0.5	0.6	23 TAF based on Year 2 operations
4	October - September	0.4	0.3	Amount determined per Term 3.6.2, minimum 50 TAF based on Year 3 operations

EXAMPLE OPERATIONS UNDER TERM 3.9

Year of CWF Operation (Water Year)	Period of CWF Operation	Total Exports / Sacramento River Runoff	Northern Exports / Total Exports	Amount of Water Wheeled
15	October - September	0.4	0.5	Amount based on Year 14 ops
16	October - September	0.1	0.4	10 TAF (however, based on Year 15 operations, 43 TAF was required)
17	October - September	-	-	Payment of penalty plus 30 TAF per Term 3.9 due to deficit in Year 16 and
		0.2	0.5	11 TAF based on Year 16 operations

EXHIBIT B
1967 AGREEMENT

AGREEMENT

THIS AGREEMENT made this 21 day of April 1967, between the STATE OF CALIFORNIA, acting by and through its Department of Water Resources, hereinafter referred to as the "State", and CONTRA COSTA COUNTY WATER DISTRICT, a public body organized and existing pursuant to Division 12 of the Water Code of the State of California, hereinafter referred to as the "District",

WITNESSETH:

WHEREAS, since 1930 the District and its predecessor, California Water Service Company, have been diverting water from Mallard Slough on Suisun Bay in Contra Costa County pursuant to Water Right Permit to Appropriate Water number 3167 issued on Application number 5941 filed on November 19, 1928. Said diversions have been for direct beneficial use and to storage for later beneficial use within the service area of the Treated Water Division of the District when the water in Mallard Slough had a chloride ion content (mean tidal cycle surface zone) of 100 parts per million or less and was not otherwise polluted to make it unsuitable for treatment for municipal and domestic use (hereinafter referred to as usable river water), and

WHEREAS, the average number of days per water year (October 1 to September 30, hereinafter referred to as "year") that usable river water has been available to the District at said point of diversion is 142 and the median period of said availability is from January 15 to June 5, both days inclusive, and

WHEREAS, during each day usable river water has been and will in the

future be available to the District the quantity thereof has been and will be adequate to meet the water requirements of the District from that point of diversion during such day, and

WHEREAS, in the future the average number of days per year that usable river water will be available to the District will decrease and such decrease will be due in part to the operation of the State Water Resources Development System as defined in Section 12931 of the Water Code, and

WHEREAS, it is contemplated that the Contra Costa Canal, supplemented by the Kellogg Unit or other facilities to be constructed by the Bureau of Reclamation, will meet the District's future water requirements which are not met by usable river water. If such facilities are not constructed by the Bureau of Reclamation, water supply facilities will have to be constructed by another agency or agencies to meet the District's future requirements including a substitute water supply equal to the District's water deficiency entitlement as defined in this agreement;

NOW, THEREFORE, the parties agree as follows:

1. The term of this agreement shall begin on the first day of October, 1967, and shall continue in effect until terminated by either party by written notice to the other party given at least 12 months prior to the effective date of such termination. The effective date of termination shall be the last day of a year (September 30) and no termination shall be effective prior to September 30, 2007.

2. The State shall reimburse the District in the manner hereinafter provided for any decrease in availability to the District of usable river water

in Mallard Slough during the term of this agreement caused by operation of the State Water Resources Development System. Such decrease in availability of usable river water is hereinafter referred to as the District's "water deficiency entitlement".

3. The quantity of the District's water deficiency entitlement shall be determined for each year during the term of this agreement by the formula $E = \frac{(142 - D)}{3} \frac{(R + P)}{142}$ where E is the District's water deficiency entitlement for such year in acre-feet, D is the number of days during such year that usable river water is available to the District at Mallard Slough, R is the total quantity of water in acre-feet diverted by the District from Mallard Slough from 8:00 A. M. on January 15 to 8:00 A. M. on June 6 and P is the total quantity of water in acre-feet purchased by the District and introduced into its facilities in the vicinity of Chenery Reservoir from 8:00 A. M. on January 15 to 8:00 A. M. on June 6. If in any year D exceeds 142, the District shall have no water deficiency entitlement for such year and the amount of such excess shall offset any water deficiency entitlement of the District for an equal number of days in the next succeeding year or years when D is less than 142.

4. For the purpose of computing the District's water deficiency entitlement, the District will at its expense measure the chloride ion content of water in Mallard Slough at such intervals as shall be reasonably necessary and shall make the results of such measurements available to the State. The State may at its expense verify the accuracy of the District's measurements and any error thus disclosed shall be corrected by the District.

5. Each year during the term of this agreement that the District has a water deficiency entitlement it shall purchase a quantity of substitute water equal thereto from the Contra Costa Canal as supplemented by the Kellogg Unit or other facilities constructed by the Bureau of Reclamation to meet the District's requirement, but if sufficient water is not available to the District from such source it shall purchase said quantity of substitute water from a project or projects constructed by another agency or agencies to meet the District's future water requirements. For the purposes of this agreement, substitute water shall be deemed to have been purchased during the period beginning at 8:00 A. M. on January 15 and ending at 8:00 A. M. on June 6 of such year and the price paid by the District for substitute water shall be deemed to be the average price per acre-foot paid by the District for all untreated water purchased by it for introduction into its facilities in the vicinity of Chenery Reservoir during said period without deduction for any discount, allowance or rebate that may hereafter be made or allowed by the U. S. Bureau of Reclamation in the event the District hereafter undertakes, to any extent to operate and maintain any facilities of the U. S. Bureau of Reclamation not operated and maintained by the District as of the date of this agreement.

6. Each year during the term of this agreement that the District purchases substitute water for its water deficiency entitlement, the State will pay the District an amount of money computed in accordance with the formula $M = E(Cw + Ce - \$4.90)$ where M is the amount in dollars to be paid by the State, E is the District's water deficiency entitlement for such year determined in

the manner provided in Section 3 hereof, C_w is the amount per acre-foot paid by the District for substitute water delivered to the District as provided in Section 5 hereof, and C_e is the average amount (if any) per acre-foot paid by the District for electric energy to transport substitute water from the point of delivery thereof to the District to the District's facilities in the vicinity of Chenery Reservoir. The State shall pay said amount to the District not later than October 31 of the following year. Such payments are hereby determined to be reasonable costs of the annual maintenance and operation of the State Water Resources Development System and shall be disbursed from the California Water Resources Development Bond Fund pursuant to subsection (b) (1) of Section 12937 of the Water Code.

7. The District, in consideration of the payments by the State herein provided, releases the State from liability for any decrease in the availability to the District of usable river water at Mallard Slough caused by operation of the State Water Resources Development System during the term of this agreement.

8. The obligations of the State herein shall not be affected by any modification or discontinuance of the District's Mallard Slough pumping plant or Chenery Reservoir.

9. Nothing herein shall be deemed to be a release or waiver of any right of the District to purchase supplemental water supplies from the State with the priorities established by Water Code Section 11460, 12201 to 12204 inclusive, and 12931.

IN WITNESS WHEREOF the parties hereto have executed this agreement
by their respective officers thereunto duly authorized on the date first above
written.

Approved as to legal form
and sufficiency:

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

By P. A. Towner /s/
Chief Counsel

By William R. Gianelli /s/
Director

ATTEST:

CONTRA COSTA COUNTY WATER
DISTRICT

B. M. McCloskey /s/
Secretary

By Ralph D. Bollman /s/
President



Delta Counties Coalition

Contra Costa County · Sacramento County · San Joaquin County · Solano County · Yolo County
"Working together on water and Delta issues"

October 20, 2020

Zachary Simmons
United States Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814

Via Email: Zachary.M.Simmons@usace.army.mil

Re: Comments on Notice of Intent to Prepare EIS for the Delta Conveyance Project

Dear Mr. Simmons,

Thank you for the opportunity to comment on the Notice of Intent ("NOI") to prepare an Environmental Impact Statement ("EIS") for the Delta Conveyance Project ("Project"). This letter is submitted on behalf of the Delta Counties Coalition ("DCC"), a coalition of elected members from Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. These counties work collaboratively to give one voice on behalf of the Sacramento-San Joaquin River Delta and its four million area-wide residents. The DCC advocates to protect and enhance Delta communities and existing land uses, improve the Delta ecosystem and provide a more reliable water supply for the State.

DCC is concerned that (1) a meaningful analysis of non-Tunnel alternatives is not occurring in the Delta Conveyance planning process, (2) the Project would have significant adverse flooding effects, and (3) the Project would have direct and indirect adverse effects on Delta Legacy Communities.

The California Department of Water Resources has not Provided the Corps with a Reasonable Range of Alternatives

The NOI confirms that the Project applicant, the California Department of Water Resources ("DWR") has no intention of considering alternatives that do not involve massive intakes on the Sacramento River and a large underground conveyance tunnel.¹ DWR's premature elimination of alternatives, such as the Western Delta Intake Concept and a No Tunnel alternative that improves levees and reduces export

¹ At a July 22, 2020 presentation, DWR disclosed that it would not consider any alternatives to a tunnel. Available at: <https://dcdca.org/wp-content/uploads/2020/07/2020-07-22-SECMeetingPresentation.pdf>, slides 9-30.

water demand, is contrary to the Corps' National Environmental Policy Act ("NEPA") guidelines. "NEPA requires the Corps to evaluate reasonable alternatives that would accomplish the underlying purpose and need of a proposed project."² Achieving that requirement becomes impossible with the truncated alternative range DWR appears to be considering.

According to DWR's Notice of Preparation of an Environmental Impact Report under the California Environmental Quality Act, DWR's objectives for the Project include: climate resiliency, seismic resiliency, water supply reliability and operational flexibility. Purportedly, alternatives that do not include intakes on the Sacramento River and a tunnel could not meet these objectives.³ Contrary to these unsupported assertions, the DCC believes that these objectives can be achieved with practicable alternatives that do not include new intakes on top of Delta Legacy communities or a massive tunnel that removes a large portion of freshwater from the northern end of the Delta. Delta stakeholders have voiced their concerns regarding the DWR's premature rejection of no tunnel alternatives.⁴ The DCC urges the Corps, in meeting its duty to "evaluate the existence of available alternatives," and to consider alternatives in the EIS other than slight modifications to the Project configuration proposed by DWR that do not reduce or eliminate the Project's most significant impacts.⁵

Adverse Flood Effects

Flood control is critical to the DCC and its local flood control partners, who have jointly spent millions of dollars rehabilitating and maintaining levees that protect livelihood, property, and safety throughout the Delta. Any alternative, tunnel, no tunnel, or otherwise, would still rely in part on the existing Delta levee system as conveyance channels. The Project, without the inclusion of components to protect or improve flood protection levels, poses a significant flood risk. The Project's intakes would be constructed on flood protection levees.

The DCC is concerned that constructing the intakes would in effect create staging areas that interfere with floodfighting, change base elevations, remove overflow areas, and encroach on flood management areas. The Project has the potential to

² Available at:

[https://www.nws.usace.army.mil/Portals/27/docs/regulatory/Forms/Alternative%20Analysis%20Framework%20NWS%20\(4-18-16\).pdf?ver=3Kf7zLXJG12kj4yqC5FMYw%3d%3d](https://www.nws.usace.army.mil/Portals/27/docs/regulatory/Forms/Alternative%20Analysis%20Framework%20NWS%20(4-18-16).pdf?ver=3Kf7zLXJG12kj4yqC5FMYw%3d%3d).

³ A summary of the DWR alternatives presentation is here:

<https://nodeltagates.com/2020/07/27/alternatives-to-the-tunnel/>.

⁴ See, e.g., July 22, 2020 Stakeholder Engagement Committee Meeting

Minutes, available at: <https://dcdca.org/wp-content/uploads/2020/08/2020-08-26StakeholderEngagementMeetingMaterials.pdf>.

⁵ Corps' Alternatives Analysis Framework, available at:

[https://www.nws.usace.army.mil/Portals/27/docs/regulatory/Forms/Alternative%20Analysis%20Framework%20NWS%20\(4-18-16\).pdf?ver=3Kf7zLXJG12kj4yqC5FMYw%3d%3d](https://www.nws.usace.army.mil/Portals/27/docs/regulatory/Forms/Alternative%20Analysis%20Framework%20NWS%20(4-18-16).pdf?ver=3Kf7zLXJG12kj4yqC5FMYw%3d%3d).

upend flood protection and the Delta levee system. Levee protection and improvement measures must be included in any iteration of the Project to ensure the safety and prosperity of Delta residents and businesses. Moreover, the EIS must disclose and analyze all of the Project's impacts, direct and indirect, on the Delta Levee system and flood control. Flood control impacts must be analyzed for both construction and operation of the Project.

Adverse Effects on Delta Legacy Communities

Any conveyance system relying on constructing large intakes on the Sacramento River and a massive tunnel would fundamentally upend the lives of Delta residents, including the Delta Legacy communities of Bethel Island, Clarksburg, Courtland, Freeport, Hood, Isleton, Knightsen, Locke, Rio Vista, Ryde and Walnut Grove. These communities contain resources of historical significance, and are also the home to people living and working in the Delta today. The Brown administration's "California WaterFix" project would have been very destructive to Delta communities, and the currently proposed Project is quite similar.

Construction noise, truck traffic, road degradation, diminished air quality, worsened water quality, and increased flood risks are just some of the ways that the Project would affect Delta Legacy Communities. Not only would these impacts directly disrupt daily life for Delta residents, but impacts such as noise and air emissions can cause adverse health effects. The EIS must consider all of the adverse effects, direct and indirect, on the Delta. These community impacts must be analyzed for both construction and operation of the Project. It would be improper for the Corps to segment review of the Project and only address the construction phase, as indicated in the Corps' NOI.

Conclusion

The DCC's concerns are inextricably linked to DWR's rigid insistence that the Project must include intakes on the Sacramento River and a tunnel. Alternatives that improve the existing through Delta conveyance system and/or place intakes in locations away from Delta Legacy communities must be considered. As the lead agency under NEPA, the Corps has a unique opportunity to guide the Project's development in a way that reduces or avoids harmful impacts of a tunnel conveyance system on the environment, as required by NEPA.

We hope that the Corps will implement the NEPA review process in a manner that reduces or avoids impacts while meeting most of the Project objectives. We look

Zachary Simmons
October 20, 2020
Page 4

forward to coordinating with your office during the upcoming environmental review process.

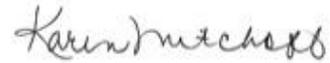
Sincerely,



Don Nottoli
Supervisor, Sacramento
County



Skip Thomson
Supervisor, Solano County



Karen Mitchoff
Supervisor, Contra Costa
County



Oscar Villegas
Supervisor, Yolo County



Chuck Winn
Supervisor, San Joaquin
County

cc: California Congressional Delegation
Carrie Buckman, Environmental Manager for Delta Conveyance,
Department of Water Resources

DELTA PROTECTION COMMISSION

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October 20, 2020

U.S. Army Corps of Engineers, Sacramento Regulatory Division
Attn: Mr. Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814-2922

Re: Notice of Intent (NOI), Delta Conveyance Project (DCP) SPK -2019-00899

Dear Mr. Simmons:

The Delta Protection Commission (Commission) is a California state agency created by the Delta Protection Act of 1992, which declared the Delta “a natural resource of statewide, national, and international significance, containing irreplaceable resources, and that it is the policy of the state to recognize, preserve and protect those resources of the Delta for the use and enjoyment of current and future generations” (Public Resources Code § 29701). The Act directed the Commission to regulate land use in the Delta to ensure that the populous metropolitan areas surrounding the Delta did not overrun this natural resource and forever alter the irreplaceable agricultural, recreational, natural and cultural features that make the Delta the unique place that it is.

According to the Federal Register NOI posting, the EIS will analyze the environmental effects of construction on the aquatic environment and all other impacts that fall within the USACE (Corps) jurisdiction. Potentially significant issues to be analyzed in depth include impacts to waters of the United States (including wetlands), the federal flood control project, and air quality. Other impacts include biological resources, special status species, hydrology and water quality, land use, navigation, water supply, aesthetics, recreation, and socioeconomic effects.

It appears that the Corps NEPA review does not cover areas of potential project impact since it does not include subsurface tunnel corridors, except the potential crossing under the Stockton Deep Water Ship Channel (SDWSC) at Lower Roberts Island. In addition, the Corps NEPA review is expressly only for construction of the project and not for project operation. If the entire project area and the operation of the project are not covered by the Corps NEPA review, the EIS should explicitly identify how impacts to those areas would be assessed, by what agency, and when.

In response to the NOI, we offer the attached document detailing issue-by-issue comments. As with the predecessor conveyance proposals, a tunnel through the Delta will irreversibly damage Delta agriculture, recreation, cultural and natural resources. The attachment presents our assessment of the potential impacts, offers alternatives and effective and feasible mitigation measures for consideration, and reaffirms our position that previously ill-defined impacts – or those not defined at all in previous environmental review – must now receive the attention they require.

In addition to the Delta Protection Act of 1992, the Commission’s authority with respect to the Delta conveyance proposal presented in the NOI derives from the following legislation and agreements.

Delta Reform Act: The Delta Reform Act of 2009 (Chapter 5, Statutes of 2009), as well as 2009 amendments to the Delta Protection Act of 1992, declared that the State’s basic goals for the Delta are to provide a more reliable water supply for California and protect, restore and enhance the Delta ecosystem “in a manner that protects and enhances the unique cultural, recreational, natural resource and agricultural values of the Delta as an evolving place” (PRC section 29702(a) and Water Code section 85054). In addition, the law identifies the Commission as a “forum for Delta residents to engage in decisions regarding actions to recognize and enhance the unique cultural, recreational, and agricultural resources of the Delta” (PRC section 29703.5(a)). It directs the Commission to recommend ways to protect and enhance the Delta’s unique values to the Delta Stewardship Council.

Sacramento-San Joaquin Delta National Heritage Area: The John D. Dingell, Jr. Conservation, Management, and Recreation Act, enacted in March 2019, created the Sacramento-San Joaquin Delta National Heritage Area (NHA). The law designates the Delta Protection Commission as the NHA’s local coordinating entity, and charges it with preparing and submitting to the Secretary of the Interior a management plan. Pursuant to the Act, the plan will emphasize the importance of agricultural resources and activities, flood protection facilities, and other public infrastructure, incorporating an integrated and cooperative approach for addressing them, and provide comprehensive policies, strategies and recommendations for conservation, management, development, and funding of the NHA. We are already at work on that plan, which is due to the Secretary of the Interior by March 2022. Federal agencies (such as the U.S. Army Corps of Engineers) that are planning to conduct activities that may impact the NHA are to coordinate their actions with the Commission to the maximum extent practicable.

The Commission has separately requested Cooperating Agency status from the Corps in a letter dated October 15, 2020.

Staten Island Memorandum of Understanding: The Commission has a role in reviewing any land-use changes on Staten Island, which is subject to a 2001 conservation easement and a 2002 Memorandum of Understanding between the Commission and the Department of Water Resources (DWR). The stated intent of the conservation easement is that Staten Island be protected from "any actions that would result in the conversion of any material portion ... away from agricultural use." DWR holds the conservation easement and is legally responsible for its enforcement.

As summarized in the attachment, the DCP will impact all Delta communities, including those within the new NHA. Proposed launch shafts, tunnel material handling, and maintenance and retrieval shafts will convert farmland and disrupt marinas and recreational boating. Socio-economic impacts of required project mitigations from agricultural lands being converted to construction sites (whether temporary or permanent) and restoration projects are a major concern, as are water quality impacts on Delta agricultural and municipal uses.

Thank you for considering these issues of central concern to those who live, work and recreate in the Delta in preparing the draft EIS.

Sincerely,



Erik Vink
Executive Director

cc: Chair Villegas and members, Delta Protection Commission

ATTACHMENT - DELTA PROTECTION COMMISSION NOI COMMENT LETTER (OCTOBER 20, 2020) – PROPOSED DELTA CONVEYANCE PROJECT

The following comments provide the Commission's specific suggestions and recommendations regarding preparation of the proposed Delta Conveyance Project Draft EIS. We encourage close coordination between the US Army Corps of Engineers (Corps) and the applicant Department of Water Resources (DWR) during the NEPA Draft EIS and California Environmental Quality Act (CEQA) Draft Environmental Impact Report (EIR) preparation to ensure that both documents appropriately and fully assess potential impacts of the entire proposed project. In addition, since it appears the Corps is not conducting NEPA over the entire project area, or for operations once the project is constructed, the EIS should clearly explain what areas are not being assessed and identify what federal agency will conduct NEPA analysis for the balance of the project area and operations.

ALTERNATIVES

The EIS should examine the following reasonable and practical alternatives, which we believe may avoid or reduce the adverse effects to Delta resources enumerated in subsequent sections.

Improve through-Delta conveyance and reduce reliance on exports. The Delta Protection Commission advocates improved through-Delta conveyance, rather than the isolated facility proposed by the Department of Water Resources (DWR). In recognition of our recommendation and because the project proposed by DWR addresses only some of the factors that contribute to the unreliability of Delta water exports, the EIS should include an alternative that promotes water reliability by strengthening Delta levees and dredging key Delta channels, rather than tunneling under the Delta, while also reducing other regions' reliance on water from the Delta by investing in water use efficiency, water recycling, and other advanced technologies. The through-Delta conveyance components of this alternative should include all the features recommended in the Delta Plan (Delta Plan recommendation WR R1 2(a)(4) and (c)).

This alternative's provisions to reduce reliance on the Delta should be informed by an analysis of water demand and promising alternative supplies in areas to be served by the project. The analysis should comply with the Delta Plan's regulatory policy WR P1. The alternative should also be informed by analyses highlighting southern California's increasingly diverse water supplies and further opportunities

to reduce imports there (<https://www.nrdc.org/experts/doug-obegi/mwd-suggests-southern-california-has-too-much-water>; <https://www.nrdc.org/experts/ben-chou/new-report-finds-big-mismatches-social-water-plans>) and in the San Joaquin Valley (<https://www.ppic.org/wp-content/uploads/water-and-the-future-of-the-san-joaquin-valley-february-2019.pdf>). In addition, the Delta Independent Science Board is currently completing a review of the scientific efforts and methods by various programs to estimate and evaluate water supply reliability that may be completed in the near future and if so, should also inform this analysis (<https://deltacouncil.ca.gov/pdf/isb/meeting-notice/2020-10-06-isb-meeting-notice.pdf>).

Alternative points of diversion. Because construction of diversion facilities causes such significant impacts to nearby Delta communities and natural and cultural resources in the Sacramento River/Highway 160 corridor, alternative diversion locations that avoid or reduce damage to Delta communities and recreational boating as well as protect fish should be considered. In addition, the analysis of potential diversion points undertaken in the BDCP/WaterFix EIR/S' Appendix 3F should be revisited with impacts to Delta communities weighted equally with impacts to fish and wildlife. Experts in Delta land use should be represented on the ranking panel equally with fish agency representatives. Relying on fish biologists, who are not trained in land use, cultural resources, or other relevant topics, to weigh impacts on Delta communities does not employ the best available science. Use of a single point of diversion with a total project capacity of 3000 cfs should also be considered, thereby reducing the extent of damage from multiple points of diversion.

Far eastern alignment. A tunnel alternative that the Corps appears to be considering is the far eastern alignment recommended in the January 20, 2020 report of the Independent Technical Review Panel to the Delta Conveyance Design and Construction Authority (DCA). In addition to the cost and logistical advantages identified by the panel, such an alignment would seem to avoid or reduce impacts to land use, recreation (including boating), and Highway 160 corridor cultural resources from noise, traffic, and construction disruption. Mitigation of remaining impacts would appear to be less complex and thus perhaps less expensive as well. However, the potential impacts of the far eastern alignment have not been as thoroughly studied as the central corridor alignment in terms of agriculture, natural resources and land use conflicts. For example, the far eastern alignment could have potential significant adverse impacts to the Port of Stockton and adjacent neighborhoods.

Bethany Reservoir alternative. DWR and the Delta Conveyance Design and Construction Authority (DCA) are investigating an alternative to the new Southern Forebay that would bypass the Clifton Court Forebay area; instead, additional tunneling and some above-ground pipelines would pump water into the Bethany Reservoir. Currently the map showing the Area of Potential Effect in the NOI does not include this. The alternative appears promising because it could avoid or reduce impacts without incurring new significant impacts.

HYDROLOGY AND WATER RESOURCES

Protect in-Delta water resources. The project's effects on in-Delta water uses should be carefully assessed. This should include modeling that forecasts the effects of the project's operations, together with ongoing State Water Project (SWP) and Central Valley Project (CVP) operations using existing south Delta facilities, on water quality parameters that affect in-Delta uses. Key parameters that should be assessed include salinity, organic carbon, temperature, in-Delta and through-Delta flows, and outflows to the Bay. The EIS should describe the implications of changes in these parameters on agriculture, municipal water suppliers that rely on Delta water, Delta industrial uses, such as food processors and petrochemical plants, Delta sport fisheries and recreation, including the spread of aquatic invasive species and harmful algal blooms. The Department of Parks and Recreation's Division of Boating and Waterways (DBW) and other agencies such as the CA Department of Fish and Wildlife (DFW) and State Water Resources Control Board (SWRCB) should be consulted for current data. This modeling should report outcomes for key parameters over time, through at least 2050, so that readers can understand the project's longer-term effects as climate change affects sea levels and makes runoff to the Delta less predictable. Implications of the project for wastewater agencies discharging to the Delta should also be explored.

If the project will adversely affect Delta water quality, as the BDCP/WaterFix EIR/S concluded, a mitigation program should be adopted that spells out the processes used to identify mitigation actions, sources of alternative water supplies, action triggers, time frame, means of payment, fund sources, an objective third-party governance system, and other pertinent details. Delta water agencies should be involved as this mitigation program is developed.

Protect groundwater. The BDCP/WaterFix EIR/S acknowledged groundwater losses due to construction dewatering and implementing its environmental commitments, but did not identify specific measures to meet preexisting or future water demands of affected parties. These impacts to groundwater should be assessed and specific measures to avoid or mitigate them should be proposed.

Anticipate export interruptions. The EIS should assess the probable impacts to south-of-Delta water users due to interruption or reduction of exports of Delta water conveyed through the proposed project due to drought, growing demand by north-of-Delta water users with superior water rights, alterations in runoff because of climate change, potential regulatory changes, or legal challenges. These and other threats make Delta water exports inherently unreliable. Contingency measures that could be employed in SWP and CVP service areas as well as in the Delta to mitigate this unreliability or restore water exports following these types of disruptions should be described.

Outline cumulative long-term effects. The complexity and potential connections among the many potential actions affecting Delta water resources that are currently under study contributes to Delta residents' concerns about the project. To address these concerns, the EIS should describe how the tunnel could be operated under a scenario in which planned reservoirs, including Sites, expanded Los Vaqueros, expanded Pacheco Reservoir, and south of Delta groundwater banks are completed and operated, as proposed in funding proposals to the California Water Commission. The reservoirs and groundwater banks are reasonably foreseeable: State and in some cases federal funds have been awarded, draft feasibility reports are sometimes complete, as is Sites Reservoir's draft EIR/S, and south-of-Delta water agencies have joined as sponsors supporting the projects. It is often stated that these projects' value depends on improved conveyance that can move water stored north of the Delta to those new storage areas proposed south of the Delta, but it is unclear how this would alter operations of the tunnel or its impacts on Delta water resources. This should be explained.

Assess flood risks and plan for post-flood recovery. Areas where key project facilities would be located are protected by levees where the risk of levee failure contributes to their ranking in the Delta Plan as very high priorities for State-funded levee improvements. In the north Delta these facilities, including the proposed diversion facilities, an electrical building, sedimentation basin and appurtenant structures, are protected by the levees of Maintenance Area No. 9 South. Similarly, the Byron Reclamation District's levees protect access to and operational facilities at Clifton Court Forebay, including presumably the new pumping facility. The EIS should describe how these project facilities would be protected from flooding in the event of levee failure, how SWP workers would access these facilities until floodwaters drain, how SWP operations would be maintained or restored after that flooding, and measures to reduce the risk of levee failure affecting project facilities.

LAND USE, PLANNING AND PUBLIC SERVICES

Delta Land Use is Controlled Carefully to Foster Agriculture, Encourage Tourism and Recreation, and Maintain Legacy Communities. The Sacramento-San Joaquin Delta is

vast, encompassing nearly three-quarters of a million acres of land and 700 linear miles of waterways. Its land uses generally reflect the settlement patterns of the past century and a half, closely associated with its rivers, sloughs, and waterways, and with the configuration of agricultural lands. Rural communities reflect the diverse heritage of the Delta, serving as social and service centers for the surrounding farms and historically served as shipping sites for products.

In response to rapidly encroaching urban growth, the California Legislature enacted the Delta Protection Act of 1992 (Public Resources Code 29760 et seq.), establishing the Delta Protection Commission and dividing the legal Delta into a primary zone and a secondary zone, with the Commission's principal land use authority over the primary zone. The Act requires the Commission to prepare and update a comprehensive Land Use and Resource Management Plan guiding land uses within the primary zone. The primary zone is largely rural and not intended for intense development. The secondary zone includes existing cities and areas that may be developed. The "legacy communities," eleven communities largely in the primary zone – Clarksburg, Courtland, Freeport, Hood, Locke, Walnut Grove, Ryde, Isleton, Rio Vista, Knightsen, and Bethel Island - are a focus of economic development activities and cultural heritage.

Key elements of the Commission's and counties' land use approach are to preserve the rural lands for agriculture and agricultural-related businesses, allow for rural, farm-friendly visitor-serving facilities such as wineries and event facilities, marinas and resorts in key locations to support tourism, and protect the legacy communities as retail and residential centers to support agriculture and tourism. This approach includes some flexibility by allowing unique uses, such as agricultural sales or childcare facilities, by special permits.

The proposed tunnel is incompatible with this fundamental strategy, both during the projected 13-year construction period and during operation. Presentations at the DCA Stakeholder Engagement Committee (SEC) meetings showing the location and intensity of construction impacts on traffic, for example, have illustrated how the effect on the Delta as a whole – as a place – is analogous to an earthquake with a series of major aftershocks. Not all Delta communities will be affected in the same way, or perhaps with the same intensity, but all will be affected.

Intake facilities on the Sacramento River as described in the NOI, regardless of which are selected, and regardless which corridor alignment is selected, would irreparably damage the communities of Clarksburg in Yolo County, and Hood and Courtland in Sacramento County. In San Joaquin County, launch shafts, tunnel material handling, and maintenance and retrieval shafts will convert farmland and disrupt marinas and recreational boating. Contra Costa County communities such as Discovery Bay would

suffer major recreation impacts. In Solano County, the economic and cultural impact of required project mitigations from agricultural lands being converted to restoration projects are a major concern, as are water quality impacts on municipal wells for Rio Vista and agricultural users in the Cache Slough region.

Every Element of the Project Disrupts Existing and Planned Land Use. Tunnel construction would fundamentally change the agricultural- and water-based character of Delta communities and landscape because of the duration and sheer number of different locations where construction and staging would take place. The use of roughly 5,000 acres of land will be changed due to surface impacts, with another several thousand acres of agricultural lands likely converted for habitat mitigation. Construction of the tunnel launch, retrieval/reception and maintenance shafts, the new southern forebay, pumping plant, and construction-support facilities along the alignment including access and haul roads, potential additional rail lines, barge unloading facilities, concrete batch plants, fuel stations, mitigation areas, and power transmission and/or distribution lines will alter the landscape for a decade and a half, according to the NOI. Use of additional areas will be harmed by noise, traffic congestion, impaired recreation and tourism, damaged scenery, other disruption accompanying construction, degraded quality of life, lowered property values, and lost investment.

- Intake and Tunnel Construction. Construction of two intakes for either alignment described in the NOI would result in irreversible changes to the communities of Clarksburg, Hood and Courtland, as well as neighboring areas and the Stone Lakes National Wildlife Refuge. Road construction and widening, bridge modifications and interchange improvements, and installation and operation of concrete batch plants would virtually all occur within the primary zone, in direct conflict with the most fundamental principles of the land use approach of the Delta Protection Act and the Commission's Land Use and Resource Management Plan. After construction is completed, pressure will grow for non-farm development at areas adjoining new offramps or sites that cannot be returned to agriculture.
- Tunnel Corridors. Extending beyond the intakes, construction and operation of the "Central Tunnel Corridor," which would also necessitate widening of narrow bridges and extension of existing or creation of new access and haul roads through much of the agricultural land of the primary zone, would literally pave the way for transformation of the regional landscape, setting a precedent of devalued baseline conditions.

Two to three launch shafts for launching the tunnel boring machines (TBMs) would be required along either tunnel corridor alignment (Central or Eastern) referred to in

the NOI. Likely launch shaft locations are at Glanville Tract adjacent to Interstate 5 at Twin Cities Road, at Lower Roberts Island near the San Joaquin River channel, and at Byron near the Clifton Court Forebay and proposed new southern forebay. Another potential launch site for an “Eastern Tunnel Corridor” would be at Rough and Ready Island near the Port of Stockton, although this is not shown in the Project Overview Map provided with the NOI. According to the SEC presentations, current thinking is that four TBMs would be used, and would potentially tunnel in both north and south directions.

Each launch shaft site would include 200-300 acres of permanent impact, but during construction the Twin Cities launch site is currently depicted in the DCA mapbook as approximately 500 acres, while the Lower Roberts Island site is approximately 400 acres with a permanent footprint of only slightly less. The size and complexity of the launch shaft sites are significant: at these sites, the TBM is launched, followed by the tunnel liner sections, and the tunnel material is removed. Once removed, tunnel material must be dewatered, currently proposed to be onsite with large levees surrounding a tunnel material storage and consolidation center. Liner sections for the proposed 40-foot diameter tunnel would potentially be fabricated at existing nearby plants in Stockton, Lathrop, Antioch and Rio Vista. Transport of liner sections onsite and tunnel material offsite is being considered by barge, rail, and/or truck, although barge and/or rail are being prioritized. A range of operational conditions for the tunnel is possible, but among the examples given at the SEC meetings for a 6,000 cubic feet per second (cfs) tunnel capacity, 50 liner segments per day would require 25 days of truck hauling versus 3 to 5 days by rail or barge. Likewise, estimates for removal of tunnel material offsite range widely, but are staggering.

The launch sites would include construction offices, concrete batch plants, equipment storage and electrical substations. In addition to the launch sites, the NOI indicates 13 maintenance and retrieval (or reception) shafts will be required for the Eastern alignment. At approximately 15 acres per shaft site, this represents another 200 acres of converted farmland.

It is unrealistic to characterize any of the land conversion along the tunnel alignment as temporary, since even construction sites that are not permanently part of operations will be fallow so many years and will be affected by soil modifiers and other effects from the use of the property as to be of questionable agricultural value if they are ever decommissioned and reclaimed for agricultural use. Most if not all facilities may well be left in place, according to presentations at the SEC, increasing pressure for non-farm use at sites that cannot be returned to agriculture.

- Habitat Mitigation. Further changes to existing land uses can be anticipated from habitat restoration likely to be proposed to mitigate damage to biological resources. For example, the BDCP/WaterFix EIR/S proposed converting thousands of acres of farmland to marsh or riparian woodland.

Recommended Significant Adverse Impacts Analysis and Method of Documentation:

Given the foregoing brief description of just some of the potential land use impacts, it is clear that tunnel construction and operation in any alignment will irrevocably alter the rural character of the Delta, adversely impacting its economic pillars (agriculture and recreation) and its cultural heritage. The project seriously threatens the long-term sustainability of the Delta regional economy, which the Commission is charged with enhancing and promoting. In addition to direct land use conflicts, in many areas the project would cause a substantial change in intensity of land use that would be incompatible with adjacent land and water uses.

Socio-economic analysis should document and quantify the degradation of quality of life of Delta legacy communities and Discovery Bay from increased noise, traffic detours and congestion, light pollution and the clutter of visual intrusions such as traffic signage. Property values and affordable housing have already been severely impacted over the past decade, buffeted by the economic downturn, by high flood insurance costs and stringent construction requirements, and by the threat of construction of BDCP/CA WaterFix, the predecessors to the current single tunnel proposal. The challenges of housing project construction workers will likely mean competition for local housing resources, which will make it more challenging for major Delta businesses such as marinas and agricultural support to house their workers. The project would cause enormous disruption of the basic elements of daily life for Delta residents, including functional access to schools, libraries, churches, medical care, elder and childcare, and shopping.

Existing congestion on Highways 4, 12, and 160 already impairs Delta residents' commutes to jobs within the Delta and beyond to the metropolitan areas of the East Bay, Stockton-Tracy, and Sacramento, often literally grinding to a standstill. Accidents are frequent and too often fatal, especially on Highway 160 and Twin Cities Road. Delta farmers' ability to move slow or over-size equipment safely from one location to another is already challenged. At least two dozen bridges on the Sacramento, Mokelumne, and Middle rivers and multiple sloughs could be affected by increased barge, rail and truck transit. Either of the alignments of the proposed project described in the NOI would exacerbate these existing transportation challenges. New rail spurs or access and haul roads could also interfere with access to farmland.

Damage to landside recreation and tourism would occur both directly and indirectly through noise and disruption of the aesthetic charm and character of key tourist destinations such as Hood, Courtland, Clarksburg, Locke, Walnut Grove and seasonal and permanent farm stands along the scenic Highway 160 as well as wildlife viewing destinations such as Stone Lakes National Wildlife Refuge (NWR), Cosumnes River Preserve, Staten Island, and numerous San Joaquin County sandhill crane and waterfowl roosting sites.

If barge facilities are proposed, recreational boating would be significantly impacted – and in some cases facilities eliminated – on the Sacramento, Mokelumne and San Joaquin Rivers and the south Delta and at marinas, launches, popular anchorages and hangouts such as Lost Slough and the Meadows; Wimpy's; Giusti's; Beaver, Hog and Sycamore Sloughs; Tower Park; King Island; Potato Slough; Mildred Island and Horseshoe Bend; Bullfrog Landing and Lazy M, to name just a few.

Effects could include partial property acquisitions, resulting in division of agricultural or residential parcels, which could create non-conforming lot sizes that are inconsistent with counties' land use and zoning designations.

To meaningfully convey these effects for Delta communities and decision-makers, the EIS should tabulate the acreage and map the areas affected by every adverse or incompatible feature of the project, including direct land use conversions, noise in excess of standards for existing or proposed land use, properties where road congestion to level D or worse impairs access, harm to landscapes surrounding visitor destinations, or other project-related damage. The acreage of lands harmed, by land use (e.g., agriculture, residential, etc.), should be tallied, as should the number of impacted homes and businesses. To adequately inform business owners, their employees, and residents, the EIS should list the names of businesses and the addresses of homes likely to be impacted, much as the EIS lists the species found in habitat areas affected by the project. Special uses that contribute to community cohesion should be highlighted, including grocery stores, post offices, schools, churches, libraries, and community centers.

To assess impacts on affordable housing, typical rents of homes adversely affected by the project should be estimated. In addition, given the tight housing markets in the affected areas, construction workers' demand for housing should be carefully forecast, considering the project's labor requirements, existing capacity of necessary skilled labor in the region, and the current and forecast utilization of construction workers residing in the region. A thorough analysis of housing impacts should replace the BDCP/WaterFix EIR/S assumption that the preponderance of project workers will already reside in the

region, particularly given the current state housing mandates that local governments are struggling to meet.

Recommended Approach to Developing and Evaluating Mitigation Measures: In preparing the draft EIS, the Corps should provide mitigation that adequately addresses the nature of impacts on land use and communities. At a minimum, the EIS should incorporate the applicable land use policies, standards and Best Management Practices (BMPs) in the applicable local government's general plan and zoning ordinance and adopt the mitigations recommended in Delta Plan recommendation WR R1 2(b)(2)(I) and the Delta Plan Mitigation, Monitoring and Reporting Program (MMRP).

Mitigation measures for land use and all other environmental aspects of the project should be structured to use careful phasing of project construction to minimize disruption, including cumulative disruptions simultaneously affecting multiple areas of the Delta. Because the duration of the project contributes to its damage to Delta land use, measures should be proposed that provide incentives for timely project completion or penalties for deviations from agreed-upon schedules, without increasing short-term impacts.

To mitigate impacts to affordable housing, replacement housing for acquired or impaired homes should be provided as required by the Delta Plan MMRP. Any home that may be acquired should be carefully maintained and, at the end of the construction period, rehabilitated as needed and sold at affordable prices to prior or new occupants. Contributions to support development of new affordable and work-force housing, including farm labor housing, should also be considered, as were provided in the LAX (Los Angeles International Airport) master plan¹. The text below identifies other measures that should be proposed to reduce harm to specific land uses, such as agriculture and tourism, or mitigate specific impacts that affect land use, such as noise or traffic congestion.

Wherever feasible, mitigation measures should support or enhance existing Delta land use. For example, could the project's greenhouse gas (GHG) emissions be offset by a fair-share contribution that covers the capital costs faced by Delta agricultural land owners who wish to grow rice or other crops that sequester carbon and reverse land subsidence, including costs for land preparation (e.g., land leveling and water management features such as checks and ditches)? The Sacramento-San Joaquin Delta Conservancy has identified these costs as a significant barrier to carbon-sequestering farming systems in the Delta.

¹ (<https://www.lawa.org/en/lawa-our-lax/studies-and-reports/mitigation-monitoring-reporting-program>).

Involve Local Agencies, Businesses and Residents. Delta agencies and affected residents should be consulted as these mitigation measures are developed, evaluated, and implemented. Especially under the current restricted conditions related to the COVID-19 pandemic, we urge the Corps to work with DWR to make a special effort to solicit input from Delta counties, other local agencies, and the Sacramento-San Joaquin Delta Conservancy, as well as other state agencies such as Caltrans and the Department of Parks and Recreation, about effective mitigation measures. For example, DWR should propose an adaptive strategy for monitoring project effects on Delta land use, residents, and businesses, monitoring outcomes and responding to unanticipated impacts. The mitigation strategy used by the California High Speed Rail project to address traffic impacts on agricultural land use could be evaluated in consultation with affected Delta property owners to assess the effectiveness of providing crossings or alternate routes that can accommodate farm equipment, allowing continued use of agricultural lands and facilities.

The EIS should also propose mitigation measures to reduce secondary effects such as economic blight and other cumulative impacts on Delta land use, as major public works projects throughout the state or elsewhere have done. One example is the Business Interruption Fund used to mitigate effects of Los Angeles' Metro subway². The fund should provide quickly accessible funds to offset the loss of business income or other damage to land uses due to construction impacts. It could also fund expansion and implementation of the Commission's Delta Community Action Planning effort, invest in public facilities that can compensate for damage to Delta communities and infrastructure through the Delta Investment Fund (PRC section 29778.5), or support agricultural, cultural, recreational, and tourism programs and projects through a Delta charitable entity such as the Delta Regional Foundation. The Commission's Economic Sustainability Plan (ESP) and the Delta Plan propose numerous recommendations in support of Delta as an evolving Place.

AGRICULTURE

Additional evaluation of secondary and cumulative effects must address Delta agriculture. Agriculture is the Delta's principal land use, the foundation of its rural economy, and a pillar of its culture. Project actions, including wildlife, fish, and habitat mitigation measures, that will directly or indirectly affect agriculture should be described. These should be based on the most recent information about Delta farms, including information we have gathered to update the ESP. Estimates of farmland lost for project facilities, tunnel material management and storage, and

² <https://www.metro.net/projects/westside/final-eis-eir/>;
https://media.metro.net/projects_studies/westside/images/final_seis/WPLE_Final_SEIS_and_Section_4f.pdf

wildlife, fish, and habitat mitigation should be reported by total acres, acres by crop type, acres by soil type, and acres under Williamson Act contract. Impacts to local irrigation, drainage, and flood control facilities should be considered, as should loss or impairments of crop processing facilities, such as packing sheds and wineries, project-related congestion on farm-to-market roads, and farm labor housing. Selection of tunnel material, management sites, habitat restoration areas, and other facilities should place a high priority on avoiding prime farmland.

Avoidance and mitigation actions. Actions taken to avoid and mitigate impacts to farmland should be described in the EIS. Affected farmers, Delta county Farm Bureaus, county agricultural commissioners, U. C. Cooperative Extension agents, the California Department of Food and Agriculture, and other agricultural interests and experts should be involved in discussions to develop these measures. The menu of potential actions outlined in the BDCP/WaterFix EIR/S agricultural land stewardship plans is one good source of mitigation options, but the EIS should describe how these would be applied to each of the construction sites within the Corps jurisdiction that affect farmland.

Where specific impact areas cannot yet be described, such as some restoration areas to compensate for habitat damage, the EIS should include clear standards or triggers that explain the extent of mitigation, how its adequacy will be determined, and how those affected will be involved in its development. At a minimum, these measures must comply with or be equivalent to those of the Delta Plan's MMRP sections 7-1 to 7-4.

Avoid and reduce tunnel material impacts. Much of the permanent impact to agriculture reported in the BDCP/WaterFix EIR/S was for management and storage of tunnel material. In addition to avoiding prime farmland when locating tunnel material facilities, further measures to reduce impacts of these facilities should be employed. Soil conditioners used in creating tunnel material management areas should be selected carefully so that disturbed areas can be returned to agricultural use after the project is completed. Measures to recover compacted soils at these sites should be proposed.

A specific plan for reusing tunnel material must be developed, beginning with review of the feasibility of reuse. A review of spoils disposed from navigation and flood control channel dredging throughout the Delta and Sacramento Valley shows that little has been reused even decades after it was disposed, either because it was unsuitable for other uses or because local users could not afford trucking and other costs required to reuse it. The results of DWR's soil boring investigations should enable classification of the potential uses of excavated

material. If feasible, excavated tunnel material should be handled and stored in ways that segregate materials of different quality so they can more easily be reused. Material suitable for reuse to maintain or improve levees should be hauled to those reclamation districts that want it. Costs of hauling tunnel material to reuse sites should be borne by the project, rather than by those who may reuse it, as this mitigation measure is properly a cost of the project's contractors pursuant to Water Code section 85089.

Use conservation easements to compensate for cumulative farmland losses. Site-specific measures to avoid or reduce impacts on farmland can reduce local impacts, but the purchase of conservation easements over Delta farmland that would otherwise be threatened by development can compensate for unavoidable cumulative losses. Farmland conservation easements are part of the California High Speed Rail project's agricultural mitigation program³. The Delta Plan's MMRP requires such compensatory mitigation at a ratio of 1 acre protected for each acre permanently damaged. Most Delta local governments require higher mitigation ratios. Rural farmland in the Delta's primary zone is already secure from development under the provisions of the Delta Protection Act, so the purchase of conservation easements should target areas as buffers in the Delta's secondary zone or areas immediately adjoining the Delta where long-term development pressure is higher. Areas proposed to be secured for sandhill crane habitat or other wildlife-friendly farming should not be considered as compensating for the project's contribution to cumulative farmland losses, since agricultural uses of those lands will be constrained, not unreservedly preserved, by those wildlife-friendly practices and because those lands will be protected in any case.

It is understandable that Delta farmers directly affected by this project may be reluctant to cooperate with DWR, but a creative partnership with the California Department of Conservation may make a program of purchasing conservation easements more feasible.

Finally, business losses by Delta farmers and agricultural businesses should be eligible for compensation through a business interruption fund, as described under the land use section above. A contribution to the Delta Investment Fund could help compensate for other economic losses to the Delta's agricultural economy.

³ Final Project Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) for the Fresno to Bakersfield Section of the California High-Speed Rail (HSR) Project

LEVEES AND DRAINAGE

Protect levees and drainage facilities. The current Delta is a creation of its network of levees and drainage works. Any threat to them risks lives, property, agriculture, legacy communities, recreational destinations, important wildlife habitats, and the region's unique culture. The facilities already face threats to their stability and durability. This project should not increase risk, but rather should reduce it where feasible. Such an outcome would further the project's purpose of anticipating rising sea levels and reducing the risk of levee breaches that may degrade water quality and threaten water supplies.

Assess and mitigate impacts to levees and drainage facilities using up-to-date information. Impacts to levees and drains cannot be assessed without up-to-date information about their locations and condition. This information should be gathered along the alternative project corridors now, including affected reclamation districts' five-year plans, background information from the Delta Plan's levee investment strategy, and conversations with levee engineers from affected districts.

The EIS should assess impacts to levees for the full range of activities from project construction. Construction activities that should be considered include levee encroachments, dewatering, grading, tunneling, tunnel material handling and storage, construction-related traffic on levee-top roads, project-related habitat restoration, and other activities. Also of concern are construction-related structures such as pilings and in-channel coffer dams, and the effect of project fills and embankments on flood flows in the event of a breach of nearby levees. Operational impacts of concern include filling and draining project forebays, changes in Delta flows, especially those that could affect siphons, seepage, or drainage at affected reclamation districts. Since the Corps NEPA review appears not to cover the entire project area, and is only for construction and not for operations, the EIS should clearly explain what areas are not being assessed and identify what federal agency will conduct NEPA analysis for the balance of the project including operations.

Mitigate adverse effects to levees and drainage networks. Recommendations from Delta reclamation district engineers should be a primary source of mitigation measures to reduce or compensate for project-related impacts to Delta levees or drains. At a minimum, these measures should conform with Delta Plan MMRP 5-1 through 5-5, 11-3, 11-7, and 11-9. Other potential mitigation measures may be outlined in the CVFPB's encroachment regulations concerning levees, retaining walls, miscellaneous encroachments, and pipelines, conduits, and utility lines, as they may apply.

Move tunnel material suitable for levee improvements to willing reclamation districts. As noted under the agriculture section above, DWR's soil boring investigations should allow classification of the potential reuses of excavated material. If feasible, excavated tunnel material should be handled and stored in ways that segregate materials of different quality so they can more easily be reused. Material suitable for reuse to maintain or improve levees should be hauled to those Delta reclamation districts that want it. This would further the project's objective of anticipating rising sea levels and reducing the risk of levee breaches that may interrupt or degrade the quality of exported water, while diminishing damage to farmland and possibly modestly reducing the imbalance between the project's damage in the Delta and the benefits it provides there.

Construction impacts should avoid, minimize and compensate for damage to Delta reclamation districts. The applicant DWR and its contractors DCA should be held to the same standard that DWR and the CVFPB apply when encroachments affect their levees and drainage works. For example, DWR/DCA should pay local reclamation districts an inspection fee to cover inspection costs, including staff and/or consultant time and expenses, for any inspections before, during, post-construction, and regularly thereafter as deemed necessary by the reclamation district. DWR/DCA should agree that, in the event that levee or bank erosion injurious to a reclamation district's facilities occurs at or adjacent to the project, it will repair the eroded area and propose measures, to be approved by the reclamation district, to prevent further erosion. DWR/DCA should be responsible for the repair of any damages to levees, channel, banks, drains, siphons, or other reclamation district facilities due to construction, operation, or maintenance of the proposed project. DWR/DCA should agree to defend, indemnify, and hold harmless affected reclamation districts against all claims, liabilities, charges, losses, expenses, and costs (including their attorneys' fees) that may arise from the project. If any claim of liability is made against a reclamation district, DWR/DCA should defend and hold them harmless from any claim.

RECREATION

Recreation in the Delta must be protected and improved. The Delta is a "dreamland for boaters, birders, and outdoor enthusiasts", according to Visit California, the State's tourism promotion organization. Its waterways, historic villages, nature areas, wineries, and food draw millions of visitors annually, and support a recreation and tourism economy that provides 3,000 jobs and \$275 million in economic activity in the Delta counties – second only to agriculture as the key economic sector in the Delta's primary zone. Its diversity of recreation is available at a wide range of price points, serving local anglers who slip down a levee trail to fish on the way home from work, boaters with dockside homes, or international travelers.

Assess and mitigate recreation impacts using up-to-date information. The project as proposed, including its construction-related traffic, potential barge installations, noise, and secondary impacts such as cultural and aesthetic impacts would significantly damage key Delta visitor attractions. The magnitude of this damage cannot be estimated, nor adequate mitigation proposed in the absence of up-to-date and accurate information about recreation use in those areas. The Commission has information as we update our ESP, especially about recreation facilities and Delta-wide recreation use, that can be made available. But new surveys are needed to gather up-to-date data on recreation in areas affected by the project, just as wildlife or fish would be surveyed in a critical habitat to be damaged by the project. These areas include:

- Legacy communities. In Hood, Clarksburg, Courtland, Locke and Walnut Grove, information about visitor use for food, wine, boating, and heritage tourism should be gathered through surveys of visitors to restaurants, wineries, museums, and historic districts.
- Recreational boating and fishing. As proposed, the project would adversely affect very popular boating and angling areas in the Delta such as Bullfrog Marina and anchorages at Mildred Island and Horseshoe Bend. These areas are critical to recreational boating and angling, just as other areas are for fish and wildlife, and deserve an equivalent level of attention by the EIS.

Delta-wide information on recreational boating has recently been gathered by DBW, but its report does not detail areas of special use by Delta boaters. The *Sacramento River Boating Guide* by Bill Corp, *Franko's Map of the California Delta*, Visit the Delta's *Heart of California* map, and Hal Schell's book, *Dawdling on the Delta* have useful information on popular local boating and fishing areas that are along the project route. In the interest of basing the impact assessment on best available science, we recommend that these references be supplemented by current, more specific usage data. Several relatively simple methods could be used. First, we suggest that aerial photographic surveys of boater use be undertaken on both weekdays and weekends during each Delta boating and fishing season so that photo interpretation can be used to identify locations and quantity of these activities. Such approaches are common on other waterways and in waterfowl surveys. Second, we encourage you to meet directly with marina operators in and near the project area to obtain their information about levels of boating use and popular areas and activities among their customers. The SEC process has recently included comments from participants about areas rarely mentioned by outsiders but beloved by locals, such as the "bedrooms." Finally, counts of various categories of recreational use could be conducted at locations around the Delta. These surveys

could be conducted safely with small teams deployed at known popular recreation sites without any contact or interference with recreators.

- Driving for pleasure. This is another popular recreation for Delta visitors that would be harmed by project-related disturbance and traffic congestion. The Commission's ESP identifies "right-of-way" activities as among the most popular in the Delta. Survey research could be used to quantify the level of this use as well as popular routes.
- Wildlife viewing. USFWS and The Nature Conservancy should be contacted for estimates of visitation at Stone Lakes NWR and Staten Island.

As with other topics we have discussed, we raise these issues at this early scoping stage because there is still time to gather this information now as the EIS and EIR are being drafted. To do otherwise would not be using the best available science to assess impacts on activities that are so important to the Delta's economy and culture.

CULTURAL RESOURCES

The Delta is culturally significant. In designating the Delta as a national heritage area, Congress concluded that the area's historic, cultural, and natural resources combine to form a cohesive, nationally important landscape. In testimony endorsing the national heritage area's designation, the National Park Service's associate director for cultural resources called the Delta "a hidden gem located at a key geographic and historic crossroads of our country. It is a land of ethnic diversity, innovation, industry, enduring history, and both fragile and robust physical features". Our own exploration of the Delta's cultural significance emphasizes it as an exemplar of the American experience in nature and its multicultural immigrants' pursuit of the American dream, free from the restrictions of more traditional societies, where the good life is possible. These cultural values must be respected.

The Delta comprises a significant cultural landscape. The Delta cannot be reduced to a list of historic buildings and archaeological sites. As defined by the National Park Service, a cultural landscape is a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibits other cultural or aesthetic values. The Delta is a landscape that has evolved through use by the people whose activities or occupancy shaped that landscape, which the Park Service calls a "historic vernacular landscape". Examples provided by the National Park Service fit the Delta areas affected by the project: rural villages; agricultural landscapes such as farms and ranches, including landscapes with a total absence of buildings, and landscapes encompassing linear

resources including transportation systems, such as the Sacramento River or the River Road. A district of historic farms along a river may be an example of a significant cultural landscape, the Park Service notes, but the presence of buildings is not required. Scenic highways such as Highway 160 are another example of a culturally significant landscape.

The Delta, including lands bordering the Sacramento River from Freeport through Sherman Island, adjoining legacy communities, neighboring islands and distributaries of the river, Highway 160, and the rural islands of the south Delta are all integral elements of this important cultural landscape. Its levees and drainage works are reminders of the region's post-Gold Rush reclamation and the efforts of California Debris Commission, an early landmark in national flood control. Its vineyards and orchards today occupy much the same lands as they did 75 years ago. Many of its multi-generational farms are operated from century-old farmsteads. The packing sheds and remnant wharves lining the river developed to transport these farms' products to market. The legacy communities, from Freeport to Isleton, several of which are listed historic districts or contain listed historic buildings, grew to serve the region's commerce and became home to Asian and European immigrants who worked in Delta farms and agricultural businesses. Asian New Year celebrations, Portuguese *festas*, Juneteenth commemorations, and other ethnic festivals, as well as Courtland's Pear Fair and other celebrations of agriculture, demonstrate these cultures' continuing vitality. Railroads and later Highway 160 and other roads, with their assortment of historic swing and lift bridges, extended into the region with the advance of trains, cars and trucks, bringing anglers, boaters, and other recreationists.

The resulting Delta landscape, observed landscape architect Frederick Law Olmsted Jr. in his 1928 report to California's State Park Commission, "commanded delightful views of the river and its margins and of miles of beautiful orchards and farming lands outside of and below the levees....Along the course of this great system of waterways, levees, and roads there are numerous delightful spots...and the route as a whole is in effect, even at present, a river parkway on a vast scale, of great landscape beauty, and enjoyed by thousands of people". This is still an apt description nearly a century later. In recognition of these charms, Highway 160 and Sacramento County's River Road are designated as a State Scenic Highway. Local routes and corridor have been similarly recognized by Sacramento, San Joaquin, and Contra Costa counties.

Given these historic landscape resources, whose importance has been recognized by Congress, U.S. Department of Interior, National Park Service, State of California and local governments, the EIS should protect the Delta as the culturally significant landscape that it is, rather than limiting its impact assessment to only archaeological

sites and individual historic structures and districts. Measures to avoid or reduce damage to these resources should be consistent with the Secretary of the Interior's Guidelines for Preserving Cultural Landscapes.

Strengthen protection of historic and archaeological sites. In addition to protecting cultural landscape resources consistent with the Secretary of the Interior's Guidelines, measures to avoid or reduce damage to historic building and archaeological sites should be implemented or mitigation provided. Representatives of California native Indian tribes should be consulted regarding protection of archaeological sites as should local Delta historical societies, museums, Locke Foundation, historians, and community groups when historic resources are affected.

If historic buildings must be acquired, they should be adequately protected, including stabilizing walls and windows, controlling mold and other damage throughout the construction period, and then rehabilitated consistent with the Secretary of the Interior's Standards for Rehabilitation for reuse upon the project's completion. A useful measure from the mitigation plan for San Francisco's central subway is monitoring vibration of historic structures adjacent to tunnels to ensure that historic properties do not sustain damage during construction. Contract documents should specify maximum peak vibration levels. If at any time the construction activity exceeds this level, that activity must immediately be halted until an alternative construction method can be identified that results in lower vibration levels.

Secondary impacts such as inadvertent damage to historic properties or historical resources must be repaired, consistent with a written general protocol for inadvertent damage to historic architectural resources and a listing of specific properties that should be the subject of an individual plan because of their immediate proximity to the project, as provided in the California High Speed Rail Authority's mitigation plan. Inadvertent damage from the project to any of the historic properties or historical resources near construction activities should be repaired in accordance with the Secretary of the Interior's Standards for Rehabilitation. Another useful measure from the High Speed Rail Authority's mitigation plan is providing interpretive information regarding specific historic properties or historical resources affected by the project, including brochures, videos, websites, study guides, teaching guides, articles or reports for general publication, commemorative plaques, or exhibits.

AESTHETICS

The Delta's landscape is integral to its qualities as a place. The Delta is characterized by many diverse and often contradictory visual attributes: it is a vast flat sweep of land and water, yet with its willow and cottonwood-lined levees, farm buildings and historic

communities, water towers and, on its horizons, wind turbines and Mount Diablo, it is not a featureless landscape. The aesthetic appeal of the Delta is as varied as the character of the farmed landscape, the waterways and marinas, the towns and communities surrounding favorite recreation areas.

County general plans identify especially prized scenic routes and corridors near the project's proposed footprint:

- Sacramento County: Highway 160, a State scenic highway; River Road, also a State scenic highway; Isleton Road; the Sacramento River, and other Delta roads atop levees bordering Delta sloughs.
- San Joaquin County: Interstate 5 north of Stockton; Eight Mile Road on King Island and Bishop Tract; West Lower Jones Road and Zuckerman Road surrounding McDonald Island; Bacon Island Road along Middle River; and Highway 4 west of Bacon Island Road.
- Contra Costa County: Highway 4 west of Old River; and Byron Road.

In recent surveys of residents and visitors, a common theme volunteered was that coming to the region is like stepping back in time, and how extraordinary that such a place could exist within an hour or two of the Bay and Sacramento metropolitan areas. One of the last lowland areas of the state to be tamed and settled, the Delta continues to be relatively hidden and remote. Few roads traverse it, most of its bridges are historic structures, and a few crossings are still accomplished by ferry. A great quiet and a slow pace rule. These qualities provide a baseline that should be preserved by minimizing the project's alteration of Delta landforms.

The Delta's landscape ranks high among the qualities that make the Delta "home" to residents and frequent visitors. It is often observed that people come to the Delta to get away from city life. They can do so with relative ease because the Delta Protection Act and county general plans have ensured that urban-type development stays for the most part at the outer edges in the secondary zone. These aesthetic qualities should be protected as carefully as key attributes of wildlife and fish habitats. The visual resources of the Delta are literally the outward manifestation of the existing land uses. Thus, all adverse project impacts affecting land use will play out visually and with a compounding, profound effect.

The Project's Decade and a Half of Landscape Alteration Will Have Significant Effects.

The principal elements of the conveyance project are mainly constructed in the primary zone, which otherwise receives the highest level of protection from changes that would radically alter its landscape, as described in the Land Use section. These principal elements include the two Sacramento River intakes, three or more tunnel boring machine (TBM) launch shafts along the tunnel's route, and thirteen reception and maintenance shafts at various locations along the 40-mile alignment. Below are described some of the concerns related to each of the principal elements.

- Project intakes. The project intakes, regardless of configuration (Intakes 2 and 3 or 3 and 5), would permanently damage scenic resources viewed by boaters on the Sacramento River or motorists on Highway 160 and the River Road, designated State scenic highways, that pass through the communities of Clarksburg, Hood and Courtland. The visual impacts of the facilities including the intakes themselves, new haul roads, road widening and bridge modifications of Hood-Franklin Road, and interchange improvements would be significant and unavoidable.
- Launch Shaft Sites. At the launch sites, construction support complexes would be necessary with high-voltage power supply to operate the TBMs, sufficient area to dewater and stockpile tunnel material until it is moved offsite, and where concrete batch plants would be co-located. The launch sites are also where the 40-foot diameter concrete tunnel liner sections would be delivered by truck, train or barge, necessarily surrounding the sites with a web of transportation corridors.

Launch shaft sites would have a massive visual impact on the landscape. The visual blight would extend through the Stone Lakes NWR where widening Hood-Franklin Road is likely. Potential avoidance strategies to reduce traffic or other impacts to existing roads, such as constructing haul roads, would increase visual impacts. Mitigation measures, such as landscape and vegetation barriers, visitor centers or kiosks, interpretive signs, and viewpoints, could provide some relief but would not prevent the permanent alteration of this landscape by the project.

Potential barge landings and related dredging would degrade scenic waterways in the south Delta.

Some siting approaches under consideration by the DCA, such as the northerly launch shaft site at Glanville Tract, push the impacts of the 500-acre "consolidation" facilities east of I-5, outside the boundary of the legal Delta. This would reduce local visual impact somewhat but construction of new haul roads and widening of Diersson Road would be required, as well as a conveyor system to carry tunnel material from the launch shaft across fields to the consolidation facilities between Diersson Road and Twin Cities Road.

For the Eastern Corridor alignment, a Lower Roberts Island launch shaft concept presented at the SEC meetings shows the massive launch shaft complex straddling Black Slough near Holt. This site includes a potential barge landing immediately upstream of Windmill Cove and new haul and access roads and a rail spur on the San Joaquin River banks opposite Buckley Cove Park, near the River Point Landing Marina, Buckley Cove boat launch and home to the Stockton Sailing Club and Delta Sculling Center. Boaters accessing the San Joaquin River from these locations and from Whiskey Slough marinas such as Tiki Lagoon and kayakers to destinations such as Mandeville Tip would all experience a highly altered and industrialized

landscape that would be inconsistent with San Joaquin County-designated scenic corridors and roadways.

The Byron launch shaft site at Clifton Court Forebay pumping station would result in even greater impact on views from scenic Byron Road due to the landform alteration involved in constructing the proposed 750-acre surface area Southern Forebay. The walls of the proposed forebay would be constructed from some 5 million cubic yards of tunnel material. What cannot be used in immediate onsite construction at or near each of the launch sites would be stockpiled for eventual removal. The area required for storage depends on several factors including the TBM speed, production of tunnel material, and height that the stockpile could be – or on how quickly it could be transported to other re-use locations such as in levee upgrades or subsidence remediation. Examples provided by the DCA in SEC presentations based on 10-foot high stockpiles would require 240 acres just for the stockpile at each launch shaft site. Clearly the visual impact and its effect on surrounding communities like Discovery Bay, Byron, Mountain House and Tracy will be massive and lasting.

- Reception and Maintenance Shafts. Based on presentations at the SEC meetings, the Sacramento River intakes would also be the site of reception shafts for the tunnel boring machines (TBMs), with a maintenance shaft between the Launch Shaft and the reception shaft. With construction and operation of the reception and maintenance shafts for either the central or eastern alignment, the visual impacts would mar the Delta legacy communities of Locke, Walnut Grove and potentially Thornton.

While reception shafts could and should be removed and their sites restored after construction is complete, as reported at SEC meetings some maintenance shafts could remain. To meet projected sea level rise impacts, these shafts would be constructed with concrete walls 30 to 50 feet high, likely rising higher than existing levees. The shafts would have lasting impacts on the landscape, and without careful planning and design could end up looking like oversized gopher mounds.

Maintenance shafts for the Central Corridor alignment driving to or from a Bouldin Island Launch shaft would potentially impact views enjoyed by recreational boaters and by visitors to Tower Park Marina. Tranquil Staten Island fields that provide opportunities for viewing sandhill cranes may also be affected.

- Transportation. Finally, transportation logistics is a key consideration in the siting of the launch shafts. According to materials presented at the SEC meetings, for a 6,000 cubic feet per second (cfs) tunnel, deliveries of tunnel liner segments by truck could require 25 trips per day every 25 minutes for ten hours per day over 25 days. By rail car that could be reduced to 20 rail cars or 2000 ton barge, every 3 to 5 days. Throughout the construction period, the commotion of this level of trucking or railroad traffic would degrade the tranquil, scenic attributes of affected Delta landscapes.

Recommended Visual Impact Analysis Approach: Lessons Learned. The BDCP/ WaterFix EIR/S utilized an approach to visual analysis that combined the three most-accepted visual assessment methodologies used by Federal agencies including the Federal Highway Administration, Bureau of Land Management, and USDA Forest Service that have overlapping assessment principles. A qualitative analysis combined with a quantitative analysis of simulations was used together with narrative descriptions of how the visual environment would be altered. However, simulations could have been more meaningfully used to convey the effects of change on the landscape.

To complement this narrative, impacts should also be portrayed through simulations of scenic conditions both during and after construction from a variety of Delta resident and visitor perspectives. Views from recreational waterways, including portions of the Sacramento, Mokelumne, San Joaquin, Middle, and Old Rivers affected by construction and from Whiskey Slough should be portrayed. This analysis should also portray drivers' views from affected portions of Highway 160, River Road, and locally designated scenic routes and corridors.

The Corps should coordinate with DWR to ensure the affected Delta communities have ample opportunity to provide input on mapping and characterization of the baseline visual landscape, drawing on existing community planning priorities and elements of the natural, historical and cultural experience to establish threshold visual quality objectives for the communities and for the natural and farmed landscapes. Such objectives should then be used to develop measures to minimize outright visual damage as well as the potential for incremental physical deterioration over the course of the construction timeframe. For example, during EIR/EIS development and continuing through the design phase, DWR or the DCA should work with the communities on the design of project features that will remain on the landscape, such as the potentially 30- to 50-foot high tunnel shafts. Like the California High Speed Rail project, DWR and/or DCA could work with communities to develop aesthetic guidelines for project elements, both temporary and permanent, that provide contextual design responses to site-specific or unique conditions, or "context-sensitive solutions". Context sensitive solutions mean structural aesthetics must respond to local settings with concern for the human scale, building scale, and the vantage points from which the structures will be viewed.

Design principles should include the requirement that the structures enhance local environments and community context to the maximum extent feasible. Especially along Highway 160, the River Road, and local scenic routes and corridors, landscaping could be used to visually integrate project structures into the local context with plantings that recreate the natural or agricultural setting into which they are placed. The aesthetic design of project structures, in combination with landscape and urban design that serve the local community can create a positive contribution to the surrounding visual context and minimize the potential for physical deterioration. If tunnel material is suitable for reuse on areas that will be returned to farming, then the EIS should assess the

feasibility of using it to gradually contour slopes surrounding the maintenance shafts, especially when highly visible from heavily travelled roads or locally designated scenic routes and corridors, to minimize abrupt discontinuities in the landform. Using tall crops, such as orchards, to shield maintenance shafts from view should also be considered where soils are suitable. High voltage power lines, batch plants, and other intrusions should be removed when construction is complete. Local government general plan policies that protect scenic routes and corridors also include provisions that suggest potential mitigation measures: maintaining agricultural land in farming use, sign controls, limiting roadway improvements to protect scenic corridors, placing riprap on levees no higher than the average annual high water, and maintaining natural roadside vegetation.

Where unavoidable visual impacts remain, a potential mitigation that should be examined with local communities could be a façade program to upgrade deteriorating storefronts or buildings in legacy communities or other visitor destinations affected by the project.

TRANSPORTATION/TRAFFIC

Transportation routes are lifelines. The key modes of transportation that move people and goods in the Delta are roads, water, and rail. Interstates 5, 80, and 580 provide major transportation and trucking routes skirting the Delta. The three major state highways in the Delta (State Routes 4, 12, and 160) are typically two lanes, sometimes built on top of levees. Originally meant for lower traffic volumes at moderate speeds, the state highways are now heavily used for regional trucking, recreational access, and commuting. More than 50 bridges, including approximately 30 drawbridges, span the navigable channels of the Delta. Regional rail traffic between the Bay Area and the Central Valley passes through the Delta, as do commuter rail services such as the Amtrak San Joaquin.

Two major ports lie in the Delta, the Ports of West Sacramento and Stockton, accessed by the Sacramento River and Stockton Deep Water Ship channels, respectively. The Sacramento channel is 30 feet in depth, and thus is a non-container port. The Stockton channel has a depth of 35 feet and can handle up to 55,000-ton ships fully loaded or up to 80,000-ton ships partially loaded. According to the Corps' Waterborne Commerce Statistics Center, a total of 898,044 tons of import/export cargo transited the Sacramento Deep Water Ship Channel in 2018. For the same period the Port of Stockton handled a total of 5.2 million tons of import/export cargo and reported a total of 252 ship calls. Both ports hope to expand in the future, which would result in an increase in ship and barge traffic through the Delta.

These transportation assets are essential to the region's economic pillars – agriculture and recreation – to the quality of life of Delta residents, and the enjoyment of Delta visitors.

Account for Pre-Existing Conditions. Traffic congestion and safety is widely acknowledged by all these players to be an ongoing issue in the Delta. Existing congestion on Highways 4, 12, and 160 already impairs travel within the Delta and beyond to the metropolitan areas of the East Bay, Stockton-Tracy, and Sacramento. Accidents are frequent, often fatal, and lead to related hazards such as fires or vehicles in the water. Some safety improvements have been implemented such as installation of “K-rail” in the median of State Route 12, but many more safety projects are a challenge due to the high traffic volumes affected, lack of right-of-way for traffic management, and other unique Delta conditions such as peat soil. Seasonally, safe movement of slow or over-size farm equipment from one location to another is risky. Aging bridges are frequently fully or partially closed for repair and maintenance and ferries may be taken offline, causing significant re-routing or delays of travel.

Rely On the Experts. Successfully avoiding or mitigating transportation impacts to an already over-taxed transportation environment will be difficult. Some transportation and circulation impacts will likely be significant and unavoidable. Addressing transportation impacts will require a construction transportation management system with flexibility and creativity. The applicant DWR and their contractors must acknowledge the severity of the baseline condition and marshal the knowledge and resources of the local and state agencies that are the most familiar with Delta transportation challenges. Most if not all of these have spent considerable time developing plans and programs to improve conditions for their citizens but may lack the resources to carry them out.

Start With Best Available Data and Science. We encourage gathering the best available data and science at this early stage to support the analysis in the draft EIS. The land suitability analysis presented at the SEC meetings appears to be assembling some of the data needed to adequately analyze the project impacts. Identifying roads, rails, and barge-worthy waterways is a start. But the EIS must evaluate more than just the factors considered in design and construction planning.

The Commission is encouraged that DWR and the DCA have initiated new traffic counts in the past several months. To avoid repeating the mistakes of the BDCP/WaterFix EIR/S, additional information will be needed about (1) the operational status of ferries and movable bridges affected by project traffic (percentage of time when operations are limited by repairs or maintenance), (2) bridge clearance above water levels and existing channel depths and configurations at proposed barge routes under a range of water conditions (to assess their suitability for barge traffic and impact of barge travel on

bridge operations and related highway congestion), and (3) recreational boat traffic on proposed barge routes to aid in assessing impacts to marine safety. Data from traffic studies currently being completed should be shared with local transportation agencies or on the state's Data Portal.

Account for the Project's Secondary and Cumulative Impacts. As implied by the foregoing baseline description, either of the project alignments described in the NOI would exacerbate a multitude of existing transportation challenges. SR 160, 12, and 4 and many county roads would be adversely impacted by increases in any type of traffic. For example, Hood-Franklin Road from Interstate 5 to SR 160 and Lambert Road from Herzog Road to Franklin Blvd are already operating at "Deficient" levels. Increased traffic on the roadways potentially to be used during construction of intakes or construction and operation of the potential Glanville Tract launch shaft site, including Hood-Franklin Road, Lambert Road, Twin Cities Road and River Road, would adversely impact public safety in transit to Locke, Walnut Grove, and the Stone Lakes NWR.

At least two dozen bridges on the Sacramento, Mokelumne, and Middle rivers, and multiple sloughs would be affected by increased barge, rail and truck transit. New rail spurs or access and haul roads could also interfere with access to farmland. An adequate assessment of the project's impacts on transportation should integrate information on all these interrelated factors affecting congestion and traffic flows.

As suggested in the Land Use section, the EIS should tabulate the acreage and map areas where congestion to LOS D or worse impairs access to properties, including residences, commercial properties, schools and other important community resources.

Engage Others to Mitigate Complex Impacts More Effectively. We recommend a comprehensive approach to transportation impact mitigation, with targeted local avoidance and mitigation wherever feasible. Mitigating transportation impacts will likely be complex, requiring extensive coordination with other entities, each of which has their own pre-existing obligations and responsibilities. These entities range from the school district transportation coordinator to Caltrans, from the CHP and other emergency responders to the residential trash pick-up contractors, from county public works departments to bridge operators.

To streamline coordination, the applicant DWR and the DCA should consult with SACOG, SJCOG, and ABAG, with the three Caltrans Delta districts (3,4 and 10) and with Caltrans headquarters. Collectively the COGs and Caltrans comprise the transportation managers of the "mega-region" and have the experience to provide practical input on avoidance and mitigation. Caltrans and some of the county agencies

may also have encroachment or other permit authority for certain aspects of the project, so their early input would be particularly valuable.

We suggest comprehensive programmatic mitigation as well as more specific localized mitigation.

- Work with county public works or transportation agencies, SACOG, SJCOG and ABAG, and Caltrans to:
 - a. Prepare traffic mitigation plans with detour maps for road closures or where construction-related traffic is likely to congest key roads. Maps should be developed and available for public comment in the draft EIS, similar to those in the San Francisco Municipal Transportation Agency (SFMTA)'s EIR/S for its Central Subway project through Chinatown⁴.
 - b. For priority project transportation routes, consider upgrading unreliable transportation features, such as bridges and ferries, affected by project-related traffic prior to project initiation.
 - c. Where water diversion structures are under construction, designate, sign, and improve as necessary an alternate route for recreational traffic that avoids Highway 160 sections by using parallel sections of River Road on the river's west bank.
 - d. As in the LA Metro Westside Subway Extension Project, establish staging areas and truck haul headways to avoid platoons of trucks upon local roads and freeways. Establish a vehicle dispatching system at construction areas and offsite locations to monitor and address truck headway issues as they arise.
 - e. Restricting nighttime truck haul operations/times for each route, as was done for the LA Metro Westside Subway Extension Project. Truck haul operations should be avoided during peak morning and evening hours, during noise restriction hours, special events, and public holidays.
 - f. Consider transit alternatives for construction workers, including park and ride lots in Elk Grove, Stockton, Tracy, Fairfield, or other locations and dedicated bus service to project construction sites.

- To communicate about detours, highway congestion, barge operations, and other project-related traffic conditions, utilize all appropriate methods of communication including but not limited to roadway signs, 511-type notices and alerts, websites, and hotlines.

- Establish a transportation/construction coordination office for the life of the project, as in the LA Metro Westside Subway Extension Project, to oversee mitigation measures' implementation, coordinate deliveries and barge movements, monitor

⁴ <https://www.sfmta.com/reports/central-subway-final-seisiseir>

traffic conditions, advise motorists and those making deliveries about detours and congested areas, and monitor and enforce delivery times and routes. The office should coordinate its transportation actions with roadway projects of other agencies. It should also coordinate with police, sheriff, fire, and water safety personnel regarding emergency access and response times.

- To provide a mechanism for adaptive management of transportation impacts and mitigation measures, the coordination office should analyze traffic conditions throughout the construction period to determine the need for additional traffic controls. It should also work with neighbors to address concerns regarding construction traffic, including a mechanism for the public to report anomalies, changes, un-planned work, etc.
- When traffic impacts cause loss of business for local businesses, use the Local Business Interruption Fund proposed under the Land Use section. Such programs have been used for the LA Metro and other major public works projects.
- To mitigate the project's transportation or greenhouse gas emissions (GHG), consider helping local transportation agencies to implement local programs or projects in the Delta that reduce congestion and locally-generated vehicle miles traveled.

NOISE

Reduce project-related noise. The Delta is quiet. Its loudest sounds are often a dog barking at a nearby home or farm machinery in a neighboring vineyard or farm. For this reason, noise can be one of the most disruptive impacts of the proposed project. In addition to its direct effects, it also contributes to changes in land use, disturbs recreation, and has other secondary impacts. Every approach to reducing it should be employed.

Thresholds of significance used to assess noise impacts should reflect the Delta's existing conditions and the land use in areas where noise effects would occur. One threshold would be noise that exceeds the background sound level by at least ten (10) dBA during daytime hours (seven a.m. to ten p.m.) and by at least five dBA during nighttime hours (ten p.m. to seven a.m.). Noise standards of applicable local government general plans and ordinances should provide another set of thresholds, as these reflect local land use, residents' expectations and other local conditions. Where local standards are unavailable, or where there are special uses, such as parks, nature areas, recreation sites, schools, libraries, churches, or other especially sensitive uses, the federal guidelines should be considered.

Ldn < 55 dB	Outdoor activity interference and annoyance
Leq (24) < 55 dB	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
Ldn < 45 dB	Outdoor areas where people spend limited amounts of time, such as schoolyards, playgrounds, etc. Indoor activity interference and annoyance
Leq(24) < 45 dB	Indoor residential areas. Other indoor areas with human activities such as schools, etc.
Leq(24) < 70 dB	Hearing loss All areas.
Source: U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Section 4, Identified Levels of Environmental Noise In Defined Areas. March 1974. Leq(24) = the sound energy averaged over a 24-hour period. Ldn = the Leq with a 10 dB nighttime penalty	

Because these thresholds are, in part, derived from current noise levels, it is important that the EIS be based on recent monitoring of noise conditions in affected areas, rather than engineering estimates as were used in the BDCP/WaterFix EIR/S. The schedule for the EIS preparation should provide time for this monitoring, as would be provided for monitoring wildlife and fish if recent data were unavailable. To do otherwise would not reflect the best available science.

Noise impacts should be calculated for all construction activities, including construction-related traffic. These calculations should be based on the equipment proposed to be used in project construction, such as types of piles and pile drivers. To help public understanding of noise impacts, areas where cumulative project-related noise would exceed any of these thresholds, as applicable, should be identified as adversely affected. Individual structures adversely affected by this noise, as well as lands affected, characterized by land use, should be identified and mapped, so that the number of homes and businesses, and the acres of land harmed can be reported. When especially sensitive uses, such as nature areas, recreation sites, schools, day care facilities, libraries, or churches would be adversely affected, they should be named. Information about construction staging should be used to indicate the duration of these noise effects.

Do not defer noise mitigation. Plans to mitigate noise impacts should be proposed now, not deferred until after the project is approved, as was proposed in the BDCP/WaterFix EIR/S. To avoid noise that exceeds significance thresholds, these plans should deploy a full menu of measures, such as those cataloged by the Federal Highway Administration (https://www.fhwa.dot.gov/ENVIRONMENT/noise/construction_noise/handbook/handbook07.cfm). They should describe equipment that will be used to reduce noise and vibration, such as pressed in pile installations, vibratory pile drivers, or University of

Washington quiet piles. Residences, businesses, and schools that will be exposed to excessive noise should be eligible for funding from the applicant DWR/DCA to install sound insulation by replacing doors and windows, as well as adding insulation and ventilation systems where necessary, so that the interior noise level is reduced to 45 dB and achieves at least a 5 dB reduction from previous noise thresholds, as Los Angeles residents are offered under the LAX Master Plan.

Where noise cannot be reduced to acceptable levels, a voluntary acquisition program, plus relocation assistance should be offered to both owners and tenants in compliance with the Uniform Relocation Act.

At a minimum, these measures must comply with the Delta Plan's MMRP measures 15-1 through 15-3. Local agencies, community members, and affected residents and businesses should be involved in developing these measures. Because construction-related traffic strongly influences noise impacts, these measures should be coordinated with plans to manage construction-related traffic.

ENVIRONMENTAL JUSTICE

Promote environmental justice in the Delta. The Delta's multiracial population is often at as much risk as the fish who swim past their communities. Too many residents and workers have low incomes. To reach jobs and conduct other daily activities, many rely on Delta roads that will be impacted by project-related congestion. Others rely on water-dependent farms and tourism that the project will harm. Those who live or work in Hood, Clarksburg, Courtland, Locke, or Walnut Grove may have their lives disrupted by noise, traffic, and other disturbances for years by a project that benefits only others far away. All suffer the stress of decades of State water and ecosystem planning efforts that threaten to harm Delta resources and upend its way of life.

The ESP reported that the age and household composition of the Delta's population is younger and with larger families than is California as a whole. Over a quarter are children younger than 18 years old. In contrast, the population of the primary zone is composed primarily of older people without children, living in smaller households. Most Delta residents describe themselves as white or Hispanic, with the next largest ethnic groups being Asian, other races, and African American or black. About one-third describe themselves as Hispanic. Areas with concentrations of lower income residents include Stockton, Walnut Grove, Locke, Courtland, Clarksburg, and Hood.

The BDCP/WaterFix EIR/S did not adequately address how the project considers environmental justice in the Delta. To the extent that socio-economic considerations overlap with environmental justice issues, the EIS should include updated analysis of demographics, income levels, and other protected characteristics of communities that

the project impacts. Disruptions in community character, lost housing, noise, lost recreation opportunities, traffic that impedes travel to employment, damage to cultural resources, or other impacts that cause disproportional impacts on children, the aged, racial minorities, lower-income or other protected populations, should be highlighted.

Mitigate environmental justice impacts. The Commission has proposed measures to DWR for its EIR to avoid, reduce, or compensate for disproportionate impacts. The best way to do so would be to adopt the Commission's recommended alternative for continued through-Delta conveyance rather than building an isolated tunnel. Another way is to carefully mitigate community disruption, noise, traffic congestion, and damage to agriculture, housing, recreation, and cultural resources, as described in our comments on those issues. Other feasible measures could provide some project-related benefits for Delta residents. Some could be adapted from those adopted to protect southern Californians harmed by the LAX Master Plan.

1. Create and utilize existing resource centers to assist historically under-represented and at-risk Delta residents to find construction and other substantive jobs with the project during both its construction and operation. Also, create a community database of project-related job opportunities by coordinating data gathering, outreach, and counseling through the following:
 - Research and assess existing specialties and current capabilities of existing workforce to assist with targeted training and outreach efforts.
 - Develop and maintain a complete data base of minority contractors
 - Produce a data base of potential jobs and specialties needed to assist in targeted training and outreach efforts.
 - Produce a data base of potential jobs and specialties needed and disseminate the information through the communities affected and to minority business enterprises
 - Commit to hiring Delta-area residents to ensure that there will be benefit to the local population.
2. Include community participation, including a diverse group of residents, stakeholders, environmental scientists, and community leaders, in monitoring the implementation of the project's MMRP, including regular meetings, to ensure agency compliance and accountability.
3. Work with local school districts to provide educational and trade training for project-related careers, targeting students in affected communities to provide them with increased career opportunities in water management, engineering, and environmental sciences.
4. Work with local school districts to offer curricula about water, engineering, agriculture, environmental sciences, and Delta history and culture at elementary schools, middle schools, and colleges of affected communities.

Finally, other local, project-related benefits could be provided by contributing funds to the Delta Investment Fund (PRC section 29778.5) to invest in public facilities, expand and implement the Commission's Delta Community Action Plan project, or support agricultural, cultural, recreational, or tourism programs and projects.

U. S. Army Corps of Engineers
Sacramento Regulatory Division
ATTN: Mr. Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814-2922

Delivered by email to: Zachary.M.Simmons@usace.army.mil

SUBJECT: Comments on the NOI to Prepare EIS for Construction of Delta Conveyance Project Sacramento, San Joaquin, Contra Costa, and Alameda Counties

Dear Mr. Simmons:

The East Bay Municipal Utility District (EBMUD or District) appreciates this opportunity to offer comments in response to the Notice of Intent (NOI) for the Delta Conveyance Project (Project) Environmental Impact Statement (EIS). EBMUD is a public agency that supplies water and waste water treatment for parts of Alameda and Contra Costa Counties. EBMUD's water system serves approximately 1.4 million people in a 325-square-mile area of the East Bay.

In February 2020, EBMUD prepared a comment letter for the Department of Water Resources CEQA Notice of Preparation (NOP) for the Project (attached). In the letter we detailed specific concerns regarding the potential Project impacts that could affect the District's operations and resources. These concerns cover three primary areas:

1. Delta Levees and Mokelumne Aqueducts
2. Impacts to Eastside Tributary Fisheries including the Mokelumne Fishery
3. Impacts on Sacramento River Flows at the Freeport Regional Water Project Intakes.

Project construction can have both direct and indirect impacts on water supply for the District based on structure siting and timing of work. As noted in our NOP letter, the Mokelumne Aqueducts and Freeport Regional Water Project are critical components of the District's water supply conveyance system. Operational information, infrastructure details, and information on a future EBMUD Delta tunnel have been provided to DWR and are included in the attached letter. Analysis of construction impacts to water supply is a potential impact that must be assessed in the Project EIS. An analysis of tunnel alignment alternatives and construction timing must also include measures to protect migrating juvenile and adult Chinook salmon, as well as endangered Central Valley ESU steelhead. Each of the existing tunnel alignments traverses key migratory waterways for many fish species including salmon. Activities associated with construction (vibrations, noise, vehicle traffic, sediment or pollution discharge, etc.) can impact the ability for salmon to migrate through areas at the appropriate rate and speed.

Additionally, given that the Project will require a discretionary approval from EBMUD to cross the Mokelumne Aqueducts ROW, EBMUD is a responsible agency for the Project. *See* CEQA

Guidelines section 15381 (“For the purposes of CEQA, ‘responsible agency’ includes all public agencies other than the lead agency which have discretionary approval power over the project.”) While the scope of the EIS and associated permitting being developed by the U. S. Army Corps of Engineers is focused on potential impacts related to the construction of the Project, EBMUD believes that those impacts need to be viewed in context with the full range of potential impacts that must be assessed in the NEPA and CEQA processes. In the attached NOP letter you will find our comments regarding the scope and content of the environmental information regarding EBMUD’s expertise and areas of statutory/regulatory responsibility that must be considered and/or included in the Draft EIS.

We appreciate this opportunity to provide scoping comments on the Project. Should you have any questions about our comments or concerns feel free to contact me at (510) 287-2021 jose.setka@ebmud.com.

Sincerely,

A handwritten signature in black ink, appearing to read 'JDS', with a long horizontal flourish extending to the right.

Jose D. Setka
Environmental Affairs Officer

JDS

Attachment

February 14, 2020

Delta Conveyance Scoping Comments
Attn: Renee Rodriguez, Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Delivered by email to: DeltaConveyanceScoping@water.ca.gov

Subject: **EBMUD Scoping Comments on the Delta Conveyance Project**

Dear Ms. Rodriguez:

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to offer comments in response to the Notice of Preparation (NOP) for the Delta Conveyance Project (Project) Environmental Impact Report (EIR). EBMUD is a public agency that supplies water and provides wastewater treatment for parts of Alameda and Contra Costa Counties. EBMUD's water system serves approximately 1.4 million people in a 325-square-mile area of the East Bay.

EBMUD's main water supply is the Mokelumne River. Water is conveyed from the Mokelumne River to EBMUD's service area via the Mokelumne Aqueducts, which traverse a distance of approximately 90 miles from Pardee Reservoir in the east to Walnut Creek in the west and deliver much of EBMUD's water supply. These aqueducts cross directly through the Delta on land owned in fee-simple by EBMUD (Mokelumne Aqueducts Right-of-Way (ROW)). In their east-west crossing of the Sacramento-San Joaquin River Delta (Delta), the Mokelumne Aqueducts pass over Lower Roberts Island, Jones Tract, Woodward Island, and Palm-Orwood Tract. Please see Attachment 1 for a map of the route of the Mokelumne Aqueducts. As the Department of Water Resources (DWR) is well aware, EBMUD is planning its own tunnel through the Delta, following the current EBMUD Mokelumne Aqueduct alignment.

EBMUD, in partnership with the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS), shares responsibility for maintaining the salmon populations in the lower Mokelumne River, which runs 30 miles from the base of the Camanche Dam to the tidal influence of the Delta. The River is inhabited by a number of resident fish species and anadromous species, including Pacific lamprey, fall-run Chinook salmon, and steelhead. Through the partnership agreement between EBMUD, the CDFW, and USFWS, the lower Mokelumne River has seen a sustained success in salmon returns. Over the last five years returns have been well above average, and returns in 2017 were record setting.

EBMUD has invested substantial resources in the development and implementation of integrated resource actions that include: a fishery management plan; aggressive water conservation and reclamation; Delta levee protection adjacent to the Mokelumne Aqueducts; and optimization of water supplies under its Central Valley Project (CVP) contract and its Mokelumne River water rights. We expect DWR to fully assess and mitigate any potential impacts that the Project could

have on any aspect of EBMUD's integrated resource actions and the exercise of its water rights and entitlements.

Figure 1 of the NOP depicts the "Proposed Project Facility Corridor Options," showing two potential tunnel corridors that the Project would use to convey water from the northern Delta to the export pumps in the southern Delta. Either of these identified tunnel corridors would intersect with the Mokelumne Aqueducts ROW as it crosses the Delta from east to west.

Given that the Project will require a discretionary approval from EBMUD to cross the Mokelumne Aqueducts ROW, EBMUD is a responsible agency for the Project. *See* CEQA Guidelines Section 15381 ("For the purposes of CEQA, 'responsible agency' includes all public agencies other than the lead agency which have discretionary approval power over the project.") Below, please find our comments regarding the scope and content of the environmental information regarding EBMUD's expertise and areas of statutory/regulatory responsibility that must be included in the draft EIR.

Delta Levees and Mokelumne Aqueducts

It is the established policy of EBMUD to (1) allow the use of District aqueduct rights-of-way by others only under the terms of a written agreement, (2) prohibit uses incompatible with EBMUD's property rights, operation and maintenance of the aqueducts and distribution pipelines, or that potentially impact EBMUD's assets, (3) ensure that all uses of aqueduct rights-of-way accommodate future construction of replacement aqueducts, additional aqueducts, and potential improvements to the aqueducts, and (4) ensure construction from any proposed third party project that passes under, over, or through a fee-owned or easement established aqueduct right-of-way is evaluated in detail for potential impacts, and mitigations are identified and implemented to the level of no significant impact. EBMUD staff evaluates each proposed use of EBMUD's aqueduct rights-of-way for conformance with this policy and may approve or disapprove proposed uses in their sole discretion. Proposed uses not in conformance with the above-described policy will not be approved.

EBMUD's existing Mokelumne Aqueducts, crossing the Delta east to west (as shown in Attachment 1) intersect both tunnel corridor options, as illustrated in Figure 1 of the NOP. The Project threatens to expose the Mokelumne Aqueducts and their deep foundations to substantial adverse effects resulting from ground settlement, undermining, lateral earth movement, and construction vibrations. To assess these potential impacts, the EIR must analyze whether the construction or long-term operations of the Project, as designed, would:

- Interfere with the Mokelumne Aqueducts' deep foundations;
- Weaken or otherwise impact surrounding levees that protect the Mokelumne Aqueducts; and
- Reduce the structural stability of the aqueducts and levees through ground loss, tunnel seepage, or tunnel exfiltration.

At a minimum, completion of these analyses will require preparation of geotechnical investigations in the vicinity of potential Project crossings of the Mokelumne Aqueducts ROW to characterize ground conditions within the potential ROW crossings, identify the potential need for ground improvement, and aid in the avoidance of geologic risks associated with the construction of the Project and long-term risks of seismic induced liquefaction and settlement. EBMUD should be consulted and should have the opportunity to review and comment on these geotechnical investigations.

Any adverse impacts to the integrity of the aqueducts could cause significant environmental impacts and costs resulting from the potential suspension of water service that could occur if risks to EBMUD's facilities resulting from the Project are not appropriately mitigated. Thus, the EIR must explore mitigation measures such as designing the Project at an elevation to avoid direct interference with pile tips of the Mokelumne Aqueducts and future aqueduct foundation repair projects to ensure the ongoing integrity of the Mokelumne Aqueducts. Additional mitigation measures that should be explored in the EIR include, but are not limited to:

- Ground treatments to be completed prior to tunneling, such as jet grouting, permeation grouting, and potentially other methods to form a more stable ground mass not susceptible to ground movement;
- Implementation of monitoring to allow rapid detection of problems during construction within the Project's Mokelumne Aqueducts ROW crossing. At a minimum, this monitoring should include installation, data collection and maintenance of surface settlement points and instrumentation, that includes, but is not limited to extensometers, piezometers, and inclinometers. All EBMUD facilities in the vicinity of the ROW crossing should be monitored, as should groundwater levels, relevant levee elevations, and the ground surface within the Mokelumne Aqueducts ROW;
- Long-term monitoring of groundwater levels and ground settlement, and completion by the Project of any corrective actions necessary to protect the integrity of EBMUD facilities in the Mokelumne Aqueducts ROW that are impacted by the Project;
- Compensation of EBMUD for any damage to EBMUD facilities resulting from the Project, and for any loss of EBMUD water supply caused by the Project;
- Coordination with EBMUD regarding Project design activities related to the Project's Mokelumne Aqueducts ROW crossing that occur after EIR certification;
- Installation of a two-pass system with secondary watertight tunnel liner to control groundwater seepage and tunnel exfiltration in the vicinity of the Project's Mokelumne Aqueducts ROW crossing; and
- EBMUD review, comment, and approval of construction submittals and schedules for work within the Project's Mokelumne Aqueducts ROW crossing.

Based upon the limited amount of information provided in the NOP, these are just some of the potential mitigation measures that could be necessary to protect EBMUD's facilities from impacts caused by the Project.

The Project must also address a likely conflict with EBMUD's future cross-Delta tunnel (EBMUD Delta Tunnel). EBMUD owns the land and subsurface rights along the alignment of

the Mokelumne Aqueducts ROW, and is planning for the EBMUD Delta Tunnel with an outside bore diameter of approximately 20-feet to replace its existing above-ground aqueducts. Attachment 2 shows the extent of the EBMUD Delta Tunnel. The conceptual design for the EBMUD Delta Tunnel is complete, and based on an extensive geotechnical exploration program completed in 2019, that design places the EBMUD Delta Tunnel within an elevation range of -80 ft msl to -130 ft msl (NAVD88 vertical datum). The EIR must address this reasonably foreseeable conflict and the environmental impacts that could result from failure of either or both of these facilities if the Project is not adequately designed to avoid adverse impacts to EBMUD's Delta Tunnel. These impacts could include a vertical alignment (elevation) of the Project that directly interferes with the EBMUD Delta Tunnel, in addition to potential groundwater seepage, ground loss, undermining, settlement, heave, vibrations, and tunnel exfiltration during construction or long-term operations of the Project. As with the Mokelumne Aqueducts, if the Project adversely affects the integrity of the EBMUD Delta Tunnel, there could be significant environmental impacts and costs resulting from the potential suspension of water service that could occur.

EBMUD expects the Project to avoid tunneling within the -80 ft msl to -130 ft msl elevation range at the site of the Project's intersection with the EBMUD ROW and to also provide an appropriate additional clearance and mitigation measures between the two facilities to avoid impacts during construction and long term operations. The project should be designed to minimize potential impacts to the EBMUD Delta Tunnel, including designing the project at an elevation to avoid direct interference with the EBMUD Delta Tunnel. To protect the EBMUD Delta Tunnel from adverse impacts, Project design work will require geotechnical investigations similar to those described above to avoid impacts to the Mokelumne Aqueducts.

Mitigation measures similar to those described above to avoid adverse impacts to the Mokelumne Aqueducts should also be explored in the EIR as potential mitigation for impacts to the EBMUD Delta Tunnel (i.e., ground improvement, monitoring, coordination with EBMUD regarding Project design, and installation of a two-pass system with secondary watertight tunnel liner to control groundwater seepage and tunnel exfiltration).

EBMUD previously provided comments (Attachment 3) on DWR's Soil Investigation for Data Collection in the Delta – a data gathering effort associated with the Project. Attachment 3 provides a comprehensive discussion of EBMUD's concerns with respect to the Mokelumne Aqueducts and EBMUD's ROW. EBMUD is moving forward this year with additional planning and engineering work necessary to complete preliminary design for its Delta Tunnel, ultimately leading to completion of CEQA review for the project.

In the absence of adequate mitigation to protect EBMUD's existing and future aqueduct and tunnel facilities, EBMUD will be unable to grant discretionary approval for the Project to cross through Mokelumne Aqueduct ROW in accordance with its established policy governing use of the ROW. For that reason, these issues must be addressed in the EIR and cannot be deferred for later consideration.

Analysis of Impacts to Eastside Tributary Fisheries – including the Mokelumne Fishery

EBMUD began a comprehensive fisheries management program on the Mokelumne River in 1990. The program assumed its present form in 1998 with the development of a partnership between EBMUD, CDFW and USFWS, formally known as the Lower Mokelumne River Partnership. This Partnership was codified in the Joint Settlement Agreement (JSA), a multi-pronged settlement between EBMUD and the resource agencies designed to enhance protection of lower Mokelumne River fishery resources. The JSA includes a schedule of flows that EBMUD must release to the lower Mokelumne River. EBMUD's water releases vary depending on water year type and time of year and are tailored to the life stages of the anadromous fisheries. The JSA also requires riparian corridor habitat enhancement work which EBMUD has completed and continues to expand upon, including annual gravel enhancement projects in the Mokelumne River to successfully promote natural spawning, riparian restoration, the Murphy Creek dam removal and habitat improvement project, and construction of juvenile rearing side channels and floodplain habitat. EBMUD also conducts a detailed study and monitoring program of the anadromous fisheries and the riparian ecosystem. Monitoring activities include upstream migration counts; redd counts (salmon and steelhead nests), outmigration counts, and fish community surveys.

As a result of the JSA and the efforts of the Lower Mokelumne River Partnership, the annual average adult Chinook salmon escapement on the lower Mokelumne River has more than doubled since the implementation of JSA flow and non-flow measures, from a pre-JSA average of 3,636 fish to a post-JSA average of approximately 10,054 fish as of 2019. During the period between 2010-2019 annual returns have averaged 13,423, including a record return of 19,954 fall-run Chinook salmon in 2017. The continued string of above average returns is indicative of the fishery's positive response to the adaptive management actions implemented by EBMUD and the Lower Mokelumne River Partnership.

Even when California was mired in the 2012 to 2015 drought, which saw widespread altered flow regimes and poor ocean conditions, the lower Mokelumne River Chinook salmon population continued to demonstrate characteristics consistent with long-term sustainability. In fact, the Mokelumne River's salmon population is one of the few nearing the established Central Valley Project Improvement Act (CVPIA) fish doubling goal established by the USFWS Anadromous Fish Restoration Program (AFRP). The AFRP's established fish doubling goal for the Mokelumne River is 9,300 Chinook salmon. As of 2016, the Mokelumne River had achieved an AFRP population target of 8,976, which represents a higher percentage toward meeting the fish doubling goal than nearly all other Central Valley river populations.

In addition to the substantial returns to the river, Mokelumne River origin salmon significantly contribute to the Central Valley Chinook salmon population and associated commercial and recreational sport fisheries. Even though the Mokelumne is a small river that comprises approximately 1 percent of the Delta watershed, in 2018 Mokelumne River origin salmon made up approximately 43 percent of the ocean commercial and 33 percent of the recreational catch off the California coast.

EBMUD is concerned that the Project-related changes in flow and water quality will reverse the beneficial impacts of its JSA-related work to boost Mokelumne salmonid populations. The Project elements, including a change in diversion point from the south of Delta to the north of Delta region, will lead to significant changes in flow and transport through the Delta, both quantitatively and qualitatively. Changes in Delta Cross Channel (DCC) operations will also impact flow patterns. These changes in flow patterns may impact adult salmon escapement and straying. Changes in Delta outflow patterns, including changes in Old and Middle River (OMR) flows, especially in the April-June timeframe could impact juvenile salmonid outmigration characteristics, causing outmigrating juveniles to spend more time in the central and southern Delta where their likelihood of survival decreases. The Mokelumne-specific data on this phenomenon is limited, and DWR should complete additional studies to fully inform the Project EIR and subsequent operations. DWR should complete a long-term monitoring program designed to determine how migration of tagged Mokelumne River salmonids through the Delta is affected by operations of DWR's facilities under the existing conditions and under conditions expected as a result of the Project. DWR should also implement a trap-and-barge plan designed to determine whether a trap-and-barge program is a feasible means to improve survival rates and serve as a mitigating measure.

At a minimum, specific fishery related parameters to identify and assess in the EIR include:

- Changes in Delta inflows and outflows;
- Changes in directional flows, especially with respect to directional flows to the south of delta pumping facilities;
- Changes in residence time of water in the Central and South Delta;
- Changes in water quality constituents, including salinity and temperature; and
- Changes in Delta Cross Channel operations.

Not only must the EIR include an assessment of these parameters, but it must also analyze the extent to which Project-caused changes in the parameters will adversely impact the survival of Mokelumne-origin juvenile salmon, and whether those changes will increase straying of returning adult salmon. The Project EIR must fully analyze and disclose these potential effects. Adequate mitigation measures should be proposed, adopted, and implemented for any adverse impacts identified. Such mitigation measures could include:

- A DCC operational plan that keeps the gates closed for at least 15 days per month during the months of October and November to protect upmigrating Mokelumne-origin salmon from straying to other river systems, and coordinates those closures with Lower Mokelumne River pulse flows.
- An operational plan that reduces exports from the Jones and Banks Pumping Plants to maintain OMR flows between April 1 and May 31 that are protective of juvenile salmonid outmigration.

These requests for analysis and potential mitigation measures are necessarily limited by the lack of specificity in the NOP. Additional analysis and consideration of additional mitigation measures may be warranted when the project and its operation plan become better defined.

The Project proponents' proposal to defer the development of an operations plan is likely to impair meaningful CEQA review of potential impacts on the Mokelumne fishery. The NOP states that neither a final operations plan nor determination of CVP participation could be completed until after the CEQA process, SWRCB water right hearings, and ESA consultation and review have been completed. Without an operating plan it will be impossible to determine the Project's potential impacts and their significance on species populations, particularly migrating salmonids. Fundamentally, *how* the State Water Project and Central Valley Project will be operated under the Project will drive the Project's water quality and fishery impacts, because such operations directly affect the quantity and timing of water moving through the Delta, and the quantity and timing of flow through the Delta drive fishery impacts. Thus, without a sufficiently defined operations plan as part of the Project, adequate environmental analysis cannot be conducted.

This is not a new issue. A common theme during the SWRCB's 2016-2019 WaterFix hearing was that the operations plan and criteria were not sufficiently developed to a level that would allow for an accurate determination of species impacts. Likewise, the potential inclusion of the CVP would likely require changes to the operations, including the DCC gates. The adequacy of the Draft EIR will be highly dependent on clearly presented operation plans and criteria based on all possible alternatives, including CVP participation.

EBMUD would be pleased to provide independent verification of modeling results presented in the EIR. It would be helpful if the modeling assumptions and other information necessary to conduct fishery, water quality and operations analysis were readily available when the draft EIR is published.

Impacts on Sacramento River Flows at the Freeport Regional Water Project Intakes

The Project's proposed new intakes on the Sacramento River, a short distance downstream from the Freeport Regional Water Project (FRWP) intakes, will affect Sacramento River flows. EBMUD uses the FRWP to access critical sources of supplemental water supplies when Mokelumne River supplies are insufficient to meet the needs of our service area. When reverse flows occur on the Sacramento River near Freeport, discharged wastewater from Sacramento Regional Sanitation District (Regional San) flows upstream towards the Freeport Project intake. To prevent wastewater effluent from entering the Freeport Project intake, the Freeport Project must stop diverting water immediately when Regional San's wastewater effluent has traveled an average distance of 0.9 miles upstream from its discharge point. This is necessary to avoid the potential diversion of discharged municipal wastewater. The Freeport Project intake may not resume operation until the Sacramento River's flow returns to a normal downstream flow and the wastewater effluent zone has retreated downstream to a location not more than 0.7 miles upstream from Regional San's discharge point. Such shut downs have significant operational impacts on the FRWP and water supply and financial impacts to EBMUD and its customers. Modeling efforts undertaken in connection with the previous iteration of this Delta conveyance project demonstrated that Project operation may result in increased frequency of reverse flow conditions at Freeport sufficient to require a FRWP shutdown. The Project EIR must fully assess Project's flow impacts on the Sacramento River at and near Freeport, including the increased

Delta Conveyance Scoping Comments

February 14, 2020

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frequency of reverse flows that will trigger shut downs of the FRWP. Before this assessment is undertaken, we believe it will be necessary to define operational parameters of the project to a sufficient level of certainty to yield meaningful analytical results. If the assessment shows the Project may cause increased reverse flows at Freeport so as to affect FRWP operations, the Project proponents must provide mitigation for the associated significant water supply, financial, and operational impacts.

Finally, as a responsible agency under CEQA, EBMUD hereby requests a meeting with DWR under CEQA Guideline 15082(c). The meeting will assist DWR in determining the scope and content of the environmental information that EBMUD requires from the EIR to fulfill its responsible agency role.

We appreciate this opportunity to provide scoping comments on the Project. Should you have any questions about our comments or concerns, and to schedule the requested meeting with EBMUD, please contact Jose Setka at (510) 287-2021.

Sincerely,



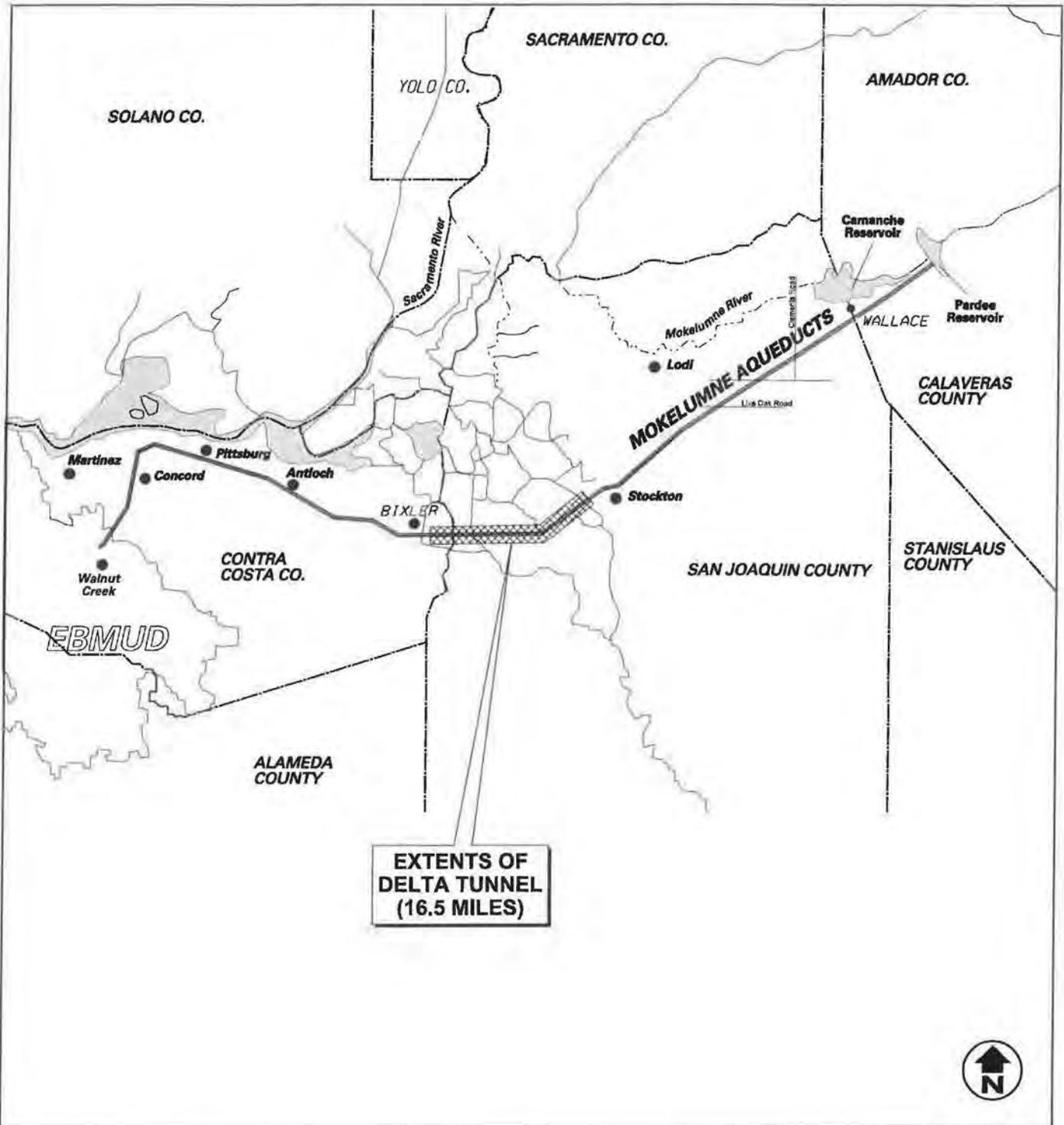
Michael T. Tognolini
Director of Water & Natural Resources

MTT:pgs

Attachments

cc: Karla Nemeth, California Department of Water Resources
Susan Tatayon, Delta Stewardship Council
Ernest Conant, U.S. Department of Interior, Bureau of Reclamation

Attachment 2 - Extent of the EBMUD Delta Tunnel



**EXTENTS OF
DELTA TUNNEL
(16.5 MILES)**



**PROJECT SITE
LOCATION MAP**

NOT TO SCALE

EAST BAY MUNICIPAL UTILITY DISTRICT

**PLANNING AND ENGINEERING
SERVICES FOR THE MOKELUMNE
AQUEDUCTS DELTA TUNNEL**

Attachment 3 - EBMUD Comments on MND



OLUJIMI O. YOLDOYE
DIRECTOR OF ENGINEERING AND CONSTRUCTION
(510) 267-1887
jimi.yolayo@ebmud.com

January 15, 2020

Ms. Katherine Marquez
California Department of Water Resources
1416 Ninth Street
Sacramento, CA 95814

SUBJECT: Comments on the Proposed Mitigated Negative Declaration (MND) for Soil Investigations for Data Collection in the Delta

Dear Ms. Marquez:

The East Bay Municipal Utility District (EBMUD) appreciates this opportunity to review and provide comments on the Department of Water Resources' (DWR) proposed Mitigated Negative Declaration (MND) for the "Soil Investigations for Data Collection in the Delta" (Project).

The proposed Project is one piece of a much larger future DWR project to construct new water conveyance facilities in and through the Delta. The soil investigation Project for which the MND was prepared would involve drilling and other investigative work in the Delta to measure physical properties of the soils, location of the groundwater table, and other typical geologic and geotechnical parameters. Information gleaned from this soil investigation will be used by DWR and the Delta Conveyance Design & Construction Authority (DCA) "to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance...."

In essence, the Project is the start of the next round of DWR efforts to build new Delta conveyance facilities. As such, it is critical that DWR thoroughly understand the potential conflicts any such conveyance project could have on EBMUD's existing and proposed Delta infrastructure. EBMUD's existing Mokelumne Aqueducts are a vital link in EBMUD's water supply system, providing the main source of EBMUD's water supply to its East Bay service area and its 1.4 million inhabitants. The Aqueducts traverse a distance of approximately 90 miles from Pardee Reservoir in the east to Walnut Creek in the west, and they cross directly through the Delta. In their east-west crossing of the Delta, the Mokelumne Aqueducts pass over Lower Roberts Island, Upper Jones Tract, Woodward Island, and Palm-Orwood Tract.

Any DWR Delta conveyance project will likely run north to south, bringing water from the Northern Delta to the State Water Project and Central Valley Project export pumps in the South Delta. Thus, a new Delta conveyance project will necessarily intersect with the Mokelumne Aqueducts as they cross the Delta. This intersection leads to likely conflicts with EBMUD's Mokelumne Aqueducts and EBMUD's planned tunnel, which is expected to follow the current EBMUD Mokelumne Aqueduct alignment.

During the California Environmental Quality Act (CEQA) process on an earlier iteration of a DWR Delta conveyance project, the BDCP/WaterFix Project, EBMUD provided DWR with extensive comments regarding that project's potential impacts on EBMUD's existing Mokelumne Aqueducts as well as EBMUD's proposed tunnel. (That BDCP/WaterFix Project included twin tunnels that would have crossed directly underneath the Mokelumne Aqueducts.)

DWR's prior efforts to advance the BDCP/WaterFix did not adequately assess its Project's impacts on the Mokelumne Aqueducts. Chapter 13.1.5 of the BDCP Conceptual Engineering Report erroneously concluded that "no conflicts are anticipated" with regard to the Mokelumne Aqueduct crossing, and Chapter 13.2.5 indicated that the crossings "will be evaluated at the preliminary design level in conjunction with EBMUD." Analysis of potentially significant environmental effects cannot be deferred to a future date. Such analysis must instead be completed during the earliest stages of planning and alternatives analysis.

A potential DWR Delta conveyance tunnel threatens to expose the Mokelumne Aqueducts and their deep foundations to substantial adverse effects resulting from soil settlement/subsidence, undermining, lateral earth movement, construction vibrations and vibration induced settlement. In addition, a Delta conveyance tunnel would also pose a significant risk of indirect environmental impacts resulting from the potential suspension of water service that could occur if impacts on EBMUD's facilities are not appropriately mitigated.

DWR must also address a likely conflict between its future Delta conveyance tunnel and EBMUD's future cross-Delta tunnel. EBMUD owns the land and subsurface rights along the alignment of the Mokelumne Aqueducts (the EBMUD ROW) and has begun planning for a cross-Delta tunnel to replace its existing above-ground aqueducts. EBMUD's design for its cross-Delta tunnel places the EBMUD tunnel within an elevation range of -80 ft msl to -130 ft msl (NAVD88 vertical datum). Any Delta conveyance tunnel proposed by DWR must address this reasonably foreseeable conflict. EBMUD expects the DWR Delta Conveyance Project to avoid tunneling within this elevation range at the site of the DWR tunnel's intersection with the EBMUD ROW and to also provide an appropriate additional clearance between the two facilities.

Finally, the Project will be taking place in the general vicinity of EBMUD's Mokelumne Aqueduct ROW which EBMUD holds in fee. Any projects being planned within or immediately adjacent to EBMUD property will need to follow EBMUD's Procedure 718 – Raw Water Aqueduct Right-of-Way Non-Aqueduct Uses. A copy of the procedure is enclosed for your reference.

Information Recently Submitted by EBMUD Related to Soil Investigations

EBMUD has already provided extensive geotechnical information to DCA. On September 3, 2019, DCA's Engineering Manager wrote EBMUD requesting deep subsurface data from EBMUD's work along the Mokelumne Aqueduct alignment. The information was requested as part of DCA's geotechnical investigations within the Delta. In response, on September 18, 2019, EBMUD provided DCA with its 2019 Geotechnical Data Report from EBMUD's Phase 1

Proposed MND Comments
January 15, 2020
Page 3

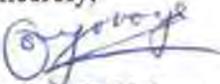
Geotechnical Exploration Program for its Delta Tunnel Project. Thus, EBMUD has shared its recent geotechnical report concerning the Delta crossing of the Mokelumne Aqueducts. We would like DWR to share with EBMUD the results of its work, including the Geotechnical Data Report, associated gINT files, and Geotechnical Interpretive Report.

Meeting

In DCA's September 3, 2019 letter to EBMUD, DCA offered to meet with EBMUD staff to discuss the current geotechnical exploration plans. In response to this offer, EBMUD's September 18, 2019 response requested such a meeting, but we have not yet received a follow-up communication to actually set the meeting. We would like to meet with DCA and DWR soon to understand both the immediate soil investigation Project and DWR's broader, overall Delta conveyance project. It is our hope that DWR engages with EBMUD to fully explore the potential impacts of its proposed single tunnel Delta conveyance project on EBMUD's Mokelumne Aqueducts and on EBMUD's proposed tunnel in the EBMUD ROW. In this way DWR's Delta conveyance project can be designed in a way to avoid such impacts so that EBMUD can continue to convey its vital Mokelumne River water supply to its East Bay service area.

We appreciate this opportunity to provide comments on the Project's Proposed MND. If you have any questions about these comments, please contact Paul Gilbert-Snyder at (510) 287-0432. To schedule a meeting with EBMUD, please contact Marshall McLeod at (510) 287-1078. Thank you for your consideration.

Sincerely,



Olujimi O. Yoloye
Director of Engineering and Construction

OOY:PGS:mb

Enclosure

cc: **Karla Nemeth, California Department of Water Resources**
Susan Tatayon, Delta Stewardship Council
Ernest Conant, U.S. Department of Interior, Bureau of Reclamation



tel: 916.455.7300 · fax: 916.244.7300
510 8th Street · Sacramento, CA 95814

October 20, 2020

SENT VIA EMAIL (Zachary.M.Simmons@usace.army.mil)

Zachary M. Simmons
United States Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street
Room 1350
Sacramento, CA 95814-2922

RE: Comments on Notice of Intent to Prepare an Environmental Impact Statement for Delta Conveyance Project

Dear Mr. Simmons:

These comments on the U.S. Army Corps of Engineers' ("Corps") Notice of Intent ("NOI") to Prepare an Environmental Impact Statement ("EIS") for the Delta Conveyance Project ("Project") are submitted on behalf of the Local Agencies of the North Delta ("LAND"). LAND is a coalition comprised of reclamation and water districts ("districts") in the northern geographic area of the Delta. As local agencies in the areas most impacted by the impacts of the Project, LAND member agencies seek to ensure the Corps thoroughly meets its duties under the National Environmental Quality Act ("NEPA") and the Clean Water Act, and provides complete analysis of the Project's far-reaching potentially significant impacts.

The Project is another attempt by the California Department of Water Resources ("DWR") to divert water directly from the Sacramento River, north of the Delta, and convey the water by underground tunnel to the south Delta State Water Project ("SWP") facilities. DWR's prior attempt, the California WaterFix, would have had devastating impacts on LAND member agencies, Delta communities, Delta ecosystems, and the Delta economy. This Project poses very similar dangers. At this early juncture in the environmental review process, it is critical the Corps fulfills its role as the lead agency under NEPA and the approving agency under the Clean Water Act. This can only occur if the Corps considers the whole of the Project.

I. The EIS Must Analyze Environmental Effects of Project Operation

A. The Corps Must Analyze Project Operations Because of the Necessity of the Section 404 Permit and Other Federal Approvals

The NOI unlawfully truncates the scope of the EIS for the Project. The NOI states that the scope of the Corps' NEPA review for operations of the Project is "limited to potential effects to navigation and long-term operations and maintenance of the modifications to Federal levees" and that the "scope does not extend to the potential downstream effects" Limiting NEPA review to only construction and a narrow aspect of Project operation is both legally deficient and illogical as a matter of policy. The Corps must evaluate all impacts of the Project's operations.

The Ninth Circuit Court of Appeals has made clear that the Corps' scope of environmental review under NEPA can exceed its statutory jurisdiction. In *White Tanks Concerned Citizens, Inc. v. Strock* (9th Cir. 2009) 563 F.3d 1033 (*White Tanks*) the Court stated:

The scope of the environmental review under NEPA, however, must be dictated by the environmental effects triggered by the filling of those washes. As expressed in the regulations themselves, the scope of analysis may be expanded well beyond the waters that provide the initial jurisdictional trigger. The Corps' scope of analysis must address the impacts of the specific activity requiring a [Corps] permit and those portions of the entire project over which the district engineer has sufficient control and responsibility to warrant Federal review Federal control and responsibility will include the portions of the project beyond the limits of Corps jurisdiction where the cumulative Federal involvement of the Corps and other Federal agencies is sufficient to grant legal control over such additional portions of the project.

(*Id.* at 1039–1040, citing 33 Code of Federal Regulations ("CFR"), Pt. 325, Append. B, §§ 7(b)(1), 7(b)(2)(A); see also *Save Our Sonoran, Inc. v. Flowers* (9th Cir. 2005) 408 F.3d 1113, 1121-1124 (*Sonoran*).) Where a development cannot go forward without a permit, then the Federal involvement is sufficient to grant Federal control and responsibility within the meaning of NEPA. (*White Tanks, supra*, 563 F.3d at 1040; *Sonoran, supra*, 408 F.3d at 1121-1124.) Here, the Corps' issuance of the Section 404 permit is critical, and DWR could not go forward with the Project without obtaining it.

In a similar fashion, the Ninth Circuit has emphasized that the degree to which the Federal action, (here, permitting under the Clean Water Act), pervades the Project itself is

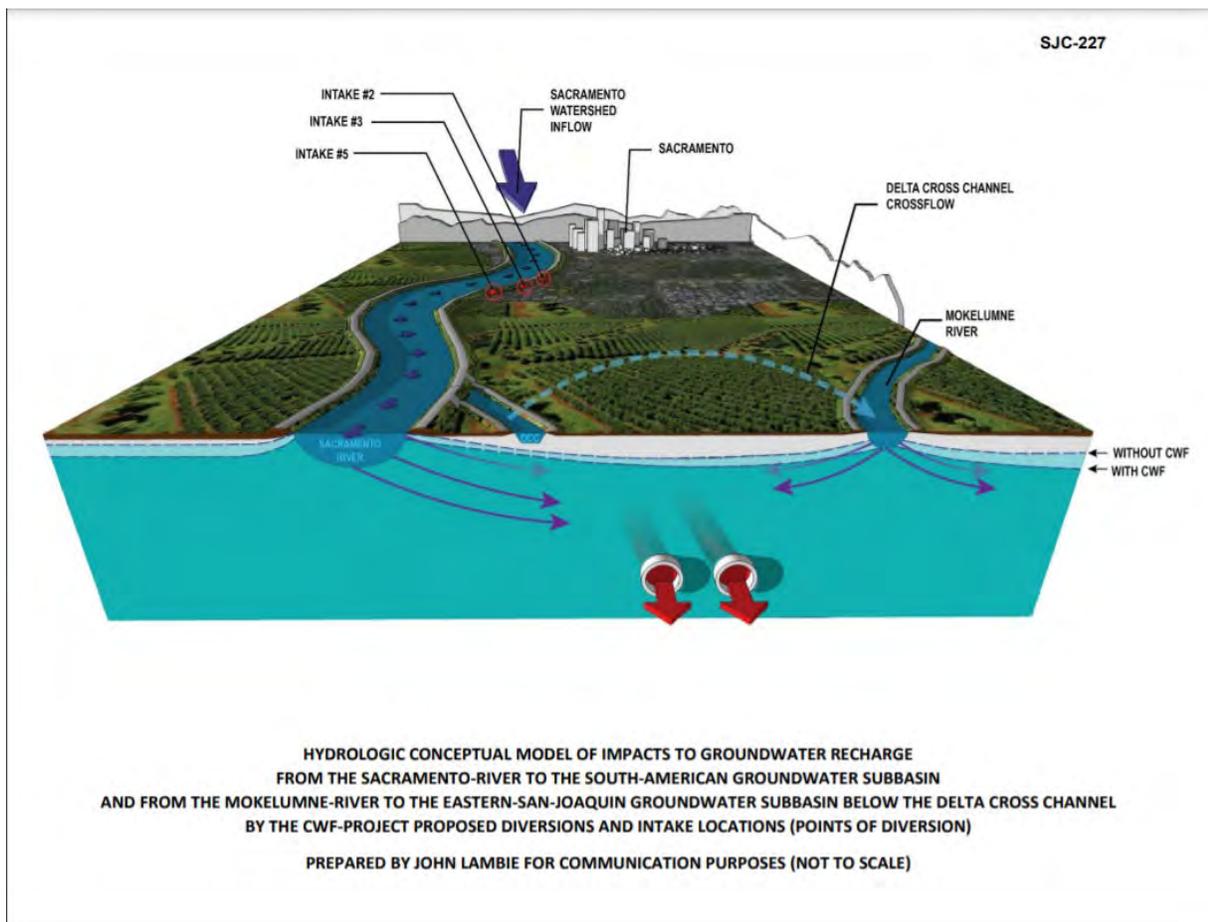
a critical inquiry for determining the scope of the environmental review. (See *Sierra Club v. United States Army Corps of Engineers* (D.C. 2013) 990 F.Supp.2d 9, 36; see *White Tanks, supra*, 563 F.3d at 1040; *Sonoran, supra*, 408 F.3d at 1121-1122.) The applicable NEPA regulations are in accord. (33 CFR, Pt. 325, Append. B, §§ 7(b)(1), 7(b)(2)(A).) In *White Tanks* and *Sonoran*, the Federal actions were also Section 404 permits. (*White Tanks, supra*, 563 F.3d at 1036; *Sonoran, supra*, 408 F.3d at 1118.) In both cases the jurisdictional waters were “dispersed throughout the site, so that any construction on the site would be impossible without affecting the waters, and a Section 404 permit [was] required for any building.” (*White Tanks, supra*, 563 F.3d at 1040.) Here the Project’s operation is innately connected to jurisdictional waters as well as the Delta levee system. The NOI itself recognizes the Project’s ongoing potential effects on Delta levees, meaning the Corps would in fact have jurisdiction over operations. The Federal Action here, even more so than *White Tanks* and *Sonoran*, pervades the Project, necessitating a wider scope of environmental review.

Moreover, the Project is subject to numerous Federal approvals, making the “cumulative Federal involvement ... sufficient to grant [the Corps’] legal control over” operations. As explained in the NOI, the Environmental Protection Agency, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service will be participating as cooperating agencies in the preparation of the EIS due to their respective approval authorities over the Project. These other Federal approvals and consultations further require the scope of the Corps’ environmental review to include Project operations.

B. Project Operations Would Impact Other Areas Under the Corps’ Jurisdiction

The Corps does have jurisdiction over Project operations, because Project operations would have the potential to impact navigable waters of the United States. In a November 9, 2015 letter to the Corps, the United States Environmental Protection Agency (“EPA”) stated that the California WaterFix, a very similar project, would result in permanent loss or conversion of waters of the United States, including tidal marsh and forested wetlands as well as affect the direction, volume, and timing of freshwater flows through the Delta. (Exhibit 1.) The Corps’ jurisdiction pursuant to section 404 of the Clean Water Act covers the navigable waters of the United States. (33 United States Code (“USC”), § 1344; 33 CFR, § 320.2(g).) The Delta is also an aquatic resource of national importance, prioritized by the EPA under the National Estuary Program to attain and maintain both water quality and protection of indigenous wildlife. Thus, the Delta is a special aquatic site under 40 CFR section 230.40(a). As the EPA recognized with California WaterFix, operation of the Project would undeniably have potentially adverse effects on the Delta as an ecosystem.

Moreover, Project operations would also reduce flows and water levels in the Sacramento River. (See Exhibit 2, State Water Resources Control Board Testimony of John Lambie.) Operation of the Project would significantly reduce the quantity of surface water to a degree that groundwater elevations would also be lowered due to reduced recharge. (*Id* at p. 5.) In turn, significant reductions of groundwater elevations could impact wetlands that are inundated or saturated by groundwater. (40 CFR § 2301.41.) Significant reductions to the rivers’ “wetted perimeters” (the circumference of a river’s cross section in contact with its bed and banks) (Exhibit 2, p. 6) would also have impacts on wetlands over which the Corps has potential jurisdiction as waters of the United States. (40 CFR § 230.41(a)(2) (wetlands adjacent to open water generally constitute the transition to upland).)



Thus, operation of the Project also implicates the Corps’ and other federal agencies’ jurisdiction, and must be analyzed in the EIS.

II. The Corps Must Require That DWR Considers a Wider Range of Alternatives than Initially Presented by DWR

The Corps cannot issue a Section 404 permit if a practicable alternative exists that would have a less adverse impact on the aquatic ecosystem, or the Least Environmentally Damaging Practicable Alternative (“LEDPA”). (40 CFR § 230.10(1); *Friends of Santa Clara River v. United States Army Corps of Engineers* (9th Cir. 2018) 887 F.3d 906, 911 (*Santa Clara*); *Bering Strait Citizens for Responsible Resource Development v. U.S. Army Corp of Engineers* (9th Cir. 2008) 524 F.3d 938, 955.) The range of alternatives is determined by the nature and scope of the proposed action, and the permit applicant must set forth those alternatives necessary to permit a reasoned choice. (42 United States Codified Acts (“USCA”), § 4332; 40 CFR §§ 1501.4, 1508.9(a)(1), 1508.9(b); see *Santa Clara, supra*, 887 F.3d at 912.) The permit applicant may not define the project purpose narrowly “in order to preclude the existence of any alternative sites and thus make what is practicable appear impracticable.” (*Ibid*; quoting *Sylvester v. U.S. Army Corps of Engineers* (9th Cir. 1989) 882 F.2d 407, 409.) The Corps is required to modify a project’s purpose if it is unduly restricted.

Here, DWR’s stated purpose and objectives for the Project are not limited on their face. Rather, the limitation on the Project alternatives has been baked into DWR’s entire proposal. The “Purpose and Project Objectives” section of DWR’s Notice of Preparation of an Environmental Impact Report (“NOP”) for the Project does not plainly state that the project must include large intakes on the Sacramento River and a tunnel to convey water to the south Delta SWP facilities. (See NOP, pp. 1-2.) But the description of the Project appears to entirely rule out any alternatives that do not include those components. (See NOP, pp. 2-3.)

DWR’s purported objectives are to increase the SWP’s climate resiliency, flood resiliency, water delivery reliability, and operational flexibility. None of these objectives necessitate construction of new intakes or boring a tunnel. Yet DWR has entirely eliminated the possibility of any no tunnel alternatives,¹ while also rejecting other alternatives that would not require intakes on the Sacramento River, such as the Western Delta Intake² and the Garamendi Deep Water Shipping Channel.³ The Corps should

¹ At a July 22, 2020 presentation, DWR disclosed that it would not consider any alternatives to a tunnel, available at: <https://dcdca.org/wp-content/uploads/2020/07/2020-07-22-SECMetingPresentation.pdf>, slides 9-30.

² See *Fix CA Water*, available at: <http://www.fixcawater.com/solution2.html>.

require that DWR consider a wider range of Project alternatives that meet the stated purpose and objectives. This way, the Corps can ensure the LEDPA is the permitted project.

III. EIS Must Consider Flood Impacts of the Project

General statements about effects and risks do not constitute a “hard look;” impact analysis must contain quantified or detailed information. (*N. Plains Res. Council, Inc. v. Surface Transp. Bd.* (9th Cir. 2011) 668 F.3d 1067, 1076.) The hallmarks of a hard look” are thorough investigation into environmental impacts and forthright acknowledgment of potential environmental harms. (*Nat’l Audubon Soc’y v. Dep’t of the Navy* (4th Cir. 2005) 422 F.3d 174, 186 (citing *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 50 (1989).)

When the California WaterFix was under environmental review, LAND was concerned that DWR and the Bureau of Reclamation overlooked impacts to the Delta levee system. The California WaterFix was not supported by bathymetry, flow modeling, or any other substantive analysis of the impacts on flood water conveyance or levees. Constructing the intakes and diverting thousands of cubic feet of water per second during Project operation would alter water flow and hydraulics in the Sacramento River and sloughs throughout the Delta. Significant changes to water flow and hydrology could damage Delta levees over time and disrupt flood control. The environmental review documents for the California WaterFix ignored these potential impacts. The Corps must take a hard look at these potential impacts to ensure a complete and thorough investigation of the Project’s potential environmental harms.

IV. Conclusion

Ensuring and increasing SWP resiliency and flexibility need not be mutually exclusive from protecting local water supply, flood control, and ecosystems. As the NEPA lead agency, the Corps must consider a reasonable range of alternatives, and any project that the Corps ultimately approves must be the LEDPA. The Corps must also review the entire Project, including operations, because the Project cannot go forward

³ See *New Map of Garamendi’s Water Plan, Op-Ed in Sac Bee on ‘Little Sip, Big Gulp’ Alternative to Twin Tunnels*, available at: <https://garamendi.house.gov/press-release/new-map-garamendi-s-water-plan-op-ed-sac-bee-little-sip-big-gulp-alternative-twin>.

Zachary M. Simmons
United States Army Corps of Engineers
Sacramento Regulatory Division
October 20, 2020
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without issuance of a Section 404 permit and other Federal approvals. We request that as the Corps prepares the EIS, it consider a wider scope for what types of alternatives could meet the Project's objectives and include the full range of the Project's impacts during construction and cooperation. Thank you for considering these comments.

Very truly yours,

SOLURI MESERVE
A Law Corporation



By:

Osha R. Meserve

ORM/wra

cc: Congressman John Garamendi



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Office of the General Manager

Via Email

October 20, 2020

U.S. Army Corps of
Engineers, Sacramento Regulatory
Division, Attn: Mr. Zachary Simmons,
1325 J Street, Room 1350, Sacramento,
CA 95814-2922
Zachary.M.Simmons@usace.army.mil

Dear Mr. Simmons:

Comments on Notice of Intent To Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

The Metropolitan Water District of Southern California (Metropolitan) is pleased to provide input to the National Environmental Policy Act (NEPA) scoping process for the single-tunnel Delta Conveyance Project now being advanced by the project applicant, the California Department of Water Resources (DWR), under the direction of Governor Gavin Newsom.

Metropolitan is a public agency that operates as a cooperative of 26 member agencies, which also are public agencies themselves.¹ There are 14 municipalities, 11 municipal water districts and 1 county water district, which provide water at wholesale and/or retail for municipal, domestic, industrial and agricultural use. Metropolitan sells wholesale, supplemental water and provides other water services to its member agencies. Its member agencies, or their own member agencies serve nearly 19 million people throughout the Southern California counties of Ventura, Los Angeles, Riverside, San Bernardino, Orange, and San Diego.

Metropolitan depends on imported water from the State Water Project (SWP), which DWR has proposed to modernize with the addition of the Delta Conveyance Project. Metropolitan receives water from the SWP under a long-term contract with DWR and is the largest contractor on the SWP system, receiving nearly 46 percent of the SWP's supplies. Water provided by Metropolitan makes up 48 percent of the water used within its service area. Although the

¹ The 26 member cities, municipal water districts and county water district of Metropolitan are: City of Anaheim, City of Beverly Hills, City of Burbank, City of Compton, City of Fullerton, City of Glendale, City of Long Beach, City of Los Angeles, City of Pasadena, City of San Fernando, City of San Marino, City of Santa Ana, City of Santa Monica, City of Torrance, Calleguas Municipal Water District, Central Basin Municipal Water District, Eastern Municipal Water District, Foothill Municipal Water District, Inland Empire Utilities Agency, Las Virgenes Municipal Water District, Municipal Water District of Orange County, San Diego County Water Authority, Three Valleys Municipal Water District, Upper San Gabriel Valley Municipal Water District, West Basin Municipal Water District, and Wester Municipal Water District of Riverside County.

amount varies from year to year, on average Metropolitan receives approximately 59-percent of its imported water supplies from the SWP; its other major source of imported supply is Metropolitan's Colorado River Aqueduct.

As the largest SWP contractor, Metropolitan has a strong interest in ensuring that the Delta Conveyance Project environmental review process being conducted by DWR under the California Environmental Quality Act (CEQA) and the U.S. Army Corps of Engineers (Corps) under NEPA occur in a coordinated manner, consistent with both statutes and their implementing regulations. While it would be ideal if the Corps and DWR prepared a joint Environmental Impact Report EIR/Environmental Impact Statement (EIS), Metropolitan recognizes that a joint document is not required under CEQA or NEPA. Instead, the Corps has stated its intent to complete the EIS in a parallel process. Metropolitan urges the Corps to work closely with DWR to avoid duplicative or inconsistent analyses of the project's environmental impacts, especially in light of the extensive outreach and community input on the project that is informing the planning process. Incorporating analysis from the EIR and supporting documents by reference or otherwise relying those documents to the extent permitted under NEPA will facilitate efficient and consistent analysis.

Overall, Metropolitan supports the proposed project sized to convey 6,000 cubic-feet-per-second (cfs) of water supply for agencies like Metropolitan that participate in the SWP. While it is appropriate for the environmental process to examine a range of sizes, the project and its alternatives must be cost effective; otherwise, the project may not receive the support needed from the SWP contractors. Cost-effectiveness should be included in the purpose and need for the project. In addition, Metropolitan believes a 6,000 cfs facility has the greatest possibility of meeting that fundamental objective, as previous analyses in the BDCP/California WaterFix have shown that smaller facilities do not proportionately reduce costs because opportunities to sufficiently capture high stormwater flows cannot be achieved; instead, the costs as compared to proportion of benefits goes up sharply as the capacity is reduced significantly below 6,000 cfs. For this reason, the EIS should not evaluate alternative capacities that the potential project participants would have no interest in funding because the economic benefits and cost effectiveness would not exist.

In addition, the prior analyses of the California WaterFix Project demonstrated that at the conveyance capacities evaluated in that EIR, the ability to correct adverse reverse flow patterns in the south Delta that affect sensitive fish species increase with increased capacity. We agree with DWR's Notice of Preparation that an alternative with a capacity of up to 7,500 cfs should be evaluated in the EIR. A 7,500 cfs facility could also help accommodate Central Valley Project (CVP) use, if CVP contractors and the Bureau of Reclamation ultimately participate in the Delta Conveyance Project. Thus, the EIS should analyze a 7,500 cfs facility as well.

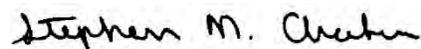
Metropolitan also supports DWR's identification of the two corridors to be examined for the tunnel facility, a "central" route similar to that of California WaterFix and an "eastern" route closer to Interstate 5. Examining these two corridors shows great promise in identifying an ultimate route that minimizes potentially significant impacts to the Delta region, and the Corps should likewise focus the EIS analysis on those corridors.

During the BDCP/California WaterFix scoping process, the CEQA and NEPA lead agencies received requests to study alternatives that emphasized local water supply development in lieu of any new Delta conveyance or in conjunction with a much smaller facility. Then and now, under NEPA, alternatives to the project evaluated in the EIS must meet the fundamental project objectives, including the goal of developing new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of SWP water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with California's Water Resilience Portfolio. New conveyance is needed to address anticipated sea level rise and other reasonably foreseeable consequences of climate change and to address seismic risks to SWP supplies from the Delta. Projects that improve local water supply reliability, for example, while essential to California's overall water reliability picture, are not alternatives to the proposed Delta Conveyance Project under NEPA because they do not meet the project's fundamental objectives; objectives which Metropolitan supports.

Finally, Metropolitan is a potentially Responsible Agency under CEQA for this project by virtue of its role as a potential participant, and it has considerable scientific, environmental planning and legal expertise in evaluating the environmental impacts of new Delta water conveyance infrastructure. Therefore, we look forward to consulting with the Corps in developing the EIS for this important project.

Thank you for considering these comments.

Sincerely,



Stephen N. Arakawa
Manager, Bay-Delta Initiatives
The Metropolitan Water District of Southern California
700 North Alameda Street, Los Angeles, California 90012

cc: Carrie Buckman (via email only)
California Department of Water Resources
Assistant Deputy Director, Delta Conveyance Office

Jennifer Pierre (via email only)
General Manager
State Water Contractors



October 20, 2020

Zachary Simmons, Project Manager
U.S. Army Corps of Engineers, Sacramento District
1325 J Street, Room 1350
Sacramento, CA 95814-2922

Sent via email to: Zachary.M.Simmons@usace.army.mil

RE: Comments on Notice of Intent To Prepare an Environmental Impact Statement for construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA (Public Notice SPK-2019-00899)

Dear Mr. Simmons:

On behalf of the Natural Resources Defense Council, which has more than 3 million members and activists, more than 450,000 of whom are Californians, I am writing to provide comments in response to the Notice of Intent to prepare an EIS for the proposed Delta Conveyance Project (“Project”), which has been identified as Public Notice SPK-2019-00899. As discussed below, the NOI fails to comply with NEPA because it improperly limits the scope of environmental review of the Project, and because the NOI fails to identify the purpose and need for the project. As a result, the NOI should be revised and recirculated to comply with NEPA. In addition to providing these scoping comments, NRDC requests to be included on the electronic notification list for this Project.

I. The Proposed Scope of the Environmental Review in the EIS Violates NEPA

Contrary to the limited scope of environmental review identified in the NOI, NEPA and the Clean Water Act require that the Army Corps of Engineers (“Army Corps” or “Corps”) analyze the potential environmental impacts of the whole of the Project in the EIS. The scope of this EIS cannot be limited to exclude analysis of impacts to fish and wildlife from operations of the Project because: (1) this 404 permit is integral to the entire project, and the other environmental impacts would not occur but for this 404 permit; (2) the Army Corps must consider the secondary impacts of the Project to waters of the United States, which includes the broader Bay-Delta ecosystem, before it can issue a 404 permit for the Project; (3) the operations of the Project will necessarily alter the coordinated operations of the federal Central Valley Project (“CVP”) and State Water Project (“SWP”), and NEPA review is required before changed operations could be implemented.

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The NOI indicates that the scope of the EIS will be limited and will not consider the potential adverse impacts of operations of new Delta Conveyance (including potential impacts to fish and wildlife), stating that:

the scope of the USACE NEPA review for operations of the new facilities is limited to potential effects to navigation and long-term operations and maintenance of the modifications to federal levees. The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.

Department of the Army, Corps of Engineers, Notice of Intent to Prepare an Environmental Impact Statement for construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA, 85 Fed. Reg. 51420, 51421 (Aug. 20, 2020). As a result, the Army Corps' proposed EIS would exclude analysis of potential impacts to fish and wildlife from operations of the Project. The proposed scope of the EIS would violate NEPA.

First, the Ninth Circuit Court of Appeals has rejected the approach of limiting the scope of NEPA review to issues within the scope of the Corps' Clean Water Act jurisdiction, the stated rationale in the NOI for limiting the scope of environmental review of the Delta conveyance project. *White Tanks Concerned Citizens, Inc. v. Strock*, 563 F.3d 1033, 1039 (9th Cir. 2009). Instead, "where a development could not go forward without a permit," the NEPA review must consider the environmental impacts of the whole project, not just those elements of the project that are within the Corps permitting jurisdiction under the Clean Water Act. *Id.* at 1039-40, 1041-42.

Here, there is no question that the Army Corps permits for modification of the levees and dredge and fill of waters of the United States are essential for the Delta conveyance project to move forward. Construction of the Project's proposed fish screens and diversion facilities must occur within waters of the United States, and without those elements the entire project could not move forward.¹ Therefore, as in *White Tanks Concerned Citizens*, the Delta conveyance project could not go forward without the Army Corps' permits, and the EIS must evaluate the environmental impacts of the whole project.

The Corps' proposed scope of NEPA review in the NOI also violates the agency's NEPA regulations. Those regulations recognize that environmental review under NEPA may be required to be more extensive than the Corps' regulatory jurisdiction, for instance in situations "where the environmental consequences of the larger project are essentially products of the Corps permit action." 33 U.S.C. Pt. 325, App. B, §§ 7(b), 8(d). The regulations also identify factors demonstrating whether sufficient federal control and responsibility exist to require

¹ Indeed, as the NOI admits, "Proposed project elements requiring a permit under Section 404 and/or Section 10 include the construction of the intakes within the Sacramento River and associated intake facilities which include setback levees, two tunnel shafts, and temporary construction work areas." 85 Fed. Reg. at 51421. The entirety of the Project could not occur but for these elements of the Project, and therefore the entire Project could not move forward without these permits.

expanding the scope of the NEPA review. *Id.*, § 7(b)(2). Several of these factors are met with the Delta Conveyance project, including the fact that the project and its effects will affect waters of the United States throughout the Bay-Delta that are within the Corps jurisdiction, the fact that the permit is not “merely a link” but is necessary for the entire Project to move forward, and the fact that the project will require federal actions by the U.S. Fish and Wildlife Service and National Marine Fisheries Service to issue biological opinions under the Endangered Species Act. *Id.* Moreover, as discussed further below, the Project will necessarily affect the coordinated operations of the CVP and SWP, further demonstrating the extensive cumulative federal involvement in this Project.

Because these permits are essential to the Project, the EIS must consider the potential environmental impacts of the entire Project, and the scope of the EIS cannot be limited as proposed in the NOI.

Second, the Army Corps’ regulations implementing section 404 of the Clean Water Act similarly compel the Corps to evaluate the impacts of the whole Project. These regulations require the Corps to consider the secondary impacts of the Project on aquatic ecosystems, which are impacts that are associated from the discharge of dredged or fill materials but do not result from the actual placement of the dredged or fill materials. 40 C.F.R. § 230.11(h). The Army Corp’s regulations explicitly include the effects of operations of a project as secondary effects that must be considered. *Id.* § 230.11(h)(2) (“Some examples of secondary effects on an aquatic ecosystem are fluctuating water levels in an impoundment and downstream associated with the operation of a dam...”). Here, the effects of the operations of the Delta Conveyance Project are plainly secondary effects for which the Corps must evaluate and make factual determinations. The Corps must evaluate these secondary effects in the EIS.

Indeed, as the U.S. Environmental Protection Agency pointed out to the Corps in 2015, the Bay-Delta “is an aquatic resource of national importance,” and the operations of the California WaterFix project “will affect the direction, volume, and timing of freshwater flows through the Delta. As the Bay Delta ecosystem has suffered significant degradation, it is essential that the direct and secondary effects of the proposed discharges avoid further contribution to its degradation.” *See* Letter from Jared Blumenfeld to Colonel William J. Leady dated Nov. 9, 2015. Designation of the Bay-Delta as an aquatic resource of national importance requires a higher level of review for projects that may affect the Bay-Delta. This Project will likewise affect the direction, volume and timing of freshwater flows through the Delta, and the EIS must analyze the potential secondary effects of the proposed discharges.

In addition, other Corps regulations require a broader NEPA analysis that considers the effects of operations of the Project. For example, the Corps is required to identify the Least Environmentally Damaging Practical Alternative (“LEDPA”) before issuing a 404 permit for this project, and the NEPA document must analyze the alternatives to support the Corps’ factual finding regarding LEDPA. 40 C.F.R. § 230.10. In order to make a reasoned decision which alternative is the LEDPA, the EIS must consider the effects of the whole Project, including the effects of operations of the Project on fish and wildlife. Finally, the Corps’ regulations explicitly require that for all Department of the Army permits, the “decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the

proposed activity and its intended use on the public interest.” 33 C.F.R. § 320.4(a)(1). This public interest review explicitly requires that:

All factors which may be relevant to the proposal must be considered including the cumulative effects thereof: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people.

Id. An EIS whose scope only excludes consideration of the effects of the operation of the Project would be inconsistent with this broad obligation to consider the public interest. Instead, the EIS must analyze the effects of the entire Project, including operations of the project on fish and wildlife, in order for the Corps to take a hard look at the environmental effects of issuing these permits, in light of its regulatory obligation to consider the probable impacts, including cumulative impacts, on the public interest.

Third, the EIS must consider the full range of environmental impacts of the proposed project, including the effects of operations on fish and wildlife, because the Project will necessarily affect the coordinated operations of the CVP and SWP. The construction and operation of new facilities will necessarily result in changes to the coordinated operations of the CVP and SWP as approved by the Bureau of Reclamation in its 2020 Record of Decision, including as a result of the issuance of biological opinions regarding operations of the Project by the U.S. Fish and Wildlife Service and National Marine Fisheries Service. The Bureau of Reclamation could not implement those changed operations, including the biological opinions, without first analyzing the effects of changed operations pursuant to NEPA. *San Luis & Delta Mendota Water Authority v. Jewell*, 747 F.3d 581, 646-48 (9th Cir. 2014).

In addition, the project description in the California Department of Water Resources’ Notice of Preparation explicitly includes potential usage of the Delta tunnel by the CVP, and it also includes a potential connection to the Jones Pumping Plant in the proposed facility description.² The EIS must consider the effects of operations of the Project in the context of the coordinated operations of the CVP and SWP to evaluate the potential environmental impacts if the CVP participates in the Project. Similarly, it is reasonably foreseeable that CVP water will be transferred through the Project, and the likely environmental impacts of such water transfers necessitates environmental review of operations of the Project under NEPA. Analysis of environmental impacts of operations is also necessary to evaluate the potential impacts of the Project on the operations of the CVP, including potential reductions to the CVP’s water supply and/or adverse impacts to fish and wildlife that would require additional mitigation measures by the CVP.

² The NOI fails to include this information regarding the potential linkages of the Project with the CVP. As a result, the NOI appears to lack an accurate project description.

In conclusion, the scope of NEPA review identified in the NOI is unlawful, and the EIS must analyze the full effects of the operations of the Project, including the effects of operations on fish and wildlife, water supply, and water quality.

II. The NOI Fails to Identify the Project Purpose and Need

In addition to identifying an unlawfully narrow scope of environmental review for the draft EIS, the NOI also fails to identify the Project's proposed purpose and need. The purpose and need statement is an important part of the NEPA process because it serves as the basis for evaluating the reasonable range of alternatives that must be considered. As noted in the attached comments regarding the scope of environmental review under the California Environmental Quality Act, the purpose and need statement cannot be narrowly defined to exclude alternatives that reduce water diversions from the Delta in order to protect and restore the health of the estuary. *See* enclosure. The NOI should be revised to include a purpose and need statement and recirculated for public review.

III. The DEIS Must Consider a Broad Range of Potential Environmental Impacts

In order to adequately analyze and take a hard look at the potential environmental impacts of the Project, the DEIS must address the range of potential impacts identified below. In addition, because the Project is anticipated to operate for decades, the Army Corps' analysis of environmental impacts must incorporate the effects of climate change on operations, including the effects of climate change on hydrology, water temperatures and air temperatures, in both the near term (2030) and longer term.

- A. *Effects on Fish and Wildlife Upstream of the Delta:* The DEIS must consider potentially significant effects of upstream operations of the CVP and SWP in light of climate change, including:
- a. the effects of changes in instream flows on survival of salmon and other fish migrating downstream;
 - b. the effects of water temperatures on salmon and other fish species that spawn and rear below dams, as a result of SWP/CVP reservoir storage and releases;
 - c. the effects of redd dewatering on salmon as a result of CVP/SWP operations.
- B. *Effects on Fish and Wildlife in the Delta:* The DEIS must consider potentially significant effects of CVP and SWP operations in the in light of climate change, including:
- a. The effects of entrainment, salvage and loss of all four runs of Chinook salmon, Delta Smelt, Longfin Smelt, steelhead, sturgeon, and other native fish and wildlife;
 - b. The effects of SWP/CVP operations on survival of all four runs of salmon through the Delta, including effects of Old and Middle River flows, import: export ratios, Delta Cross Channel gate operations, and Sacramento River flows at Freeport;
 - c. The effects of increased entrainment and loss of sediment and reduced turbidity downstream of the proposed new Delta conveyance facility on Delta Smelt, longfin smelt, all four runs of Chinook salmon, and other species;
 - d. The effects of reduced flows below the proposed North Delta conveyance intakes on survival of salmonids through the Delta;

- e. The effects of Delta outflow on the abundance and survival of Longfin Smelt, Delta Smelt, salmon, and other species.
- C. *Effects on Water Quality in the Delta:* The DEIS must consider potentially significant effects of CVP and SWP operations in light of climate change on water quality in the Delta, including:
- a. The effects of reduced turbidity, changes in residence times, changes in flows, and other operational changes on the magnitude, duration, and frequency of harmful algal blooms;
 - b. The effects of operations on salinity, residence time, and water temperatures in the Delta, particularly in light of sea level rise and climate change.
- D. *Effects during Droughts:* State and federal agencies have previously admitted that waivers of protective operations are “reasonably foreseeable” during future droughts, similar to the waivers of water quality standards and ESA/CESA protections during 2013-2015. The DEIS must account for the impacts of waiving or weakening these protections during future droughts, because the analysis of environmental impacts must rely on measures that are reasonably certain to occur.
- E. *Effects on avian and terrestrial species:* The DEIS must consider potentially significant effects of project construction and CVP and SWP operations on avian and terrestrial species, including:
- a. Impacts to wildlife in south of Delta wildlife refuges from changes in water supply;
 - b. Construction impacts to wetland-dependent wildlife in the Delta; and
 - c. Impacts to wildlife from increased frequency and/or extent of crop-idling water transfers.

Thank you for consideration of our views. Please contact us at your convenience if you have any questions regarding these comments or if you would like to discuss this matter further with us.

Sincerely,



Doug Obegi

Enclosure



April 17, 2020

Delta Conveyance Scoping Comments
Attn: Renee Rodriguez
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Sent Via Email to DeltaConveyanceScoping@water.ca.gov

RE: Scoping Comments regarding the Notice of Preparation of Environmental Impact Report for the Delta Conveyance Project

Dear Ms. Rodriguez:

On behalf of the Natural Resources Defense Council, Defenders of Wildlife, The Bay Institute, and San Francisco Baykeeper, we are writing to provide scoping comments regarding the Notice of Preparation of Environmental Impact Report for the Delta Conveyance Project (“NOP”). As you know, in January 2013 a coalition including NRDC and Defenders of Wildlife proposed a single Delta tunnel as part of a portfolio alternative for the Delta and asked the State to evaluate the alternative.¹ NRDC remains open to the concept of new conveyance in the Delta, provided that new conveyance in the Delta is part of an enforceable portfolio that: (1) significantly improves conditions for native fish and wildlife, in part by substantially reducing water diversions from the Bay-Delta; (2) minimizes and avoids impacts to communities in the Delta from the construction and operation of such a facility; and, (3) includes significant investments in sustainable local and regional water supply projects to help offset reduced water diversions from the Delta.

We believe that credible and impartial environmental and economic analyses of a proposed project and alternatives are essential, in contrast to the fundamentally flawed analyses that DWR previously performed for the Bay Delta Conservation Plan (“BDCP”) and California WaterFix project, including the final EIR for which DWR ultimately withdrew certification. However, as discussed on the pages that follow, we are concerned that language in the NOP could prevent consideration of a reasonable range of alternatives, preclude analysis of impacts from the whole project, unreasonably limit consideration of the likely environmental impacts, and fails to

¹ This Portfolio Alternative for the Delta is available online at: <https://www.nrdc.org/resources/portfolio-based-conceptual-alternative-bay-delta>

provide a stable and accurate project description. We therefore strongly urge the Natural Resources Agency to reconsider the approach to the proposed project and analysis of environmental impacts described in the NOP.

1. The Purpose Statement in the NOP is Unlawful and Cannot Justify Excluding Alternatives That Significantly Reduce Diversions from the Delta

CEQA requires that the project description contain a clear statement of the project objectives, including the underlying purpose of the project. Cal. Code Regs., tit. 14, § 15124(b). The project’s purpose and objectives are relevant to defining the reasonable range of alternatives that must be considered in the DEIR. *Id.*, § 15126.6(a). However, DWR’s purpose and objectives in the NOP are inconsistent with State law and could limit consideration of feasible alternatives. DWR must revise the Purpose and Objectives statement and ensure that the statement does not limit meaningful consideration of alternatives that significantly reduce diversions from the Delta.

In contrast to DWR’s purpose and objectives for the BDCP/WaterFix, the purpose statement in this NOP omits any consideration of protecting and restoring the Bay-Delta ecosystem and/or the co-equal goals for the Delta, and instead makes the project purpose solely to “restore and protect” water diversions from the Delta, as the table below demonstrates.

BDCP/WaterFix	Single Delta Conveyance
“DWR’s fundamental purpose in proposing the BDCP is to make physical and operational improvements to the SWP system in the Delta necessary to restore and protect ecosystem health, water supplies of the SWP and CVP south-of-Delta, and water quality within a stable regulatory framework, consistent with statutory and contractual obligations.”	“DWR’s underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State’s Water Resilience Portfolio.”

This purpose statement in the NOP is inconsistent with state law, the best available science regarding climate change and ecosystem health, and the Newsom Administration’s publicly stated objectives for the project. DWR must significantly revise this proposed purpose statement to eliminate language suggesting the purpose is to increase water deliveries from the Delta to ensure that this language does not exclude consideration of a proposed project or alternatives that reduce water diversions from the Bay-Delta.

First, the project purpose to “restore” State Water Project water deliveries suggests that the proposed project should maintain or increase water diversions from the imperiled estuary. However, increasing water diversions from the Delta is inconsistent with the best available science regarding both the effects of climate change and legally required protections for the Bay-Delta ecosystem. For instance, DWR’s 2019 Climate Change Vulnerability Assessment found that climate change is likely to reduce median State Water Project diversions from the Delta by 10% by 2050 (deliveries reduced by 312,000-acre feet per year). Other recent analyses, such as Ray *et al* 2020, also have concluded that climate change is likely to result in reduced SWP diversions from the Delta. Equally important, numerous analyses by state and federal agencies have concluded that increased protections for native fish and wildlife, including threatened and endangered species, are needed to prevent extinction and to comply with state laws, and that these increased environmental protections (e.g., increased instream flows, increased Delta outflow, improved temperature management, improved migratory survival through the Delta) would be likely to reduce diversions from the Delta.²

Similarly, the NOP’s stated purpose of increased SWP water diversions from the Delta, without any investment in local and regional water supplies to reduce reliance on the Delta, is inconsistent with state law. The Delta Reform Act established state policy to reduce reliance on the Delta and to meet state water needs through investments in sustainable local and regional water supply projects, such as improved water use efficiency and water recycling. Cal. Water Code § 85022. While the purpose statement in the NOP references the State’s Water Resilience Portfolio, the purpose statement does not explicitly require reduced reliance on the Delta, and it appears to focus on increasing (“restoring” to some higher level) water deliveries from the Delta. More generally, the reference to the Water Resilience Portfolio does nothing to cure the deficiencies in the NOP’s stated purpose. The Portfolio has not yet been finalized, does not commit any funding, fails to include enforceable deadlines, and fails to include linkages between the actions (including with new conveyance). The purpose and objectives should be revised to explicitly include reduced reliance on the Delta through a program of investments in local and regional sustainable water supply projects, and by deleting the word “restore” to avoid any implication that the project purpose is to increase water diversions from the Delta, rather than reducing water diversions as necessary to comply with the California Endangered Species Act and other state laws.

Third, the purpose statement and objectives in the NOP are inconsistent with the co-equal goals for the Delta established in the Delta Reform Act. That Act establishes co-equal goals of providing a more reliable water supply and protecting, restoring and enhancing the Delta ecosystem in a manner that protects and enhances the unique values of the Delta. *See* Cal. Water

² Examples include the Secretary of the Interior’s August 2016 memo to the President, the State Water Resources Control Board’s (“SWRCB”) 2010 Public Trust Flows report, the SWRCB’s 2017 Scientific Basis Report, the SWRCB’s July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan, the SWRCB’s January 2020 comments on the draft environmental impact report for operations of the State Water Project, and the State of California’s 60-day notice letter and filed complaint challenging the Trump Administration’s 2019 biological opinions.

Code § 85054. In contrast, the purpose and objectives in the NOP omits any consideration of ecosystem health and restoration, impacts to Delta communities. Such an approach is inconsistent with the Delta Reform Act, and the project purpose and objectives should be revised to incorporate restoration of the Bay-Delta ecosystem as a co-equal purpose to improving the physical reliability of the water delivery system.

Finally, the purpose statement and objectives in the NOP are inconsistent with the Newsom Administration's public statements regarding Delta conveyance. For instance, the Governor's 2019 State of State speech emphasized that in addition to protecting water supply, a single Delta tunnel project must also "preserve Delta fisheries," and that conveyance must be part of a portfolio with water recycling and water conservation. Similarly, the draft Water Resilience Portfolio Report (Recommendation 19.1) emphasized that a Delta tunnel must "protect water quality," "support ecosystem restoration," and "limit local impacts." The purpose and objectives in the NOP wholly omit any consideration of these essential attributes of a sustainable project.

We therefore urge DWR to significantly revise the purpose and objectives of Delta conveyance to eliminate any suggestion that the project's purpose is to increase water diversions from the Delta, to explicitly require reduced reliance on the Delta and investments in local and regional water supply projects as part of a true portfolio, and to incorporate protection and restoration of the Bay-Delta ecosystem as a co-equal purpose of the project.

2. The DEIR Must Consider a Reasonable Range of Alternatives

CEQA requires that an environmental impact report analyze a reasonable range of alternatives to the proposed project, including a no project alternative. Cal. Pub. Res. Code §§ 21002, 21061, 21100; tit. 14, Cal. Code Regs. § 15126.6. Here, a reasonable range of alternatives must include not only one or more alternatives that reduce diversions from the Delta, but also one or more alternatives that include a single Delta tunnel as part of a portfolio of local and regional water supply investments. However, language in the NOP does not appear to consider alternatives that reduce diversions from the Delta and fails to include new conveyance as part of an enforceable portfolio of local and regional water supply projects.

First, because the purpose and objectives of a project define what alternatives are reasonable, *id.* at § 15126.6(a), as discussed *supra* it is essential that the State revise the NOP's purpose and objectives to ensure consideration of alternatives that significantly reduce diversions from the Bay-Delta as needed to comply with state and federal laws. Here, the NOP identifies a range of alternatives based on size of new conveyance (from 3,000 to 7,000 cfs), but it does not identify a range of operational criteria. Instead, it suggests that the alternatives would "increase DWR's ability to capture water during high flow events," and that it would identify "initial operating criteria" rather than a range of operational criteria. However, that approach to operations ignores: (1) the best available science regarding the need to substantially increase Delta outflows and reduce diversions to protect fish and wildlife during portions of most water year types, including wetter years; (2) more restrictive pumping limits in the South Delta to offset the new

environmental impacts caused by the North Delta diversion facility(ies); (3) the best available science showing that diversions from the North Delta reduce salmon survival when flows below the proposed intakes are less than 35,000 cfs (Perry *et al* 2018).

While it is true that the Supreme Court in 2008 upheld the final EIR for the CALFED program despite the fact that the document did not consider a reduced export alternative, *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings*, 43 Cal. 4th 1143, 1168 (2008), changes in state law and the best available scientific information demonstrate that a EIR for this project must consider alternatives that reduce diversions from the Bay-Delta. For instance, the subsequent enactment of the Delta Reform Act now makes ecosystem restoration a co-equal purpose with improving water supply reliability and establishes state policy to reduce reliance on the Delta. Similarly, the best available science regarding the effects of climate change and ecosystem restoration demonstrate that reduced water diversions are needed to meet water quality standards and comply with state and federal endangered species acts. As a result, the EIR for this project must consider alternatives that result in reduced diversions from the Delta, even as the physical reliability of the system may be improved with new conveyance.

Second, in order to be consistent with the Delta Reform Act the DEIR must consider one or more alternatives that include new conveyance as part of a portfolio of local and regional water supply investments. The 2013 Portfolio Alternative for the Delta provides one model for this approach, and the terms and conditions proposed by NRDC *et al* in our opening statement to the SWRCB for the WaterFix change in point of diversion hearing provides another portfolio alternative that should be considered. The CALFED EIR/EIS provides another potential model for analyzing Delta conveyance as part of a broader program; that final EIR analyzed the effects of the CALFED program, including program elements such as habitat restoration, water conservation, new Delta conveyance, water quality improvements, and improved flows and fish screens to protect fish and wildlife. Similarly, here CEQA analysis of a single tunnel Delta conveyance project as part of a portfolio that reduces reliance on the Delta and invests in local and regional water supply projects could utilize both programmatic and project level analysis of different program elements.

Finally, the NOP indicates that the scoping process will inform operations to be analyzed in the DEIR. We strongly suggest that the DEIR include a range of operational alternatives that strengthen protections for fish and wildlife, including: (1) one or more alternatives that are consistent with the operations outlined in the SWRCB's July 2018 Framework for the Sacramento/Delta Update to the Bay-Delta Plan; (2) one or more alternatives that are consistent with the operational criteria identified by NRDC *et al* in our opening statement to the SWRCB for Phase 2 of the water rights proceeding for the California WaterFix project.³ These operational requirements include significant increases in Delta outflow to protect longfin smelt, Delta Smelt, and other native fish species, and prohibitions on diversions from new conveyance

³ Available online at:

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/opening_statements/docs/part2/opening_nrdc.pdf

when flows at Freeport are less than 35,000 cfs to protect salmon (*see Perry et al 2018*). In order to comply with state and federal laws, the proposed project must strengthen environmental protections as compared to the environmental baseline.

3. The Scope of the DEIR Must Include Analysis of Effects of the Whole Project of SWP/CVP Operations and Facilities, Including Upstream Operations

CEQA requires that the DEIR analyze the effects of the whole project on the environment. CEQA Guidelines § 15378 (definition of “project” means “the whole of an action”). The definition of a project is broadly construed in order to maximize protection of the environment. *Nelson v. County of Kern*, 190 Cal.App.4th 252, 271 (2010). The whole of the action analyzed in this DEIR must include upstream operations of the SWP and CVP, and it must consider not only short-term effects of construction and operations, but also effects of operations in the long term in light of the likely effects of climate change.

While there is language in the NOP suggesting that the DEIR will consider upstream effects, other language in the NOP suggests that the DEIR will not fully consider effects from operations of the SWP and CVP upstream of the Delta. The NOP acknowledges on page 6 that the scope of the environmental review may include State Water Project contract amendments relating to paying for Delta conveyance, and that the geographic scope includes areas upstream of the Delta. In contrast, the NOP on page 9 suggests that the DEIR will only examine changes in flow in the Delta and exclude consideration of changes to flow and water temperature upstream. Moreover, DWR’s recent DEIR for operations of the State Water Project failed to adequately consider environmental impacts from operations of the CVP and SWP upstream of the Delta, raising further concerns about the language in this NOP. As discussed in more detail in our comments on that DEIR, because the State Water Project and Central Valley Project are operated as a coordinated system, and because operations in the Delta affect operations upstream, the DEIR must consider effects of SWP and CVP operations throughout the Bay-Delta watershed, including effects in the Feather River below Oroville Dam and in the Sacramento River below Shasta Dam.

Second, although the NOP does not identify the temporal duration or extent of environmental analysis, it is essential that the DEIR consider both short-term and long-term effects of the proposed project and alternatives. Short-term effects would include effects of more than ten years of construction and the subsequent operation of the project; long-term effects would include operations, including the effects of climate change, decades from now. Long-term effects must be considered because: (1) the SWP, including Delta conveyance, is intended to be operated for decades; (2) SWP contractors would likely be paying for the project for decades; and, (3) because the California Endangered Species Act requires that the State Water Project fully mitigate impacts in light of the effects of climate change, regardless of whether and to what extent SWP operations contributed to climate change. *Environmental Protection Information Agency v. Calif. Dep’t. of Forestry and Fire Protection*, 44 Cal. 4th 459, 513 (2008). The DEIR

must therefore consider the effects of operations of the SWP in light of the effects of climate change over a time period that extends at least until 2070.

4. The Environmental Baseline Should Include ESA and CESA Requirements at the Time the NOP was Issued, as well as Existing Habitat Restoration Obligations

CEQA requires that the proposed project and alternatives be analyzed against the existing environmental conditions (the “environmental baseline”), in order that the Project’s environmental impacts can be meaningfully analyzed and compared to alternatives. Cal. Code Regs., tit. 14, § 15125(a); see *County of Amador v. El Dorado County Water Agency*, 76 Cal.App.4th 931, 952 (1999); *Neighbors for Smart Rail v. LA County Metropolitan Transit Authority*, 57 Cal. 4th 310, 315 (2013). That environmental baseline is generally existing conditions at the time of the Notice of Preparation. Cal. Code Regs., tit. 14, § 15125. Under CEQA, the DEIR must “delineate environmental conditions prevailing absent the project, defining a ‘baseline’ against which predicated effects can be described and quantified.” *Neighbors for Smart Rail*, 57 Cal.4th 439, 447 (2013) (citing *Communities for a Better Environment v. South Coast Air Quality Dist.*, 48 Cal.4th 310, 315 (2010)). The purpose is to provide a “realistic baseline that will give the public and decision makers the most accurate picture practically possible of the project’s likely effects.” *Neighbors for Smart Rail*, 57 Cal.4th at 449 (citing *Communities for a Better Environment*, 48 Cal. 4th at 322, 325, 328).

The NOP was issued on January 15, 2020. Accordingly, the environmental baseline should include the operational requirements under CESA and the ESA that were in effect on that date, including the full requirements of the 2008 and 2009 biological opinions and the related incidental take permits and consistency determinations under CESA for operations of the SWP. In addition, although the vast majority of the habitat restoration requirements of those prior CESA/ESA permits had not been implemented at the time of the NOP, excluding these existing mitigation and compliance obligations from the environmental baseline in this DEIR would bias the environmental analysis and would be misleading to the public and decisionmakers. See *Neighbors for Smart Rail*, 57 Cal. 4th at 457.

5. The DEIR Must Provide an Accurate and Stable Project Description

It is black letter law that, “[a]n accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR.” *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 193 (1977). An EIR must provide a clear explanation of the nature and scope of the proposed project, otherwise it “is fundamentally inadequate and misleading.” See *Communities for a Better Environment v. City of Richmond*, 184 Cal.App.4th 70, 84-85 (2010). Here, the lack of clarity as to the role of the Bureau of Reclamation must be resolved before the DEIR can be issued.

The NOP admits that the Bureau of Reclamation “may” have a role in the project, and that the objectives of the project “potentially” include water deliveries of the Central Valley Project.

However, the operations of the Bureau of Reclamation are coordinated with the operations of the State Water Project pursuant to the Coordinated Operating Agreement, and the DEIR must have clarity as to Reclamation's operations and whether Reclamation will participate in the conveyance project. For instance, if the Bureau of Reclamation does not participate in the conveyance project, how will the State Water Project ensure no injury to the Bureau of Reclamation if Old and Middle River flows must be less negative, or Delta outflow must be increased, to offset and fully mitigate adverse impacts from operations and construction of new conveyance and the State Water Project? Similarly, how will the State Water Project ensure no injury to south of Delta wildlife refuges that rely on the Bureau of Reclamation for delivery of water that sustains endangered species and millions of Pacific Flyway birds? In addition, Reclamation's participation is likely to affect questions of sizing and operations of Delta conveyance that are essential to resolve before release of the DEIR. Similarly, DWR must ensure that the proposed project is reasonably certain to implement the proposed environmental flow conditions to maintain water quality and protect fish and wildlife, and the DEIR cannot lawfully rely on DWR providing a "proportional share" of such environmental and water quality measures, if the full measures are not reasonably certain to occur. *See* Cal. Code Regs., tit. 14, § 15126.2.

NRDC *et al* raised similar issues regarding a lack of a stable and accurate project description in our January 6, 2020 comments⁴ on DWR's recent DEIR regarding operations of the State Water Project, which inconsistently described the role of the Bureau of Reclamation, and as a result, provided misleading analysis of the potential environmental impacts of the proposed project and alternatives. To comply with CEQA, the DEIR must provide a clear and consistent description of the Bureau of Reclamation's role in the proposed project and alternatives and ensure that all operational measures are reasonably certain to occur.

6. The NOP Inaccurately Discusses the Relationship to the BDCP/WaterFix EIS/EIR

Pages 10-11 of the NOP inaccurately describes the BDCP/WaterFix EIS/EIR process, because it fails to acknowledge that DWR withdrew its Notice of Determination and withdrew certification of the final EIR. *See* DWR, Rescission of Notice of Determination (NOD) – State Clearinghouse Number – 2008032062, May 2, 2019.⁵ The NOP properly acknowledges that the "proposed Delta Conveyance Project is a new project and is not supplemental to these past efforts **or tiered from previous environmental compliance documents.**" (emphasis added). DWR must ensure that the DEIR does not tier to the fundamentally flawed final EIR for the BDCP/WaterFix project.

⁴ That comment letter and supporting documents are incorporated by reference.

⁵ This document is available online at: <https://ceqanet.opr.ca.gov/2008032062/9/Attachment/gFURwX>. It is hereby incorporated by reference.

7. The DEIR Must Analyze Potentially Significant Impacts, Including Effects of Waiving Protective Operational Requirements During Droughts, Effects Upstream of the Delta in Light of Climate Change, and Cumulative Impacts, Using Credible Methods of Analysis

CEQA requires that a DEIR accurately assess potential environmental impacts from the proposed project and alternatives, using credible methods of analysis. *See, e.g.,* Cal. Code Regs., tit. 14, § 15151; *Laurel Heights Improvement Assn. v. Regents of University of Cal.*, 47 Cal.3d 376, 409 (1988). DWR's recent DEIR for the operations of the State Water Project violated this fundamental principle by using analytical methods that are not scientifically credible, failing to consider the effect of waiving operational measures that protect fish and wildlife during droughts, and failing to analyze all likely significant impacts of the project, as discussed in NRDC et al's January 6, 2020 comments on the DEIR for operations of the State Water Project. The following potentially significant impacts should be considered in this DEIR:

- A. *Effects on Fish and Wildlife Upstream of the Delta:* The DEIR must consider potentially significant effects of upstream operations of the CVP and SWP in light of climate change, including:
 - a. the effects of changes in instream flows on survival of salmon and other fish migrating downstream;
 - b. the effects of water temperatures on salmon and other fish species that spawn and rear below dams, as a result of SWP/CVP reservoir storage and releases;
 - c. the effects of redd dewatering on salmon as a result of CVP/SWP operations.
- B. *Effects on Fish and Wildlife in the Delta:* The DEIR must consider potentially significant effects of CVP and SWP operations in the in light of climate change, including:
 - a. The effects of entrainment, salvage and loss of all four runs of Chinook salmon, Delta Smelt, Longfin Smelt, steelhead, sturgeon, and other native fish and wildlife;
 - b. The effects of SWP/CVP operations on survival of all four runs of salmon through the Delta, including effects of Old and Middle River flows, import: export ratios, Delta Cross Channel gate operations, and Sacramento River flows at Freeport;
 - c. The effects of increased entrainment and loss of sediment and reduced turbidity downstream of the proposed new Delta conveyance facility on Delta Smelt, longfin smelt, all four runs of Chinook salmon, and other species;
 - d. The effects of reduced flows below the proposed North Delta conveyance intakes on survival of salmonids through the Delta;
 - e. The effects of Delta outflow on the abundance and survival of Longfin Smelt, Delta Smelt, salmon, and other species.
- C. *Effects on Water Quality in the Delta:* The DEIR must consider potentially significant effects of CVP and SWP operations in light of climate change on water quality in the Delta, including:
 - a. The effects of reduced turbidity, changes in residence times, changes in flows, and other operational changes on the magnitude, duration, and frequency of harmful algal blooms;

- b. The effects of operations on salinity, residence time, and water temperatures in the Delta, particularly in light of sea level rise and climate change.
- D. *Effects during Droughts:* As discussed in our January 6, 2020 comments, DWR has admitted that waivers of protective operations are “reasonably foreseeable” during future droughts, similar to the waivers of water quality standards and ESA/CESA protections during 2013-2015. The DEIR must account for the impacts of waiving or weakening these protections during future droughts, because the analysis of environmental impacts must rely on measures that are reasonably certain to occur.
- E. *Effects on avian and terrestrial species:* The DEIR must consider potentially significant effects of project construction and CVP and SWP operations on avian and terrestrial species, including:
 - a. Impacts to wildlife in south of Delta wildlife refuges from changes in water supply;
 - b. Construction impacts to wetland-dependent wildlife in the Delta; and
 - c. Impacts to wildlife from increased frequency and/or extent of crop-idling water transfers.

In order to accurately assess potentially significant impacts, the DEIR must use credible methods of analysis, such as the Winter-Run Life Cycle Model, and cannot use statistically improper methods, such as the statistical manipulation that DWR used to analyze impacts to longfin smelt from reduced Delta outflow in its recent DEIR for Operations of the State Water Project. Moreover, to accurately assess the impacts of the proposed project and alternatives in light of climate change, DWR should use CALSIM 3 or another model that uses CMIP5 projections of climate change, given that NMFS and other agencies have concluded that CMIP3 projections are not the best available science and underestimate the likely adverse effects of climate change on hydrology and water temperatures. As noted above, the analysis of impacts must only rely on protective operations and mitigation measures that are reasonably certain to occur. Any impact that results in reduction in survival or abundance of species listed under CESA is a significant impact for which mitigation is required, as we noted in our January 6, 2020 comments to DWR:

Given the imperiled status of these species, the further reductions in abundance and survival caused by the proposed project constitute mandatory findings of significant impacts under CEQA. The populations of Delta smelt, Longfin smelt, winter-run Chinook salmon, and spring-run Chinook salmon already are not self-sustaining (particularly without hatchery supplementation of salmonids) and are declining in abundance, and the proposed project would further “cause a fish or wildlife population to drop below self-sustaining levels.” Cal. Code Regs., tit. 14, § 15065(a)(1).⁶

Finally, in its recent DEIR on the operations of the State Water Project, DWR has admitted that with respect to the adverse effects on fish and wildlife caused by operations of the State Water

⁶ Moreover, any reductions in abundance and survival of listed species under the proposed project compared to the baseline demonstrates that the proposed project is not fully mitigating impacts as required by CESA, and thus that the proposed project is inconsistent with the project objectives.

Project, together with similar effects caused by the CVP, other dams and water diversions in the Bay-Delta watershed, and habitat modifications in the watershed, “This overall cumulative impact is significant.” In light of the acknowledged significant and adverse cumulative impacts, and the State Water Projects’ disproportionately large proportion of those effects (including the State Water Project’s settlement contractors on the Feather River and implementation of the Coordinated Operating Agreement with the CVP), the DEIR must carefully consider the cumulative impacts of the proposed project, particularly in light of pending proposals for Sites Reservoir and other water storage and diversion projects. Given that CALSIM modeling of Sites Reservoir and other reasonably foreseeable projects is available, the DEIR’s analysis of cumulative impacts should include quantitative analysis and not simply rely on qualitative analysis.

8. Conclusion

We are concerned that the approach to the Delta Conveyance Project and environmental analysis described in the NOP is significantly flawed. Those concerns are heightened by DWR’s recent deeply flawed DEIR for Operations of the State Water Project, and by the continuing delay of the State Water Resources Control Board’s update of the Bay-Delta Water Quality Control Plan. Before the State and public considers a new Delta Conveyance Project or other major water storage and diversion projects that are likely to significantly worsen environmental conditions in the Delta, the State Water Resources Control Board should first establish updated flow and water quality standards that will achieve salmon doubling, prevent extinction, and protect and restore native fish and wildlife and the health of the Bay-Delta watershed.

We strongly encourage the Natural Resources Agency to reconsider the approach identified in the NOP, consistent with these comments. We would be happy to discuss these comments further with the Natural Resources Agency at your convenience.

Thank you for consideration of our views.

Sincerely,



Doug Obegi
NRDC



Rachel Zwillinger
Defenders of Wildlife



Gary Bobker
The Bay Institute



Jon Rosenfield, Ph.D.
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October 20, 2020

VIA EMAIL (Zachary.M.Simmons@usace.army.mil)

Mr. Zachary Simmons
US Army Corps of Engineers
1325 J Street Room 1513
Sacramento, CA 95814

Re: COMMENTS ON DELTA CONVEYANCE PROJECT USACE PERMIT APPLICATION

Dear Mr. Simmons:

Thank you for the opportunity to provide comment on the permitting process for the Delta Conveyance Project. Provided this project is still in a programmatic stage of design it is difficult to provide detailed comments on impacts of the project to navigable waters and the affected aquatic environment subject to Section 10, 404 and 408 review. In my opinion, this request for public comment is premature. The public should be engaged in scoping and subsequent permit review when the project is nearing final design. While in person public meetings are not feasible due to COVID-19, I request online public meetings to be held during this permitting process and as the project reaches final design. With a project of this magnitude, that has significant unavoidable impacts, public hearings are necessary.

NOT ENOUGH PROJECT INFORMATION

Having worked on various USACE permit applications for in-water work, the lack of detail of this project would never have been accepted as a complete application for review by the USACE. For instance, there was much consternation in one permit application over the lifespan of plantable bag material being used in place of rock revetment. The level of detail needed for review is critical to determine the amount of impacts this project will have within Corps jurisdiction. No project detail is provided and therefore a USACE permit cannot be issued until that exists, particularly because this project cannot be fully vetted by the public. If this permit is approved with the programmatic project as currently proposed, the entire USACE permit process seems to be null.

Given the lack of detail on the Corps website, my comments are based off of past and concurrent design provided through other separate processes, such as the Delta Conveyance Authority Stakeholder Engagement Committee. Even in the preliminary stage of design, there are general concerns related to impacts to the Sacramento River Flood Control Project (SRFCP) levees, channel carrying capacity, cumulative habitat impacts related to future levee repairs, pile driving noise, impacts to recreation, and the consideration of a wider array of project alternatives.

INCREASED FLOOD RISK

The planned intakes are located on SRFCP levees. Installation of the intakes should be done in a manner to that does not increase flood risk to adjacent lands protected by the existing levee system, as well as lands downstream that would be affected if the levee at the intakes were to fail. Particularly, transitions to the existing levee should be done in a gradual way that does not introduce erosive currents and eddies that undermine the levees immediately upstream and downstream of the intakes. Furthermore, consideration must be made to improve the entire levee segment between and upstream of intakes to at least a 100-year standard. Currently this levee segment, within the jurisdiction of Maintenance Area 9, is one of the most vulnerable to failure in the North Delta.

REDUCED CHANNEL CARRYING CAPACITY

Placement of the intakes in the Sacramento River may cause significant channel blockage. Mitigation for such loss in carrying capacity may require setback levees on the west side of the Sacramento River. The amount of channel blockage and the need for western setback levees is unclear in any of the past and current project designs. Still, this issue must be fully vetted in this permitting process and the affected local maintaining agencies must be consulted if levee setbacks are to occur. Reduced carrying capacity can also have detrimental downstream impacts that must be assessed and mitigated through improvements to the existing flood control system so as not to increase flood risk in downstream areas.

REDUCTION IN AVAILABLE HABITAT MITIGATION FOR OTHER IN-WATER WROK

There are limited habitat mitigation opportunities to offset impacts of in-water work and work within riparian zones. The construction of the Delta Conveyance Project will require a substantial amount of habitat credits along with habitat development in the Delta to offset the project's environmental impacts. This will have a cumulative impact on the availability of credits and opportunity areas for habitat (particularly riparian) for other projects that could have similar channel impacts, such as larger levee maintenance and rehabilitation projects, within the Delta. Without credit availability and opportunity to offset impacts for maintenance and rehabilitation projects, such necessary projects will become exceedingly difficult for local maintaining agencies to complete.

NOISE IMPACTS FROM PILE DRIVING

The amount of pile driving required to construct the intakes is unknown but will be significant due to the length of the intake facilities. Pile driving should be limited to as few strikes as necessary or employ the use of a vibratory hammer to reduce noise and impacts to the surrounding environment. Pile driving needs should be quantified and provided to the public.

IMPACTS TO RECREATIONAL BOATING

The construction of the intakes and other tunnel components may involve the use of barges. If barges are utilized for construction, given the material demands of the project, many barge trips

will be necessary. This will negatively impact recreational boating by creating additional traffic that makes it difficult and dangerous to navigate the channel when barges are present. Barges also create undesirable wave conditions for skiing and wakeboarding.

EXPANDED ALTERNATIVE ANALYSIS

There are currently only two tunnel corridor alternatives designs provided for this project. There are no other alternatives considered, particularly for intake locations. Other suggested alternative intake locations that have been proposed are intakes at Sherman Island and Garamendi's "Little Sip Solution" that utilizes the Port of Sacramento. These intake alternatives attempt to move impacts to the edges of the Delta and need to be weighed against the current project configuration to determine which alternative has the least impacts to the Delta channels. Such alternatives at the periphery of the Delta, could reduce habitat and cultural impacts as well as limit work in above or below channels. There also must be a serious consideration of a no project alternative that instead evaluates repairing the existing levee system that currently conveys water for the State Water Project. Not only would repairs to the existing system have additional flood control benefits, it is also a fundamental component of the Delta Conveyance Project operations. The project will be operated as a dual conveyance system but there has yet to be any consideration for necessary improvements to the existing system after the DCP is constructed to maintain systemwide reliability. Improvements to through-Delta conveyance should be considered among cumulative impacts of this project.

Sincerely,



Emily Pappalardo, PE

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October 20, 2020

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1325 J Street, Room 1350
Sacramento, California 95814-2922
Email: Zachary.M.Simmons@usace.army.mil

Re: Public Notice SPK-2019-00899 regarding the Delta Conveyance Project

Dear Mr. Simmons,

As described in the Public Notice, the California Department of Water Resources (DWR) is proposing to construct two new water intakes in the north Delta along the east bank of the Sacramento River between the communities of Clarksburg and Courtland. The proposed Delta Conveyance project would also include a tunnel to convey water from the new intakes to a pumping plant and possibly a new southern forebay on Byron Tract, immediately west of the existing Clifton Court Forebay.

The new facilities would provide an alternate location for diversion of water from the Delta. They would be operated in coordination with the existing south Delta pumping facilities, resulting in a system also known as "*dual conveyance*" because there would be two complementary methods to divert and convey water. Under the proposed project, the new north Delta facilities would be sized to convey up to 6,000 cubic feet per second (cfs), potentially as much as 7,500 cfs, of water from the Sacramento River to the SWP facilities in the south Delta.

The U.S. Army Corps of Engineers (Corps or USACE), as the lead agency under the National Environmental Policy Act (NEPA), is also preparing an Environmental Impact Statement (EIS) for construction of the proposed Delta Conveyance project. The EIS will analyze DWR's proposed action to construct new conveyance facilities and alternatives. The Corps' Notice of Intent to prepare an EIS was published in the Federal Register on August 20, 2020.

The Notice of Intent states that the EIS will analyze the **environmental effects of construction on the aquatic environment and all other impacts that fall within the USACE jurisdiction**. Potentially significant issues to be analyzed in depth include impacts to waters of the United States (including wetlands), the federal flood control project, and air quality. Other impacts include **biological resources**, special status species, hydrology and water quality, land use, navigation, water supply, aesthetics, recreation, and socioeconomic effects.

The Notice of Intent also states that the Corps has invited the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the U.S. Environmental Protection Agency to participate

as cooperating agencies in the preparation of the EIS. DWR is the lead agency for the preparation of an Environmental Impact Report (EIR) under the California Environmental Quality Act (CEQA) for the proposed project. **The EIS and EIR will be completed as separate, but parallel processes, and result in separate documents.**

I have the following comments on the Public Notice and on the Notice of Intent:

1. The EIS, and DWR's EIR, must both fully analyze and disclose the environmental and aquatic environment impacts of the operations of the proposed project

In order to fully understand the environmental effects of the Delta Conveyance project on the aquatic environment and all other impacts that fall within the USACE jurisdiction, including biological resources, special status species, hydrology and water quality, navigation, and water supply, the EIS must include detailed modeling of reservoir operations, upstream river flows, Delta tidal flows and water quality and exports from the Delta. It is not sufficient to only look at the impacts over the 10-15 year construction period.

The implementation of a joint storage-conveyance proposal for the Delta will also change operations of the U.S. Bureau of Reclamation's Central Valley Project (CVP). The effects of these federal operations on the Delta, with and without the project also need to be analyzed, disclosed and fully mitigated in the EIS.

2. The new proposal is barely different than DWR's failed WaterFix project and will also fail to restore and sustain the Delta ecosystem and reduce reliance on the Delta for export water supply

This single tunnel Delta Conveyance proposal is a barely different, somewhat smaller capacity (up to 7,500 cfs compared to 9,000 cfs), version of DWR's seriously flawed California WaterFix project. On May 2, 2019, DWR withdrew their project approval for the WaterFix project and rescinded DWR's accompanying CEQA notice of determination. DWR in coordination with the U.S. Bureau of Reclamation (Reclamation) also notified the State Water Resources Control Board (SWRCB) they were withdrawing the pending Petition for Change in Points of Diversion and Rediversion (CPOD Petition) for the State Water Project (SWP) and CVP and the related application for Section 401 certification for WaterFix. The applications for a Department of the Army permit under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act were also officially withdrawn (May 3, 2019).

These withdrawals were necessary in large part because the California Delta Stewardship Council staff had made a compelling draft finding that the WaterFix project was **not consistent**

with the Delta Plan¹. The DSC staff draft determination found that DWR's Certification of Consistency was **not** supported with respect to the five Delta Plan policies:

- Full consistency infeasible, but on the whole the covered action is consistent with the coequal goals (23 CCR § 5002, subd. (b)(1)) (“G P1(b)(1)”)
- Best Available Science (23 CCR § 5002, subd. (b)(3)) (“G P1(b)(3)”)
- Reduce Reliance on the Delta Through Improved Regional Water Self Reliance (23 CCR § 5003) (“WR P1”)
- Delta Flow Objectives (23 CCR § 5005) (“ER P1”)
- Respect Local Land Use When Siting Water or Flood Facilities or Restoration Habitats (23 CCR § 5011) (“DP P2”)

What DWR is doing is starting over again, essentially from scratch, with the same flawed conveyance-only concept. This is madness and is **doomed to fail, again**.

3. DWR's EIR and the Corps' EIS must analyze a full range of alternatives

As stated in CEQA Guidelines Section 15126.6(a), an “*EIR shall describe a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.*”

However, DWR's January 15, 2020 Notice of Preparation (NOP) only states that “*the scoping process will inform preliminary locations, corridors, capacities and operations of new conveyance facilities to be evaluated in the EIR.*” It appears that DWR does not intend to develop, analyze and disclose the environmental impacts of any alternatives other than new Delta conveyance.

However, the previous October 2006 – April 2015 Bay-Delta Conservation Plan (BDCP) and May 2015 - May 2019 WaterFix projects failed because they focused on a Delta-conveyance-only solution. Without **additional storage in the south-of-Delta export areas**, these two proposed projects were consistently unable to capture, export and store significant amounts of water during periods of high Delta flows (wet months), i.e., they were unable to consistently take

¹ Determination Regarding Appeals of the Certification of Consistency by the California Department of Water Resources for California WaterFix. Staff Draft. November 19, 2018 <https://coveredactions.deltacouncil.ca.gov/Services/download.ashx?u=018bccad-02c2-4b2c-a8bd-6264896014f1>

a **Big Gulp**. During storm events, San Luis Reservoir filled and then there was nowhere to use (wet fields, low demand) or rapidly store any more exported water and export pumping was cut way back. This isn't a biological opinion restraint, an operational issue, or a conveyance limitation. It is due to a lack of surface water storage in the Delta export area south of the Delta.

Similarly, because a conveyance-only project is unable to capture sufficient water when it is plentiful and less harmful to the Delta ecosystem and Delta water quality, the BDCP and WaterFix had to rely on (i.e., continue and increase) exports from the Delta during periods of low Delta flow when the Delta ecosystem was most vulnerable and Delta salinities were already high (dry months), i.e., they were unable to limit themselves to taking a **Little Sip** and reducing SWP and CVP reliability on the Delta for their water supply (Cal. Water Code §85021).

DWR's January 15, 2020 NOP stated that "*DWR is currently considering alternatives with capacities that range from 3,000 to 7,500 cfs, with varying degrees of involvement of the CVP, including no involvement.*" DWR also proposes to consider two different tunnel routes under the Delta. In December 2019, one of those tunnel routes was found by a group of engineers from major tunneling companies around the world to be **infeasible**. This Independent Technical Review Panel convened by the Delta Conveyance Design and Construction Authority (DCA) found that constructing the main tunnel in the original WaterFix project footprint was **impractical** due to access issues, and that the tunnel muck was likely not reusable².

DWR's NOP only proposes one feasible tunnel route and a range of tunnel capacities. DWR is not considering any meaningful alternatives such as water conservation, groundwater recharge, and local water supply actions to reduce export water demand from the Delta, joint storage-conveyance alternatives that would allow actual "**Big Gulp, Little Sip**" operations, or any enhanced through-Delta alternatives. The Corps must analyze additional alternatives such as these and disclose the environmental impacts in the Corps' EIS.

The EIS must also analyze and disclose the environmental impacts of alternatives such as enhanced through-Delta conveyance and operations based on the SWRCB's Bay-Delta Water Quality Control Plan (WQCP) Update enhanced flow requirements (outflows and inflows as a percentage of unimpaired flow) as well as operations based on the most current voluntary agreement proposal and the latest SWP Incidental Take Permit and Federal Biological Opinions.

The Corps should not issue any permits to DWR for the discharge of dredged and fill material and/or work in waters of the U.S. to construct the Delta Conveyance project unless DWR's EIR (and the Corps' EIS) develops, analyzes and discloses the environmental impacts of a wider range of alternatives, including a **joint storage-conveyance alternative**.

4. The EIS must extend the previous modeling period for reservoir and Delta operations and Bay & Delta water quality through 2019

² See <https://www.dcdca.org/pdf/2020-02-20DCABoardPkgV2.pdf>, ITR report, page 6.

The EIS must model both the operations and water quality, with and without the project alternatives, for the full available historical hydrologic period, water years 1922-2019. The operation modeling performed by DWR for the BDCP and WaterFix proposals was only for the 82 years from October 1921 through September 2003. This simulation period must be updated to include the subsequent 16 years of recent historical hydrology. DWR's water quality simulations for WaterFix only used a 16-year period (water years 1976-1991). This brief 16-year period is not representative of the range of adverse water quality impacts for the longer 82-year period and led to underestimates of Delta water quality impacts. The Corps' EIS must simulate water quality over the full available historical hydrology period October 1921 through September 2019.

5. CalSim operations modeling for the EIS must meet SWRCB urban water quality standards

The salinity-outflow calculations for DWR's previous CalSim modeling for BDCP and WaterFix was based on an Artificial Neural Network (ANN) model that underestimated the amount of Delta outflow needed to meet the SWRCB's municipal and industrial chloride concentration objectives at Contra Costa Water District's intake at the entrance to the Contra Costa Canal off Rock Slough. When the effects of the project on Delta water quality were simulated using DWR's DSM2 model, the estimated chloride concentrations at Pumping Plant #1 and in Old River at the entrance to Rock Slough were frequently well in excess of 250 mg/L chloride concentration (**up to 760 mg/L**) in violation of the SWRCB's daily January-December, standard. This means that the proposed project operations did not meet SWRCB standards, obscured the potential water quality impacts of the project, and overestimated the amount of water available for export. See for example, Contra Costa County and Solano County's joint written testimony in the WaterFix water rights change petition hearing [WaterFix Hearing Exhibit CCC-SC-51].

A recent technical paper by Nimal Jayasundara, Sanjaya Seneviratne, Erik Reyes and Francis Chung (all DWR) titled "Artificial Neural Network for Sacramento-San Joaquin Delta Flow-Salinity Relationship for CalSim 3.0," showed the poor agreement between simulated CalSim and DSM2 salinity at Rock Slough and Jersey Point in previous CalSim modeling.³ They described the results of a new ANN salinity-outflow model that much more accurately reproduces the DSM2 model simulations.

The EIS and EIR analyses must use a salinity-outflow model that is able to accurately simulate the amount of Delta outflow needed to meet existing SWRCB water quality standards.

³ American Society of Civil Engineers Journal of Water Resources Planning and Management, Vol. 146, Issue 4 (April 2020), <https://ascelibrary.org/doi/abs/10.1061/%28ASCE%29WR.1943-5452.0001192>

6. The presentation of modeling data and disclosure of environmental impacts in the EIS and EIR must be in a form that is usable and useful for decision makers and the public

Water Quality Data

The long-term (16- and 82-year) averages previously used by DWR to present the WaterFix modeling data masked potentially serious adverse impacts in individual months within the full 1922-2003 period. These long-term averages also hide the fact that the water quality modeling studies for the WaterFix project exceed the SWRCB's D-1641 water quality standards by a very large margin. For example, for many days in November, the chloride concentrations for both the with- and without project alternatives (CWF H3+ and NAA) were as high as 760 mg/L, well in excess of the 250 mg/L year-round maximum required by the SWRCB Bay-Delta standards. [see, SWRCB WaterFix Hearing Exhibit CCC-SC-60.]

DWR also used long-term averaging of the water quality data for each month of the year which meant there were only 12 data points for each alternative. Long-term averaging by water year type means the range of future flows and water quality changes for a given alternative were reduced to being represented by only five data points (one each for critical, dry, below normal, above normal and wet water year types).

To clearly disclose the full range of environmental impacts and the details regarding the timing and magnitude of these impacts, the simulation data for the Corps' EIS and DWR's EIR should also be presented in the form of **scatter plots of daily water quality data**, i.e., with-project plotted as a function of without-project data. This will more clearly disclose the full range of water quality conditions and whether the project modeling complies with SWRCB water quality standards and is a realistic simulation of actual future Delta Conveyance operations.

Flow and Export Data

A major flaw in DWR's earlier proposed WaterFix project, and presumably, the latest single tunnel Delta Conveyance proposal, was that a conveyance-only alternative will be unable to capture and export sufficient "new" water during wet months to allow exports to be reduced and Delta flows increased during dry months when the Delta ecosystem is most vulnerable.

The EIS should include plots of monthly (preferably daily) total south-of-Delta exports via Banks and Jones pumping plants as a function of the corresponding Delta outflow for each alternative. Without a Delta tunnel and additional north or western Delta intakes, the maximum combined CVP and SWP export capacity is typically $4,600 + 6,680 = 11,280$ cfs. The new single-tunnel proposal would allow SWP Banks Pumping Plant to operate up to 10,300 cfs, beyond the current limits imposed by the U.S. Army Corps of Engineers' permit for Clifton Court Forebay.

With the single-tunnel project, it would be possible to export at $4,600 + 10,300 = 14,900$ cfs even during drier months. However, State policy (California Water Code §85021⁴) requires that Bay-Delta projects reduce reliance on the Delta in meeting water supply needs and this is most important during dry months when Delta outflows are low and the Delta ecosystem is most vulnerable. Any project that **increases rather than decreases** exports during periods of low Delta outflow is not consistent with this State policy, the 2009 Delta Reform Act and, like the WaterFix proposal, would be **inconsistent** with the Delta Plan.

Figure 1 below shows WaterFix monthly exports as a function of Delta outflow during lower outflow months (outflow < 12,000 cfs). The now-withdrawn WaterFix project would have increased exports beyond the typical 11,280 cfs existing level up to 14,900 cfs (more than a 30% increase). The EIS must analyze and disclose alternatives, such as a joint storage-conveyance alternative, that reduce reliance (exports) from the Delta during dry periods.

Figure 1 also shows a reasonable limit on exports as a function of Delta outflow, maximum export ≤ 1.5 times Delta outflow, which would help ensure operations do indeed reduce reliability on the Delta and are consistent with the “Little Sip” concept. The Corps’ EIS should include alternatives using this important restraint on exports at very low Delta outflow.

⁴ 85021. The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts.

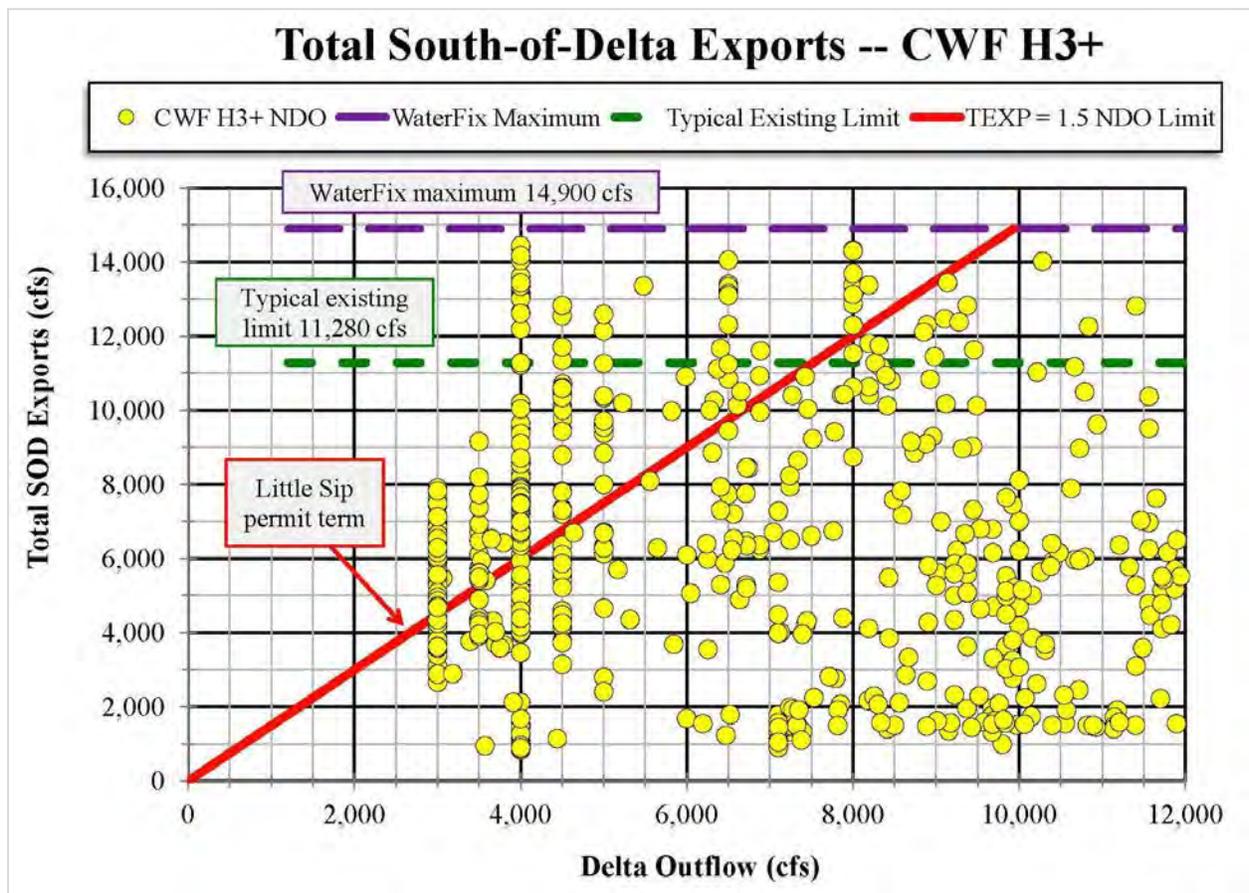


Figure 1: Monthly-averaged total South-of-Delta exports for the previously proposed WaterFix project CWF H3+ as a function of the corresponding Delta outflow. The data represent the modeling period, October 1, 1921 through September 30, 2003. Only data for outflows less than 12,000 cfs are plotted to highlight the proposed WaterFix operations during drier months. The WaterFix project increases exports beyond existing levels when Delta outflows are very low and the Delta ecosystem is most vulnerable. This is the exact opposite of the “Little Sip” concept. The suggested 1.5 times Delta outflow limit would help ensure operations consistent with the “Little Sip” concept. [from WaterFix Hearing Exhibit CCC-SC-63]

The Delta Independent Science Board, in a September 30, 2015 comment letter to the Chair of the Delta Stewardship Council and Director of the California Department of Fish and Wildlife, described the partially Recirculated Draft EIR/Supplemental Draft EIS for the Bay Delta Conservation Plan/California WaterFix as “*sufficiently incomplete and opaque to deter its evaluation and use by decision makers, resource managers, scientists and the broader public.*” [WaterFix Hearing Exhibit CCC-SC-20, p. 1.]

The Corps’ EIS and DWR’s EIR for the Delta Conveyance proposal must present the modeling data in forms such as scatter plots of daily water quality and monthly (preferably daily) flow and

export data that make the EIS, EIR and data usable and useful for decision makers, resource managers, Bay-Delta stakeholders, and the general public. Merely summarizing the data as long-term (16- or 82-year) averages is not acceptable.

7. The Corps' EIS must analyze alternatives that implement enhanced Delta outflows consistent with the SWRCB's 2010 Delta Flow Criteria Report and Fall X2 objectives

The SWRCB is currently in the process of updating the Bay-Delta WQCP and has proposed new enhanced Delta inflow (Sacramento and San Joaquin River) and outflow objectives to help restore and sustain key Delta fish species. These minimum flow objectives are based on a percentage of unimpaired flow during part of the winter and spring as well. The SWRCB also proposed Fall X2 objectives (September, October and some Novembers) to help restore the Delta ecosystem. The Corps' EIS and DWR's EIR must include, analyze and disclose the environmental impacts and benefits of alternatives that have enhanced Delta inflow and outflow objectives consistent with the SWRCB's recommendations and adopted objectives for the WQCP.

The WaterFix modeling and environmental review, for example, not only suggested that the now-withdrawn WaterFix proposed project would reduce the Sacramento River flow through the Delta (downstream of the proposed north Delta intakes) but would also, in many months, reduce the Sacramento inflow at Freeport by up to as much as 30%. The months when Sacramento inflow is decreased include many during the SWRCB's proposed January-June regulatory period. This is exactly the opposite of what was recommended in 2009 by the SWRCB. [WaterFix Hearing Exhibit CCC-SC-64.]

The Corps' EIS and DWR's EIR must present the Sacramento inflow at Freeport, San Joaquin at Vernalis flow and Delta outflow as a percentage of unimpaired flow for all alternatives so that the EIS and EIR are usable and useful for decision makers like the SWRCB, Bay-Delta stakeholders and the general public. If the EIS includes alternatives operated according to a WQCP voluntary agreement, for example, it is important to fully disclose whether those operations actually increase any of the key Delta flows and whether the corresponding percentages of unimpaired flow are consistent with the SWRCB's original 2009 Delta Flow Criteria recommendations.

Similarly, the historical October Fall X2 data since the signing of the Bay-Delta Accord is significantly different than the early trend in X2 (as a function of water year index). X2 values after 1994 during above normal and wet years are much higher (more salinity) and are more consistent with Fall X2 values in drier historical years. This period also represents the time when there was a significant decline in pelagic organisms in the Delta.

The current Fall X2 limits are 74 km in wet years and 81 km in above normal years (USFWS 2008 Biological Opinion) [WaterFix Hearing Exhibit SWRCB-87] and SWRCB Delta Flow Criteria Report [WaterFix Hearing Exhibit SWRCB-25]. These Fall X2 limits are consistent with

historical trends prior to 1994. Note that the SWRCB's Spring X2 estuarine habitat standards were developed based on restoring Delta flow and salinity conditions to those that existed during the period 1968-1975 to protect and restore key fish species. The Fall X2 objectives have a similar effect of restoring 1968-1975 flow and salinity conditions in the Delta.

There have been recent efforts by export water contractors to argue away the need for Fall X2 limits or replace them with other operational requirements. The Corps' EIS and DWR's EIR should still fully analyze alternatives that comply with these Fall X2 objectives so that decision makers and the public can understand the benefits to key Bay-Delta fish species of restoring fall salinities back to pre-1994 conditions.

8. To fully protect the Delta aquatic environment the EIS must include alternatives where the SWP export diversions to Clifton Court Forebay are fully screened

The proposed Delta Conveyance project must include state-of-the-art fish screens for the intake to the Clifton Court Forebay. Although the current diversions can be as high as 10,300 cfs as a daily average, and even higher when the intake gates are open for only half of the tidal cycle, there are feasible solutions for fully screening the inflow to Clifton Court.

One such design was presented in DWR's November 2009 Conceptual Engineering Report – Through-Delta Facility Conveyance Option. This detailed Conceptual Engineering Report recommends a new screened intake on Victoria Canal and a siphon to convey the diverted screened water into Clifton Court Forebay. [WaterFix Hearing Exhibit CCC-SC-31 which reproduced Figures 7-5 and 20-1 from the Conceptual Engineering Report.]

DWR's previous WaterFix project relied on diversions from the south Delta into Clifton Court for approximately half of the total WaterFix south-of-Delta exports. The current single tunnel Delta Conveyance proposal will likely also rely on continued south Delta diversions for the SWP. A Delta project that fails to screen the largest diversion point in the Delta is not in the public interest. The EIS and DWR's EIR must analyze south Delta exports through fully screened intakes.

9. Other Modeling Requests for the Corps' EIS

- a. The EIS must accurately model the conveyance of CVP water, if any, through any new Delta conveyance for the U.S. Bureau of Reclamation.
- b. The EIS must simulate the actual proposed project operations, e.g., the Rio Vista minimum flow requirement of 3,000 cfs (January-August) that was assumed by DWR in the WaterFix operations.
- c. The EIS must include alternatives that operate to the existing SWRCB Bay-Delta standards, state and federal biological opinions and U.S. Army Corps of Engineers permits. At various times during DWR's BDCP and WaterFix environmental review processes, DWR assumed the Emmaton SWRCB D-1641 agricultural water quality

Zachary Simmons, USACE Project Manager
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October 20, 2020
Page 11

standard compliance location would be relocated to Three Mile Slough, ignored the Corps' limits on inflows to Clifton Court Forebay and ignored the biological opinion limit on the ratio of San Joaquin River inflow to south Delta exports.

- d. The EIS must simulate the operations of the proposed project with and without **Global Climate Change**.
- e. The EIS must analyze and disclose the effect of the new intakes on the flow through Sutter and Steamboat Sloughs and the corresponding effect on the passage of migrating anadromous fish, and smelt, through the Sacramento River and Delta Cross Channel system.

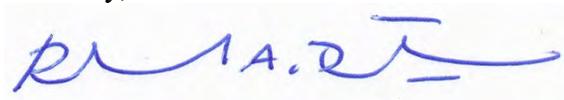
Many of these comments remain similar to the November 9, 2015 comments made by Contra Costa County to the USACE on the Department of Water Resources' 2015 California WaterFix Section 404/10 Application, Public Notice SPK-2008-00861 (Ryan Hernandez to Zachary Simmons, Project Manager.) I request that those comments also be included into the record by reference.

Some of my comments focused on the State of California's CEQA requirements (rather than just NEPA) and State legislation and regulations. However, it is important that the federal USACE not issue permits to projects within California that fail to comply with the State's own laws.

I am also attaching exhibits from the SWRCB's water rights hearing on the WaterFix project, many of which are referenced in this letter and shed additional light on the many flaws with the proposed conveyance-only approach.

Thank you for considering my comments on the Public Notice for the Delta Conveyance project application and the Notice of Intent. If you have any questions, please contact me at (510) 339-3618.

Sincerely,



Richard A. Denton

Attachment: Compilation of Relevant SWRCB WaterFix Hearing Exhibits

Cc: Wade Crowfoot, California Secretary for Natural Resources
Email: secretary@resources.ca.gov

Compilation of Relevant SWRCB WaterFix Hearing Exhibits
Joint Contra Costa County and Solano County exhibits in the WaterFix Change
Petition Hearing plus DWR Exhibit 334

1. CCC-SC-20 Delta Independent Science Board to DSC 30Sep2015 RDEIR-SDEIS comments
2. CCC-SC-28 Difference Between 16-year and 82-year Analyses of Water Quality Impacts
3. CCC-SC-31 November 2009 Conceptual Engineering Report Design for Screened Intake to Clifton Court Forebay
4. CCC-SC-51 Written Rebuttal Testimony of Dr. Richard A. Denton
5. CCC-SC-60 Daily Old River at Bacon Island EC in November for CWF H3+
6. CCC-SC-63 Proposed WaterFix Project Increases Exports during Drier Periods
7. CCC-SC-64 Proposed WaterFix Project Reduces Sacramento Inflows at Freeport
8. CCC-SC-74 Historical Trends in Fall X2 from DAYFLOW
9. DWR-334 2016 CCWD Agreement



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September 30, 2015

To: Randy Fiorini, Chair, Delta Stewardship Council
Charlton Bonham, Director, California Department
of Fish and Wildlife

From: Delta Independent Science Board

Subject: Review of environmental documents for California WaterFix

We have reviewed the partially Recirculated Draft Environmental Impact Report/ Supplemental Draft Environmental Impact Statement for the Bay Delta Conservation Plan/California WaterFix (herein, "the Current Draft"). We focused on how fully and effectively it considers and communicates the scientific foundations for assessing the environmental impacts of water conveyance alternatives. The review is attached and is summarized below.

The Current Draft contains a wealth of information but lacks completeness and clarity in applying science to far-reaching policy decisions. It defers essential material to the Final EIR/EIS and retains a number of deficiencies from the Bay Delta Conservation Plan Draft EIR/EIS. The missing content includes:

1. Details about the adaptive-management process, collaborative science, monitoring, and the resources that these efforts will require;
2. Due regard for several aspects of habitat restoration: landscape scale, timing, long-term monitoring, and the strategy of avoiding damage to existing wetlands;
3. Analyses of how levee failures would affect water operations and how the implemented project would affect the economics of levee maintenance;
4. Sufficient attention to linkages among species, landscapes, and management actions; effects of climate change on water resources; effects of the proposed project on San Joaquin Valley agriculture; and uncertainties and their consequences;
5. Informative summaries, in words, tables, and graphs, that compare the proposed alternatives and their principal environmental and economic impacts.

The effects of California WaterFix extend beyond water conveyance to habitat restoration and levee maintenance. These interdependent issues of statewide importance warrant an environmental impact assessment that is more complete, comprehensive, and comprehensible than the Current Draft.

**Review by the Delta Independent Science Board of the
Bay Delta Conservation Plan/California WaterFix
Partially Recirculated Draft Environmental Impact Report/
Supplemental Draft Environmental Impact Statement**

September 30, 2015

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EXPECTATIONS FOR IMPACT ASSESSMENT OF CALIFORNIA WATERFIX

The Sacramento – San Joaquin Delta presents interconnected issues of water, biological resources, habitat, and levees. Dealing with any one of these problem areas is most usefully considered in light of how it may affect and be affected by the others. The effects of any actions further interact with climate change, sea-level rise, and a host of social, political, and economic factors. The consequences are of statewide importance.

These circumstances demand that the California WaterFix EIR/EIS go beyond legal compliance. This EIR/EIS is more than just one of many required reports. Its paramount importance is illustrated by the legal mandate that singles it out as the BDCP document we must review.

It follows that the WaterFix EIR/EIS requires extraordinary completeness and clarity. This EIR/EIS must be uncommonly complete in assessing important environmental impacts, even if that means going beyond what is legally required or considering what some may deem speculative (below, p. 4). Further, the WaterFix EIR/EIS must be exceptionally clear about the scientific and comparative aspects of both environmental impacts and project performance (p. 9).

These reasonable expectations go largely unmet in the Bay Delta Conservation Plan/California WaterFix Partially Recirculated Draft Environmental Impact Report/Supplemental Draft Environmental Impact Statement Draft (herein, “the Current Draft”). We do not attempt to determine whether this report fulfills the letter of the law. But we find the Current Draft sufficiently incomplete and opaque to deter its evaluation and use by decision-makers, resource managers, scientists, and the broader public.

BACKGROUND OF THIS REVIEW

The Delta Reform Act of 2009, in §85320(c), directs the Delta Independent Science Board (Delta ISB) to review the environmental impact report of the Bay Delta Conservation Plan (BDCP) and to provide the review to the Delta Stewardship Council and the California Department of Fish and Wildlife. On May 14, 2014, we submitted our review of the BDCP’s Draft Environmental Impact Report/Draft Environmental Impact Statement (herein, the “Previous Draft”), which had been posted for review on December 9, 2013. This review¹ contained three main parts: an extended summary, detailed responses to charge questions from the Delta Stewardship Council, and reviews of individual chapters. Although the Previous Draft considered vast amounts of scientific information and analyses to assess the myriad potential environmental impacts of the many proposed BDCP actions, we concluded that the science in the Previous Draft had significant gaps, given the scope and importance of the BDCP.

The proposed BDCP actions have now been partitioned into two separate efforts: water conveyance under California WaterFix² and habitat restoration under California EcoRestore³. Environmental documents in support of California WaterFix (the Current Draft) were made available for a 120-day comment period that began July 10, 2015. The Current Draft focuses on three new alternatives for conveying Sacramento River water through the Sacramento – San

¹ <http://deltacouncil.ca.gov/sites/default/files/documents/files/Attachment-1-Final-BDCP-comments.pdf>

² <http://www.californiawaterfix.com/>

³ <http://resources.ca.gov/ecorestore/>

Joaquin Delta. One of them, Alternative 4A, is the preferred alternative, identified as California WaterFix.

The Delta Stewardship Council asked us to review the Current Draft and to provide our comments by the end of September 2015. We are doing so through this report and its summary, which can be found in the cover letter.

The review began in July 2015 with a preliminary briefing from Laura King-Moon of California Department of Water Resources (three Delta ISB members present). The Delta ISB next considered the Current Draft in a public meeting on August 13–14 (nine of the ten members present)⁴. The meeting included a briefing on California EcoRestore by David Okita of California Natural Resources Agency and a discussion of the Current Draft and California WaterFix with Cassandra Enos-Nobriga of California Department of Water Resources (DWR) and Steve Centerwall of ICF International.

The initial public draft of this review was based on our study of Sections 1-4 of the Current Draft and on checks of most resource chapters in its Appendix A. This public draft was the subject of a September 16 meeting that included further discussions with Cassandra Enos-Nobriga⁵ and comments from Dan Ray of the Delta Stewardship Council staff. Additional comments on that initial draft were provided by DWR in a September 21 letter to the Delta ISB chair⁶. These discussions and comments helped clarify several issues, particularly on expectations of a WaterFix EIR/EIS.

This final version of the review begins with a summary in the cover letter. The body of the report continues first with a section on our understanding of major differences between the BDCP and California WaterFix. Next, after noting examples of improvement in the Current Draft, we describe our main concerns about the current impact assessments. These overlap with main concerns about the Previous Draft, which we revisit to consider how they are addressed in the Current Draft. Finally, we offer specific comments on several major Sections and Chapters.

DIFFERENCES BETWEEN THE BDCP AND CALIFORNIA WATERFIX

The project proposed in the Current Draft differs in significant respects from what was proposed as the BDCP in December 2013. Here we briefly state our understanding of some main differences and comment on their roles on this review:

- The time period for permitting incidental take under Section 7 of the federal Endangered Species Act (ESA) and Section 2081(b) of the California Endangered Species Act (CESA) is substantially less than the 50 years envisioned as part of a Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) in BDCP. As a result, the science associated with many impacts of climate change and sea-level rise may seem less relevant. The permitting period for the project proposed in the Current Draft remains in place unless environmental baseline conditions change substantially or other permit requirements are not met. Consequently, long-term effects of the proposed project remain important in terms of operations and expected benefits (p. 8).

⁴ <http://deltacouncil.ca.gov/docs/delta-isb-meeting-notice-meeting-notice-delta-isb/delta-independent-science-board-isb-august-13>

⁵ Written version at https://s3.amazonaws.com/californiawater/pdfs/63qnf_Delta_ISB_draft_statement_-_Enos_-FINAL.pdf

⁶ <http://deltacouncil.ca.gov/docs/response-letter-dwr>

- In this shortened time frame, responsibility for assessing WaterFix’s effects on fish and wildlife would fall to resource agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, California Department of Fish and Wildlife). Other impacts would be regulated by a variety of federal and state agencies (Current Draft Section 1).
- The proposed habitat restorations have been scaled back. The Current Draft incorporates elements of 11 Conservation Measures from BDCP to mitigate impacts of construction and operations. Most habitat restoration included in the Previous Draft has been shifted to California EcoRestore. Our review of the Previous Draft contained many comments on the timing of restoration, species interactions, ecological linkages of conservation areas, locations of restoration areas and the science supporting the efficiency and uncertainty of effective restoration. Some of these comments apply less to the Current Draft because of its narrower focus on water conveyance.
- There remains an expected reliance on cooperative science and adaptive management during and after construction.
- It is our understanding that the Current Draft was prepared under rules that disallow scientific methods beyond those used in the Previous Draft. The rules do allow new analyses, however. For example, we noticed evidence of further analyses of contaminants, application of existing methods (e.g. particle tracking) to additional species (e.g., some of the non-covered species), and occasional selection of one model in place of the combined results of two models (e.g., fish life cycle models SALMOD and SacEFT).

IMPROVEMENTS ON THE PREVIOUS DRAFT

A proposed revamping of water conveyance through the Sacramento-San Joaquin Delta involves a multitude of diverse impacts within and outside of the Delta. Unavoidably, the EIR/EIS for such a project will be complex and voluminous, and preparing it becomes a daunting task in its own right. The inherent challenges include highlighting, in a revised EIR/EIS, the most important of the changes.

The new Sections 1 through 4 go a long way toward meeting some of these challenges. Section 1 spells out the regulatory context by discussing laws and agencies that establish the context for the Current Draft. Section 2 summarizes how the Previous Draft was revised in response to project changes and public input. Section 3 describes how the preferred alternative in the Previous Draft (Alternative 4) has been changed. Section 4 presents an impressive amount of detailed information in assessing the sources of habitat loss for various species and discussing how restoration and protection can mitigate those losses. Generally comprehensive lists of “Resource Restoration and Performance Principles” are given for the biological resources that might be affected by construction or operations. For example, page 4.3.8-140 clearly describes a series of measures to be undertaken to minimize the take of sandhill cranes by transmission lines (although the effectiveness of these measures is yet to be determined).

Section 4 also contains improvements on collaborative science (4.1.2.4, mostly reiterated in ES.4.2). This part of the Current Draft draws on recent progress toward collaborative efforts in monitoring and synthesis in support of adaptive management in the Delta. The text identifies the main entities to be involved in an expected memorandum of agreement on a monitoring and adaptive-management program in support of the proposed project.

Appendix A describes revisions to the resource chapters of the Previous Draft. Track-changed versions of the chapters simplify the review process, although this was not done for the

key chapter on aquatic resources (p. 17). We noticed enhanced analyses of contaminants and application of methods such as particle tracking to additional species, including some of the non-covered taxa; a detailed treatment of *Microcystis* blooms and toxicity; more information about disinfection byproducts; improved discussion of vector control arising from construction and operational activities; and revised depiction of surficial geology. Potential exposure of biota to selenium and methylmercury is now considered in greater detail. Evaluations will be conducted for restoration sites on a site-specific basis; if high levels of contaminants cannot otherwise be addressed, alternative restoration sites will be considered (page 4.3.8-118). Incidentally, this is a good example of adaptive management, although it is not highlighted as such. Explanations were provided for why the nitrogen-to-phosphorus ratio was not specifically evaluated, why dissolved vs. total phosphorus was used in the assessment, and how upgrades to the Sacramento Regional Wastewater Treatment Plant would eventually affect phosphorus concentrations.

CURRENT CONCERNS

These and other strengths of the Current Draft are outweighed by several overarching weaknesses: overall incompleteness through deferral of content to the Final EIR/EIS (herein, "the Final Report"); specific incompleteness in treatment of adaptive management, habitat restoration, levees, and long-term effects; and inadequacies in presentation. Some of these concerns overlap with ones we raised in reviewing the Previous Draft (revisited below, beginning on p. 10).

Missing content

The Current Draft lacks key information, analyses, summaries, and comparisons. The missing content is needed for evaluation of the science that underpins the proposed project. Accordingly, the Current Draft fails to adequately inform weighty decisions about public policy. The missing content includes:

1. Details on adaptive management and collaborative science (below, p. 5).
2. Modeling how levee failures would affect operation of dual-conveyance systems (below, p. 7). Steve Centerwall told us on August 14 that modeling of the effects of levee failure would be presented in the Final Report.
3. Analysis of whether operation of the proposed conveyance would alter the economics of levee maintenance (below, p. 7).
4. Analyses of the effects of climate change on expected water exports from the Delta. “[A]n explanation and analysis describing potential scenarios for future SWP/CVP system operations and uncertainties [related to climate change] will be provided in the Final Report” (p. 1-35 of the Current Draft).
5. Potential impacts of climate change on system operations, even during the shortened time period emphasized in the Current Draft (below, p. 8 and 11).
6. Potential effects of changes in operations of the State Water Project (SWP) and Central Valley Project (CVP), or other changes in water availability, on agricultural practices in the San Joaquin Valley (p. 12).
7. Concise summaries integrated with informative graphics (below, p. 9 and 13). The Current Draft states that comparisons of alternatives will be summarized in the Final Report (p. 1-35).

While some of the missing content has been deferred to the Final Report (examples 2, 4, and 7), other gaps have been rationalized by deeming impacts “too speculative” for assessment.

CEQA guidance directs agencies to avoid speculation in preparing an EIR/EIS⁷. To speculate, however, is to have so little knowledge that a finding must be based on conjecture or guesswork. Ignorance to this degree does not apply to potential impacts of WaterFix on levee maintenance (example 3; see p. 7) or on San Joaquin Valley agriculture (example 6; p. 12).

Even if content now lacking would go beyond what is legally required for an EIR/EIS, providing such content could assist scientists, decision-makers, and the public in evaluating California WaterFix and Delta problems of statewide importance (above, p. 1).

Adaptive management

The guidelines for an EIR/EIS do not specifically call for an adaptive-management plan (or even for adaptive management). However, if the project is to be consistent with the Delta Plan (as legally mandated), adaptive management should be part of the design.

The Current Draft relies on adaptive management to address uncertainties in the proposed project, especially in relation to water operations. The development of the Current Draft from the Previous Draft is itself an exercise in adaptive management, using new information to revise a project during the planning stage. Yet adaptive management continues to be considered largely in terms of how it is to be organized (i.e., coordinated with other existing or proposed adaptive-management collaborations) rather than how it is to be done (i.e., the process of adaptive management). Adaptive management should be integral with planned actions and management—the Plan A rather than a Plan B to be added later if conditions warrant. The lack of a substantive treatment of adaptive management in the Current Draft indicates that it is not considered a high priority or the proposers have been unable to develop a substantive idea of how adaptive management would work for the project.

There is a very general and brief mention of the steps in the adaptive management process in Section 4 (p. 4.1-6 to 4.1-7), but nothing more about the process. We were not looking here for a primer on adaptive management. Rather, we expected to find serious consideration of barriers and constraints that have impeded implementation of adaptive management in the Delta and elsewhere (which are detailed in the Delta Plan), along with lessons learned on how adaptive management can be conducted overcome these problems.

The Current Draft contains general statements on how collaborative science and adaptive management under California WaterFix would be linked with the Delta Collaborative Science and Adaptive Management Program (CSAMP) and the Collaborative Adaptive Management Team (CAMT). These efforts, however, have taken place in the context of regulations and permits, such as biological opinions and biological assessments required under the Endangered Species Act. We did not find examples of how adaptive management would be applied to assessing—and finding ways to reduce—the environmental impacts of project construction and operations.

Project construction, mitigation, and operations provide many opportunities for adaptive management, both for the benefit of the project as well as for other Delta habitat and ecosystem initiatives, such as EcoRestore. To be effective in addressing unexpected outcomes and the need for mid-course corrections, an adaptive-management management team should evaluate a broad range of actions and their consequences from the beginning, as plans are being developed, to facilitate the early implementation and effectiveness of mitigation activities.

⁷ https://s3.amazonaws.com/californiawater/pdfs/bo0lx_Delta_ISB_Draft_Statement_&_Response_Letter_-_Enos_-_FINAL.pdf

The Current Draft defers details on how adaptive management will be made to work: “An adaptive management and monitoring program will be implemented to develop additional scientific information during the course of project construction and operations to inform and improve conveyance facility operational limits and criteria” (p. ES-17). This is too late. If adaptive management and monitoring are central to California WaterFix, then details of how they will be done and resourced should be developed at the outset (now) so they can be better reviewed, improved, and integrated into related Delta activities. The details could include setting species-specific thresholds and timelines for action, creating a Delta Adaptive Management Team, and capitalizing on unplanned experiments such as the current drought⁸. Illustrative examples could use specific scenarios with target thresholds, decision points, and alternatives. The missing details also include commitments and funding needed for science-based adaptive management and restoration to be developed and, more importantly, to be effective.

The protracted development of the BDCP and its successors has provided ample time for an adaptive-management plan to be fleshed out. The Current Draft does little more than promise that collaborations will occur and that adaptive management will be implemented. This level of assurance contrasts with the central role of adaptive management in the Delta Plan and with the need to manage adaptively as climate continues to change and new contingencies arise.

Restoration as mitigation

Restoration projects should not be planned and implemented as single, stand-alone projects but must be considered in a broader, landscape context. We highlighted the landscape scale in our review of the Previous Draft and also in an earlier review of habitat restoration in the Delta⁹. A landscape approach applies not just to projects that are part of EcoRestore, but also to projects envisioned as mitigation in the Current Draft, even though the amount of habitat restoration included (as mitigation) in the Current Draft has been greatly reduced. On August 13 and 14, representatives of WaterFix and EcoRestore acknowledged the importance of the landscape scale, but the Current Draft gives it little attention. Simply because the CEQA and NEPA guidelines do not specifically call for landscape-level analyses is not a sufficient reason to ignore them.

Wetland restoration is presented as a key element of mitigation of significant impacts (example below in comments on Chapter 12, which begin on p. 18). We noticed little attention to the sequence required for assessing potential impacts to wetlands: first, avoid wetland loss; second, if wetland loss cannot be avoided, minimize losses; and third, if avoidance or minimization of wetland loss is not feasible, compensate. Much of the emphasis in the Current Draft is on the third element. Sequencing apparently will be addressed as part of the permitting process with the US Army Corps of Engineers (USACE) for mitigation related to the discharge of dredged or fill material.¹⁰ However, it is difficult to evaluate the impacts on wetlands in advance of a clarification of sequencing and criteria for feasibility.

Mitigation ratios

Restoring a former wetland or a highly degraded wetland is preferable to creating wetlands from uplands¹¹. When an existing wetland is restored, however, there is no net gain of

⁸ <http://deltacouncil.ca.gov/docs/adaptive-management-report-v-8>

⁹ <http://deltacouncil.ca.gov/sites/default/files/documents/files/HABITAT%20RESTORATION%20REVIEW%20FINAL.pdf>

¹⁰ Letter from Cassandra Enos-Nobriga, DWR, September 21, 2015.

¹¹ <http://www.nap.edu/openbook.php?isbn=0309074320>

area, so it is unclear whether credits for improving existing wetlands would be considered equivalent to creating wetlands where they did not recently exist.

In view of inevitable shortcomings and time delays in wetland restorations, mitigation ratios should exceed 1:1 for enhancement of existing wetlands. The ratios should be presented, rather than making vague commitments such as “restore or create 37 acres of tidal wetland...” The Final Draft also needs to clarify how much of the wetland restoration is out-of-kind and how much is in-kind replacement of losses. It should examine whether enough tidal area exists of similar tidal amplitude for in-kind replacement of tidal wetlands, and whether such areas will exist with future sea-level rise. We agree that out-of-kind mitigation can be preferable to in-kind when the trade-offs are known and quantified and mitigation is conducted within a watershed context, as described in USACE’s 2010 guidance for compensatory wetland mitigation.¹² Since then, many science-based approaches have been developed to aid decision-making at watershed scales, including the 2014 Watershed Approach Handbook produced by the Environmental Law Institute and The Nature Conservancy¹³.

Restoration timing and funding

To reduce uncertainty about outcomes, allow for beneficial and economical adaptive management, and allow investigators to clarify benefits before the full impacts occur, mitigation actions should be initiated as early as possible. Mitigation banks are mentioned, but are any operational or planned for operation soon? The potential for landowners to develop mitigation banks could be encouraged so restoration could begin immediately, engendering better use of local knowledge, financial profit, and local support for the project. We are told that the timing of mitigation will be coordinated with other review processes that are currently ongoing.⁶

Levees

A comprehensive assessment of environmental impacts should relate California WaterFix to levee failure by examining the consequences each may have for the other. The interplay between conveyance and levees is receiving additional attention through the Delta Levee Investment Strategy.

On the one hand, the Current Draft fails to consider how levee failures would affect the short-term and long-term water operations spelled out in Table 4.1-2. A rough estimate was proposed under the Delta Risk Management Study¹⁴ and another is part of a cost-benefit analysis for the BDCP¹⁵. The Final Report should provide analyses that incorporate these estimates.

On the other hand, the Current Draft also fails to consider how implementing the project would affect the basis for setting the State’s priorities in supporting Delta levee maintenance. This potential impact is illustrated by a recent scoring system of levee-project proposals that awards points for expected benefits to “export water supply reliability”¹⁶. Further efforts to quantify these benefits have been recommended as part of a comprehensive risk assessment that

¹² http://www.sac.usace.army.mil/Portals/43/docs/regulatory/Guidelines_for_Preparing_a_Compensatory_Mitigation_Planf.pdf

¹³ https://www.eli.org/sites/default/files/eli-pubs/watershed-approach-handbook-improving-outcomes-and-increasing-benefits-associated-wetland-and-stream_0.pdf

¹⁴ http://www.water.ca.gov/floodmgmt/dsmo/sab/drmosp/docs/Delta_Seismic_Risk_Report.pdf

¹⁵ http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Draft_BDCP_Statewide_Economic_Impact_Report_8513.sflb.ashx

¹⁶ http://www.water.ca.gov/floodsafe/fessro/docs/special_PSP14_final.pdf

would guide the Delta Levees Investment Strategy¹⁷. Public safety, a focus of the Delta Flood Emergency Management Plan,¹⁸ is just one asset that levees protect. The Current Draft does not evaluate how the proposed project may affect estimates of the assets that the levees protect.

The Current Draft cites levee fragility mainly as a reason to build isolated conveyance for Sacramento River water (examples, p. 1-1, 1-7, 1-9). In a similar vein, the California WaterFix website states, “Aging dirt levees are all that protect most of California’s water supplies from the affects [*sic*] of climate change. Rising sea levels, intense storms, and floods could all cause these levees to fail, which would contaminate our fresh water with salt, and disrupt water service to 25 million Californians”¹⁹. Neither the Previous Draft nor the Current Draft, however, provides a resource chapter about Delta levees. Such a chapter would be an excellent place to examine interacting impacts of conveyance and levees.

Long-term effects

With the shortened time period, several potential long-term impacts of or on the proposed project no longer receive attention. While these effects may not become problematic during the initial permit period, many are likely to affect project operations and their capacity to deliver benefits over the long operational life of the proposed conveyance facilities. In our view, consideration of these long-term effects should be part of the evaluation of the science foundation of the proposed project.

The No-Action alternative establishes the baseline for evaluating impacts and benefits of the proposed alternative(s). It is therefore important to consider carefully how the baseline is established, as this can determine whether particular consequences of the alternatives have costs or benefits. Climate change, for example, is considered under the No-Action alternative in the Current Draft, as is sea-level rise. Climate change is expected to reduce water availability for the proposed northern intakes, and both climate change and sea-level rise are expected to influence tidal energy and salinity intrusion within the Delta²⁰. Changes in water temperature may influence the condition of fishes that are highly temperature-dependent in the current analyses. These environmental effects, in turn, are likely to influence environmental management and regulation; from the standpoint of water quality they may even yield environmental benefits if agricultural acreage decreases and agricultural impacts are reduced.

Rather than consider such effects, however, the Current Draft focuses on how the proposed project would affect “the Delta’s resiliency and adaptability to expected climate change” (Current Draft section 4.3.25). Quite apart from the fact that “resiliency” and “adaptability” are scarcely operational terms, the failure to consider how climate change and sea-level rise could affect the outcomes of the proposed project is a concern that carries over from our 2014 review and is accentuated by the current drought (below, p. 11).

The Current Draft states that “Groundwater resources are not anticipated to be substantially affected in the Delta Region under the No Action Alternative (ELT) because surface water inflows to this area are sufficient to satisfy most of the agricultural, industrial, and municipal water supply needs” (p. 4.2-16). This conclusion is built on questionable assumptions; the current drought illustrates how agriculture turns to groundwater when surface-water availability diminishes. Groundwater regulation under the recently enacted Sustainable

¹⁷ <http://deltacouncil.ca.gov/docs/delta-levee-investment-strategy/dlis-peer-review-technical-memorandum-31>

¹⁸ <http://www.water.ca.gov/floodmgmt/hafoo/fob/dreppr/InterdepartmentalDraftDFEMP-2014.pdf>.

¹⁹ <http://www.californiawaterfix.com/problem>

²⁰ <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0024465>

Groundwater Management Act (SGMA) can also be expected to have long-term effects on the proposed project—effects that the Current Draft does not assess. Ending of more than a million acre-feet of overdraft in the southern Central Valley under the SGMA is likely to increase demand for water exports from the Delta in the coming decades. The Current Draft discusses the potential effects of the project on groundwater (for example, in Sections 4.3.3 and 5.2.2.3), but we found only two brief, descriptive mentions of SGMA in the 235 pages of Section 5. The implications of prolonged droughts (e.g., on levee integrity) and of the consequences of SGMA receive too little attention in the Current Draft.

The Current Draft suggests that unnamed “other programs” that are “separate from the proposed project” will use elements of the Previous Draft to implement long-term conservation efforts that are not part of California WaterFix (Current Draft, p. 1-3). The Final Report should provide assurances that such other programs will step in, and could go further in considering their long-term prospects.

Informative summaries and comparisons

According to guidance for project proponents, “Environmental impact statements shall be written in plain language and may use appropriate graphics so that decision-makers and the public can readily understand them” (Code of Federal Regulations, 40 CFR 1502.8). Far-reaching decisions should not hinge on environmental documents that few can grasp.

This guidance applies all the more to an EIR/EIS of the scope, complexity, and importance of the Current Draft. It demands excellent comparative descriptions of alternatives that are supported by readable tables and high-quality graphics, enumeration of major points, well-organized appendices, and integration of main figures with the text. For policy deliberations, the presentation of alternatives should include explicit comparisons of water supply deliveries and reliabilities as well as economic performance. For decision-makers, scientists, and the public, summaries of impacts should state underlying assumptions clearly and highlight major uncertainties. The Current Draft is inadequate in these regards.

The Previous Draft provided text-only summaries for just the two longest of its resource chapters (Chapters 11 and 12). A fragmentary comparison of alternatives was buried in a chapter on “Other CEQA/NEPA required sections” (part 3 of Chapter 31) but fell far short of what was needed. Both the Previous and Current Drafts have been accompanied by a variety of outreach products for broad audiences (e.g., the descriptive overview of the BDCP Draft EIR/EIS²¹). These products do little to compensate for the overall paucity of readable summaries and comparisons in the Previous and Current Drafts.

For over three years, the Delta ISB has been specifically requesting summaries and comparisons: first in June 2012²², then in June 2013²³, and again in a review of the Previous Draft in May 2014 (footnote 1, p. 1). Appallingly, such summaries and comparisons remain absent in the Current Draft. The generally clear writing in Sections 1 through 4 shows that the preparers are capable of providing the requested summaries and comparisons. Prescriptions in CEQA and NEPA in no way exclude cogent summaries, clear comparisons, or informative graphics. And three years is more than enough time to have developed them.

²¹ Highlights+of+the+Draft+EIS-EIR+12-9-13.pdf

²² http://deltacouncil.ca.gov/sites/default/files/documents/files/DISB_Letter_to_JMeral_and_DHoffman-Floerke_061212.pdf

²³ http://deltacouncil.ca.gov/sites/default/files/documents/files/DISB%20Comments%20on%20Draft%20BDCP%20Document.doc_.pdf

On August 14, 2015, representatives of California WaterFix assured us that this kind of content would eventually appear, but only in the Final Report. That will be far too late in the EIR/EIS process for content so critical to comprehending what is being proposed and its potential impacts.

PRIOR CONCERNS AND THEIR RELEVANCE TO THE CURRENT DRAFT

The Delta ISB review of May 14, 2014 emphasized eight broad areas of concern about the scientific basis for the Previous Draft. Each is summarized below, followed by a brief appraisal of how (or whether) the concern has been dealt with in the Current Draft. While the reduced scope of the proposed project has reduced the relevance of some issues, particularly habitat restoration and other conservation measures, other concerns persist.

Our persistent concerns include the treatment of uncertainty, the implementation of adaptive management, and the use of risk analysis. These topics receive little or no further attention in the Current Draft. We also found few revisions in response to points we raised previously about linkages among species, ecosystem components, or landscapes; the potential effects of climate change and sea-level rise; and the potential effects of changes in water availability on agricultural practices and the consequent effects on the Delta. Our previous comments about presentation also pertain.

Effectiveness of conservation actions

Our 2014 review found that many of the impact assessments hinged on optimistic expectations about the feasibility, effectiveness, or timing of the proposed conservation actions, especially habitat restoration.

This is arguably less of a concern now, given the substantially shorter time frame of the revised project and narrower range of conservation actions designed for compensatory restoration. Nonetheless, the Current Draft retains unwarranted optimism, as on page 4.3.25-10: “By reducing stressors on the Delta ecosystem through predator control at the north Delta intakes and Clifton Court Forebay and installation of a nonphysical fish barrier at Georgiana Slough, Alternative 4A will contribute to the health of the ecosystem and of individual species populations making them stronger and more resilient to the potential variability and extremes caused by climate change.” A scientific basis for this statement is lacking, and an adaptive or risk-based management framework is not offered for the likely event that such optimism is unfulfilled.

Is it feasible for even the reduced amounts of mitigation and restoration to be completed within the time period proposed? Perhaps yes. Is it feasible that these actions will mitigate impacts over the long term? This is more problematic. To be effective, mitigation actions should deal with both the immediate and long-term consequences of the project. The proposed permitting should allow for monitoring long enough to assess the effectiveness of habitat restoration measures, which will need to extend beyond the initial permitting period.

Uncertainty

The 2014 review found the BDCP encumbered by uncertainties that were considered inconsistently and incompletely. We commented previously that modeling was not used effectively enough in bracketing uncertainties or exploring how they may propagate or be addressed.

In the Current Draft, uncertainties and their consequences remain inadequately addressed, improvements notwithstanding. Uncertainties will now be dealt with by establishing “a robust program of collaborative science, monitoring, and adaptive management” (ES 4.2). No details about this program are provided, so there is no way to assess how (or whether) uncertainties will be dealt with effectively. Although sensitivity modeling was used to address the effects of changes in the footprint and other minor changes of the revised project, full model runs were not carried out to assess the overall effects of the specific changes. Consequently, modeling that would help to bracket ranges of uncertainties or (more importantly) assess propagation of uncertainties is still inadequate.

Many of our prior concerns about uncertainties pertained to impacts on fish. If those uncertainties have now been addressed in Chapter 11, they are difficult to evaluate because changes to that chapter have not been tracked in the public draft (below, p. 17).

There are also uncertainties with the data generated from model outputs, although values are often presented with no accompanying error estimates. This situation could be improved by presenting results from an ensemble of models and comparing the outputs.

Effects of climate change and sea-level rise on the proposed actions

Our 2014 review stated concerns that the Previous Draft underestimated effects of climate change and sea-level rise across the 50-year timeline of the BDCP. With the nominal duration shortened substantially, most of the projected impacts of climate change and sea-level rise may occur later. But climate-related issues remain.

First, the Current Draft is probably outdated in its information on climate change and sea-level rise. It relies on information used in modeling climate change and sea-level rise in the Previous Draft, in which the modeling was conducted several years before December 2013. The absence of the climate-change chapter (Chapter 29) in the Previous Draft from Appendix A in the Current Draft indicates that no changes were made. In fact, the approaches and assumptions in the Current Draft remained unchanged from the Previous Draft in order to ensure consistency and comparability across all the Alternatives, even though newer scientific information had become available.⁶ Yet climatic extremes, in particular, are a topic of intense scientific study, illustrated by computer simulations of ecological futures²⁴ and findings about unprecedented drought²⁵. The Current Draft does not demonstrate consideration of recently available climate science, and it defers to the Final Report analysis of future system operations under potential climate and sea-level conditions. In fact, the Current Draft generally neglects recent literature, suggesting a loose interpretation of “best available science.”

Second, climate change and sea-level rise are now included in the No-Action Alternative, as they will transpire whether or not WaterFix moves forward. A changed future thus becomes the baseline against which Alternative 4A (and the others) are compared. Changes in outflow from the Delta due to seasonal effects of climate change and the need to meet fall X2 requirements are considered in Section 4.3.1. The difference in outcomes then depends on assumptions about the facility and operations of Alternative 4A and the other Alternatives. Sensitivity analyses indicate that the impacts of the different Alternatives are generally similar in comparison to the No Action Alternative under the range of climate projections considered.⁶ Thus, “Delta exports would either remain similar or increase in wetter years and remain similar

²⁴ <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0024465>

²⁵ Cook, B.I., Ault, T.R., and Smerdon, J.E., 2015, Unprecedented 21st century drought risk in the American Southwest and Central Plains: *Science Advances*, v. 1, doi:10.1126/sciadv.1400082.

or decrease in the drier years under Alternative 4A as compared to the conditions without the project.” (p. 4.3.1-4). Such an inconclusive conclusion reinforces the need to be able to adapt to different outcomes. Simply because the Alternatives are expected to relate similarly to a No Action Alternative that includes climate change does not mean that the Alternatives will be unaffected by climate change.

Interactions among species, landscapes, and the proposed actions

The Previous Draft acknowledged the complexities produced by webs of interactions, but it focused on individual species, particular places, or specific actions that were considered in isolation from other species, places, or actions. Potential predator-prey interactions and competition among covered and non-covered fish species were not fully recognized. Confounding interactions that may enhance or undermine the effectiveness of proposed actions were overlooked. In our 2014 review we recommended describing and evaluating the potential consequences of such interactions, particularly in Chapters 11 (Fish and aquatic resources) and 12 (Terrestrial resources).

The Current Draft recognizes that mitigation measures for one species or community type may have negative impacts on other species or communities, and mitigation plans may be adjusted accordingly. But the trade-offs do not seem to be analyzed or synthesized. This emphasizes the need for a broader landscape or ecosystem approach that comprehensively integrates these conflicting effects.

Effects on San Francisco Bay, levees, and south-of-Delta environments

In 2014 we pointed to three kinds of impacts that the Previous Draft overlooked: (1) effects on San Pablo Bay and San Francisco Bay in relation to Delta tides, salinity, and migratory fish; (2) effects of levee failures on the proposed BDCP actions and effects of isolated conveyance on incentives for levee investments; and (3) effects of increased water reliability on crops planted, fertilizers and pesticides used, and the quality of agricultural runoff. The Current Draft responds in part to point 1 (in 11.3.2.7) while neglecting point 2 (above, p. 7) and point 3.

On point 3: Although the Current Draft considers how the project might affect groundwater levels south of the Delta (7.14 to 7.18), it continues to neglect the environmental effects of water use south of (or within) the Delta. Section 4.3.26.4 describes how increased water-supply reliability could lead to increased agricultural production, especially during dry years. Elsewhere, a benefit-cost analysis performed by ICF and the Battle Group²⁶ calculated the economic benefits of increased water deliveries to agriculture in the Delta. The Current Draft does not fully consider the consequences of these assumptions, or of the projections that the project may enhance water-supply reliability but may or may not increase water deliveries to agriculture (depending on a host of factors). We have been told that to consider such possibilities would be “too speculative” and that such speculations are explicitly discouraged in an EIR/EIS. Yet such consequences bear directly on the feasibility and effectiveness of the project, and sufficient information is available to bracket a range of potential effects. Our previous concerns are undiminished.

The impacts of water deliveries south of the Delta extend to the question of how each intake capacity (3,000, 9,000, or 15,000 cfs) may affect population growth in Southern

²⁶ Hecht, J., and Sunding, D., Draft Bay Delta Conservation Plan statewide economic impact report, August 2013.

California. Section 4.4.1-9 treats the growth-enabling effects of alternative 2D lightly, saying that additional EIS review would be needed for future developments.

Implementing adaptive management

In the Previous Draft, details about adaptive management were to be left to a future management team. In our 2014 review we asked about situations where adaptive management may be inappropriate or impossible to use, contingency plans in case things do not work as planned, and specific thresholds for action.

Although most ecological restoration actions have been shifted to California EcoRestore (p. 5), we retain these and other concerns about adaptive management under California WaterFix. If the mitigation measures for terrestrial resources are implemented as described, for example, they should compensate for habitat losses and disturbance effects of the project. The test will be whether the measures will be undertaken as planned, be as effective as hoped, and continue long enough to fully mitigate effects. This is where adaptive management and having contingency plans in place becomes critically important. It is not apparent that the mitigation plans include these components.

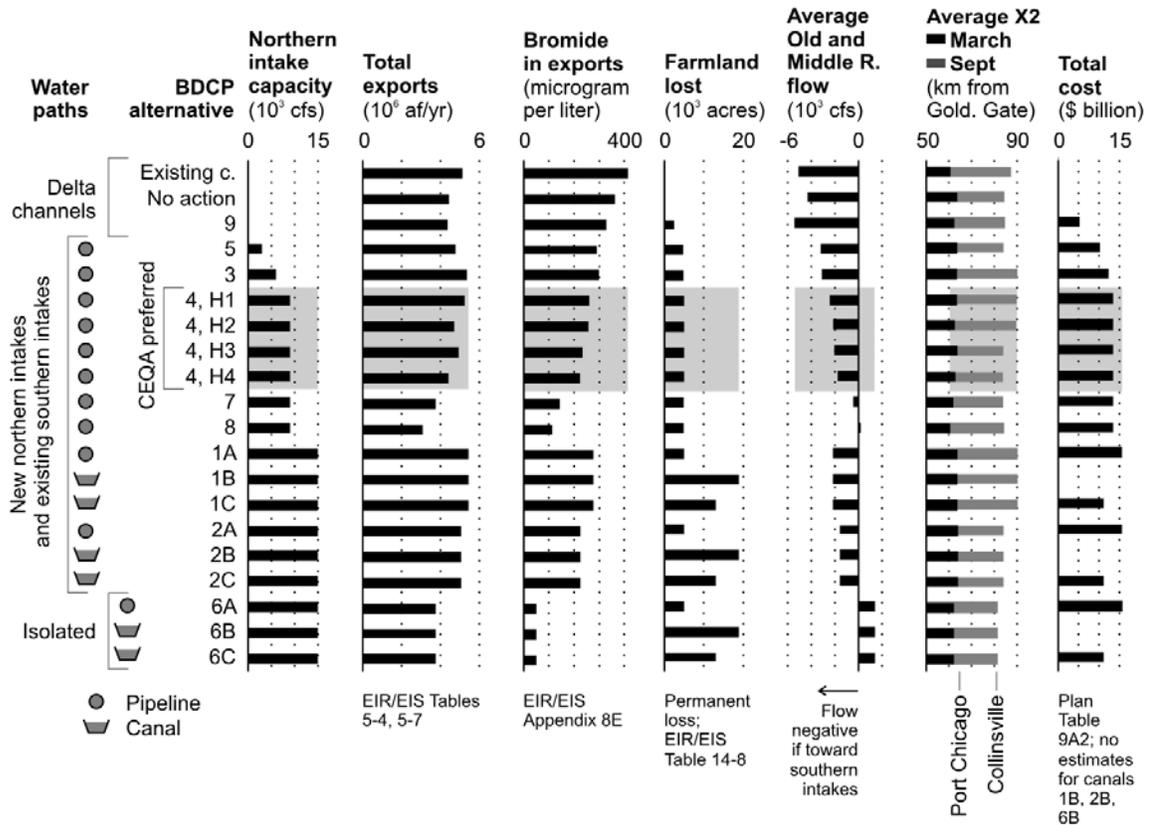
Reducing and managing risk

Our 2014 review advised using risk assessment and decision theory in evaluating the proposed BDCP actions and in preparing contingency plans. We noticed little improvement on this issue, just a mention that it might be considered later. This is not how the process should be used.

Comparing BDCP alternatives

The Previous Draft contained few examples of concise text and supporting graphics that compare alternatives and evaluate critical underlying assumptions. Rudimentary comparisons of alternatives were almost entirely absent. The Current Draft retains this fundamental inadequacy (p. 9).

Our 2014 review urged development and integration of graphics that offer informative summaries at a glance. We offered the example reproduced below. If the Current Draft contains such graphics, they would need to be ferreted out from long lists of individual pdf files. Because they are not integrated into the text where they are referenced in the Current Draft, the figures cannot readily illustrate key points.



COMMENTS ON INDIVIDUAL SECTIONS AND CHAPTERS

This final section of the review contains minimally edited comments on specific points or concerns. These comments are organized by Section or Chapter in the Current Draft. Many are indexed to pages in the section or chapter named in the heading.

Alternatives 4A, 2D, and 5A (Section 4)

It is good that the proposed alternatives are seen as flexible proposals, as it is difficult to imagine that any proposal for such a complex and evolving system could be implemented precisely as proposed. Some initial and ongoing modifications seem desirable, and unavoidable.

The operating guidance for the new alternatives seems isolated from the many other water management and environmental activities in and upstream of the Delta likely to be important for managing environmental and water supply resources related to Delta diversions. While it is difficult to specify detailed operations for such a complex system, more details on the governance of operations (such as the Real Time Operations process) would be useful. The operational details offered seem to have unrealistic and inflexible specificity. Presentations of delivery-reliability for different alternatives remain absent. Environmental regulations on Delta diversions have tended to change significantly and abruptly in recent decades, and seem likely to change in the future. How sensitive are project water supply and environmental performance to changes in operating criteria?

The collaborative science ideas seem philosophically attractive, but are not given much substance. Monitoring is mentioned, but details of organization, intent, and resources seem

lacking. Adequate funding to support monitoring, collaborative science, and adaptive management is a chronic problem. Section ES.4.2 states that “Proponents of the collaborative science and monitoring program will agree to provide or seek additional funding when existing resources are insufficient.” This suggests that these activities are lower in priority than they should be.

The three new alternatives, 4A, 2D, and 5A, seem to have modest changes over some previous alternatives, with the exception of not being accompanied by a more comprehensive environmental program. In terms of diversion capacities, they cover a wide range, 3,000 cfs (5A), 9,000 cfs (4A), and 15,000 cfs (2D). The tables comparing descriptions of the new alternatives to previous Alternative 4 are useful, but should be supplemented by a direct comparison of the three new alternatives.

The new Sustainable Groundwater Management Act (SGMA) seems likely to increase demands for water diversions from the Delta to the south to partially compensate for the roughly 1.5-2 maf/year that is currently supplied by groundwater overdraft.

The State seems embarked on a long-term reduction in urban water use, particularly outdoor irrigation. Such a reduction in urban water use is likely to have some modest effects on many of the water-demand and scarcity impacts discussed.

The climate change analysis of changes in Delta inflows and outflows is useful, but isolating the graphs in a separate document disembodies the discussion. The fragmentation of the document by removing each Section 4 figure into a separate file is inconvenient for all, and makes integrated reading practically impossible for many.

The details of the alternative analyses seem mostly relevant and potentially useful. Much can be learned about the system and the general magnitude of likely future outcomes from patient and prolonged reading of this text. An important idea that emerges from a reading of the No Action Alternative is that the Delta, and California water management, is likely to change in many ways with or without the proposed project. The No Action and other alternatives also illustrate the significant inter-connectedness of California’s water system. The range of impacts considered is impressive, but poorly organized and summarized.

The discussion of disinfection by-product precursor effects in Delta waters is improved significantly, but could be made more quantitative in terms of economic and public-health impacts.

The discussion on electromagnetic fields is suitably brief, while the tsunami discussion could be condensed.

The effects of the likely listing of additional native fish species as threatened or endangered seems likely to have major effects on project and alternative performance. These seem prudent to discuss, and perhaps analyze.

Is Alternative 2D, with 15,000 cfs capacity, a serious alternative? Does it deserve any space at all?

Table 4.1-8 implies that tidal brackish/*Schoenoplectus* marsh. Should some of this be considered tidal freshwater marsh?

The dynamics of the Delta are largely determined by water flows. The Current Draft acknowledges that water flows and salinity will change in complex ways. There are statements about how inflows, outflows, and exports will change in Alternative 4A in relation to baseline (No-Action) conditions (p. 4.3.8-13). What is the scientific basis on which these changes will be managed? Will models be used? What confidence should we have in current projections? Have the effects of droughts or deluges been considered?

4.3.7-10, line 13: Text on disturbing sediments and releasing contaminants needs to add nitrogen and phosphorus to the concerns.

Water quality (Chapter 8)

8-3, line 13: *Microcystis* is singled out as a cyanobacterium that can (but doesn't always) produce the toxin, microcystin; however, there are other cyanobacteria that sometimes produce other toxins. Different genera can differ in the nutrient that limits their blooms (see 2014 letter by Hans Paerl in *Science* 346(6406): 175-176). For example, *Microcystis* blooms can be triggered by N additions because this species lacks heterocysts, while toxin-producing *Anabaena* blooms can be triggered by P additions, because *Anabaena* has heterocysts and can fix N. The frequently repeated discussion of cyanobacteria blooms needs to be updated. Also cite Paerl on page 8-45 line 8. Ditto on page 8-103 and 8-106 line 34.

8-8. In our earlier comments, we recommended that carbon be separated into its dissolved and particulate forms for consideration of water quality impacts because dissolved organic carbon (DOC) is the form most likely to react with chloride and bromide and result in formation of disinfection by-products. The section on bromide focuses on interactions with total organic carbon (TOC), rather than DOC. Carbon is primarily considered with respect to formation of disinfection by-products but carbon plays a central role in the dynamics of the Delta, affecting processes such as metabolism, acidity, nutrient uptake, and bioavailability of toxic compounds. Carbon cycling determines ecosystem structure and function in aquatic systems. It also modifies the influence and consequences of other chemicals and processes in aquatic systems. Dissolved organic carbon (DOC), for example, influences light and temperature regimes by absorbing solar radiation, affects transport and bioavailability of metals, and controls pH in some freshwater systems. Respiration of organic carbon influences dissolved oxygen concentrations and pH.

8-18, line 12 says that salt disposal sites were to be added in 2014; were they?

8-19 and 8-20: "CECs" is not defined and seems to be used incorrectly. Change "CECs" to "EDCs" on page 8-19 and to "PPCPs" on page 8-20.

8-21, line 18-19: Such a statement should be qualified. The conclusion that marine waters are N-limited and inland waters are P-limited is outdated. Recent papers, including the above, find more complex patterns.

8-22, lines 18 and 30: Choose either "cyanobacteria" or "blue-green algae;" using both will confuse readers who may perceive them as different.

8-23, lines 15-16: Say how the N:P ratio changed composition, not just that it did change composition.

8-23 through 8-25: Uncertainties (e.g., standard deviation or standard error of the mean) associated with the mean concentrations of DOC should be presented. It is impossible to interpret differences between the values that are presented without knowledge of the variation around the mean values (e.g., without knowledge of variation around the mean, it is difficult to evaluate whether DOC concentrations at south vs. north-of-Delta stations and Banks headworks differ from one another; 3.9 to 4.2 mg/L vs. 4.3 mg/L).

8-65, line 12: Specify if DO is for daytime or night, and for surface, bottom or mid-water column.

8-75, line 6: The failure to consider dissolved P (DP) should be addressed; there is much greater uncertainty. The adherence of some P to sediment does not prevent considerable

discharge of P as DP. Also on page 8-95 line 40, qualify predictions due to lack of consideration of DP.

8-82, line 4-5: It seems unlikely that current levels of *Microcystis* growth in the Delta are dependent on the exclusive uptake of ammonia. Temperature is one of the primary factors driving *Microcystis* blooms and global warming could promote bloom occurrence. Consider revising this section to, “Because it seems unlikely that current levels of *Microcystis* growth in the Delta are dependent on the exclusive uptake of ammonia, the frequency, magnitude and geographic extent of *Microcystis* under future scenarios is difficult to predict.”

8-105, line 8: Would total nitrogen be dominated by nitrate just by increasing ammonia removal? Depending on redox and microbiota, why wouldn't nitrate be converted to ammonium?

A lot of attention is given to factors controlling *Microcystis* blooms in this chapter but little attention is given to its toxicity. Just as factors controlling blooms are not fully understood, the regulating factors of cellular toxin contents remain poorly understood. As a result, the impact of blooms on the environment can vary (e.g., large blooms of non-toxic or low toxin organisms may have impacts on environmental variables such as nutrient uptake and dissolved oxygen consumption while small blooms of highly toxic organisms could impact food webs) [see: Ma et al. (2015) Toxic and non-toxic strains of *Microcystis aeruginosa* induce temperature dependent allelopathy toward growth and photosynthesis of *Chlorella vulgaris*. Harmful Algae 48: 21–29].

Fish and aquatic resources (Chapter 11)

We found individual conclusions or new analyses difficult to identify in this key chapter because changes to it were not tracked in the public version of the Current Draft and there was no table of contents that could have assisted in side-by-side comparison with the Previous Draft.

Effects of temperature

We noticed more emphasis on temperature concerning the fish ‘downstream’ impacts (but without tracked changes this becomes difficult to document).

The main temperature variable used expresses the percentage of time when monthly mean temperatures exceed a certain rate or fall within a certain boundary. The biological impact, however, is difficult to assess with these numbers. If all of the change occurred just during operations or just during one day, the biological impact could be much different than a small change every day (provided by using means). Graphs of changes and listing of extreme highs and lows during a model run would have more biological meaning. Also, comparisons were made using current baseline conditions and did not consider climate change effects on temperatures.

Fish screens

It is unclear how (and how well) the fish screens would work. The description of fish screens indicates that fish >20 mm are excluded, but what about fish and larvae that are <20 mm, as well as eggs? Table 11-21 seems out of date, because some fish screens appear to have been installed, but data on their effects are not given. Despite the lack of specific data on how well screens function, the conclusion that there will be no significant impact is stated as certain (e.g., page 1-100 line 38).

Here, as in many other places, measures are assumed to function as planned, with no evidence to support the assumptions. The level of certainty seems optimistic, and it is unclear whether there are any contingency plans in case things don't work out as planned. This problem persists from the Previous Draft.

Invasive plants

Cleaning equipment is mentioned, but it is not specifically stated that large machinery must be cleaned before entering the Delta. Section 4.3.8-358 says equipment would be cleaned if being moved within the Delta. Cleaning is essential to reduce transfer of invasive species; a mitigating measure is to wash equipment, but it must also be enforced.

Weed control (fire, grazing) is suggested, but over what time frame? It may be needed in perpetuity. That has been our experience at what is considered the world's oldest restored prairie (the 80-yr-old Curtis Prairie, in Madison, WI).

Weed invasions can occur after construction is completed; how long will the project be responsible for weed control? 3-5 years won't suffice.

4.3.8-347. Herbicides are prescribed to keep shorebird nesting habitat free of vegetation, but toxic effects of herbicides on amphibians etc. are not considered.

4.3.8-354. Impacts of invasive plants seem underestimated. Impact analysis implies that the project disturbance area is the only concern, when dispersal into all areas will also be exacerbated. At the Arboretum, a 1200-ac area dedicated to restoration of pre-settlement vegetation, invasive plants are the main constraint. A judgment of no significant impact over just the disturbance area is overly optimistic.

4.3.8-356. Does not mention need to clean equipment to minimize import of seeds on construction equipment.

Cryptic acronym and missing unit

Figure 2: SLR x year: y axis lacks units; reader has to continue on to table 11-20 to find that it is cm.

Terrestrial biological resources (Chapter 12)*Effects on wetlands and waters of the United States (WOTUS)*

Page 12-1, line 18-19 says: "Under Alternatives 2D, 4, 4A, and 5A, larger areas of non-wetland waters of the United States would be filled due to work in Clifton Court Forebay; however, the Forebay would ultimately expand by 450 acres and thus largely offset any losses there." Is the assumption that, acre for acre, all jurisdictional waters are interchangeable, whether of different type or existing vs. created? The literature does not support this assumption.

The text argues that the wetlands would be at risk with levee deterioration, sea-level rise, seismic activity, etc. But the solution is for "other programs" to increase wetlands and riparian communities. What if this project causes the problem, e.g. via vibration?

CM1 alternative 4A would fill 775 acres of WOTUS (491 wetland acres); Alt 2D would fill 827 (527 wetland) + 1,931 ac temporary fill at Clifton Court Forebay; Alt 5A would fill 750 (470 wetland). That's a lot of area. The timing and details of mitigation measures are not provided. References to the larger Delta Plan suggest that compensations would come at unknown times. Piecemeal losses such as indicated here: "Only 1% of the habitat in the study area would be filled or converted" (Chapter 12, line 29, page 12-22) is how the US has lost its historical wetlands. What are the overall cumulative impacts of wetland losses in the Delta? What is the tipping point beyond which further wetland losses must be avoided? The proposed project is one part of the broader array of management actions in the Delta and should be considered in that broader context.

Habitat descriptions

How will mudflats be sustained for shorebirds? Exposed mud above half-tide can become vegetated rapidly. In the Delta, the bulrush *Schoenoplectus californicus* tolerates nearly continuous tidal submergence.

Are soils clayey enough for the proposed restoration of up to 34 acres of vernal pool and alkali seasonal wetland near Byron? These areas will need to pond water, not just provide depressions.

12-243, line 18: How would adding lighting to electrical wires eliminate any potential impact to black rails? This mitigation is overstated.

Several of the species accounts (e.g., bank swallow) indicate that there is uncertainty about how construction or operations will impact the species. In most cases, monitoring is proposed to assess what is happening. But to be effective, the monitoring results need to be evaluated and fed into decision-making, as visualized in the adaptive-management process. There is little explicit indication of how this will be done or funded.

Land use (Chapter 13)

Alternative 4A would allow water diversion from the northern Delta, with fish screens, multiple intakes, and diversions limited to flows that exceed certain minima, e.g., 7000 cfs. This would reduce flood-pulse amplitudes and, presumably, downstream flooding. How does this alter opportunities for riparian restoration? Which downstream river reaches are leveed and not planned to support riparian restoration? Where would riparian floodplains still be restorable?

Over what surface area does the pipeline transition to the tunnel? At some point along the pipeline-tunnel transition, wouldn't groundwater flow be affected?

Up to 14 years of construction activities were predicted for some areas (e.g., San Joaquin Co.); this would have cumulative impacts (e.g., dewatering would affect soil compaction, soil carbon, microbial functions, wildlife populations, and invasive species). What about impacts of noise on birds; e.g., how large an area would still be usable by greater sandhill cranes?

State how jurisdictional wetlands have been mapped and how the overall project net gain or net loss of wetland area has been estimated. If mitigation consists only of restoration actions in areas that are currently jurisdictional wetlands, then there would be an overall net loss of wetland area due to the project. A mitigation ratio >1:1 would be warranted to compensate for reduced wetland area. This was also a concern for Chapter 12.

Up to 277 ac of tidal wetlands are indicated as restorable; text should indicate if these are tidal freshwater or tidal brackish wetlands (or saline, as is the typical use of "tidal wetlands").

13-19. On the need to store removed aquatic vegetation until it can be disposed: there are digesters for this purpose, and they might be efficient means of mitigation if management of harvested aquatic plants will be long-term. A waste product could be turned into a resource (methane fuel).

13-19, line 12: Text says that "predator hiding spots" will be removed. What are these?

13-19, line 20: What are the E16 nonphysical fish barriers? An electrical barrier?

13-20, line 19: Boat-washing stations are mentioned; would these discharge pollutants (soap, organic debris?)

Difference Between 16-year and 82-year Analyses of Water Quality Impacts

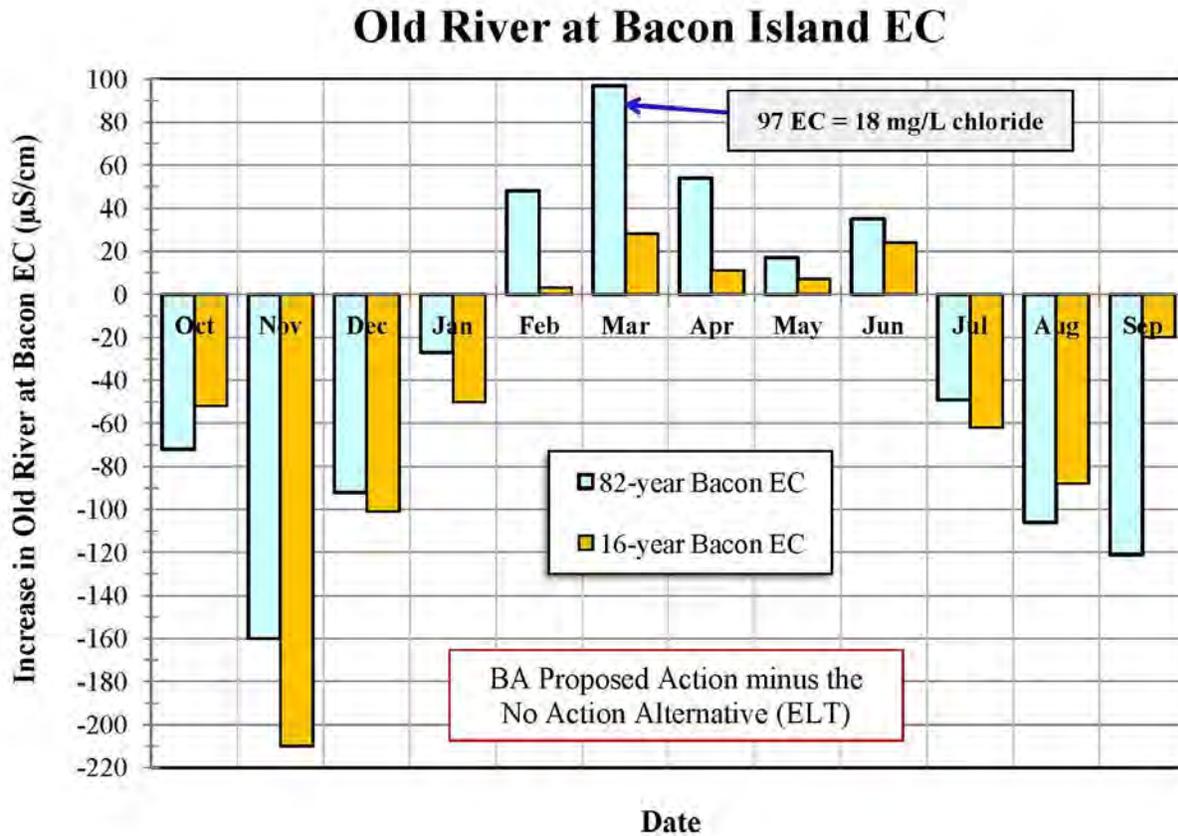


Figure 1: Increases in specific conductance (EC) on Old River at Bacon Island for water years 1922-2003 and 1976-1991 (82-years and 16-years, respectively). The water quality data are from the WaterFix Biological Assessment (BA) Proposed Action (PA) and No Action Alternative (NAA) at Early Long Term (ELT). (SWRCB-104). Using only a 16-year average underestimates the adverse impacts in February-June and overestimates the simulated benefits in November-January.

Old River at Bacon Island EC - March

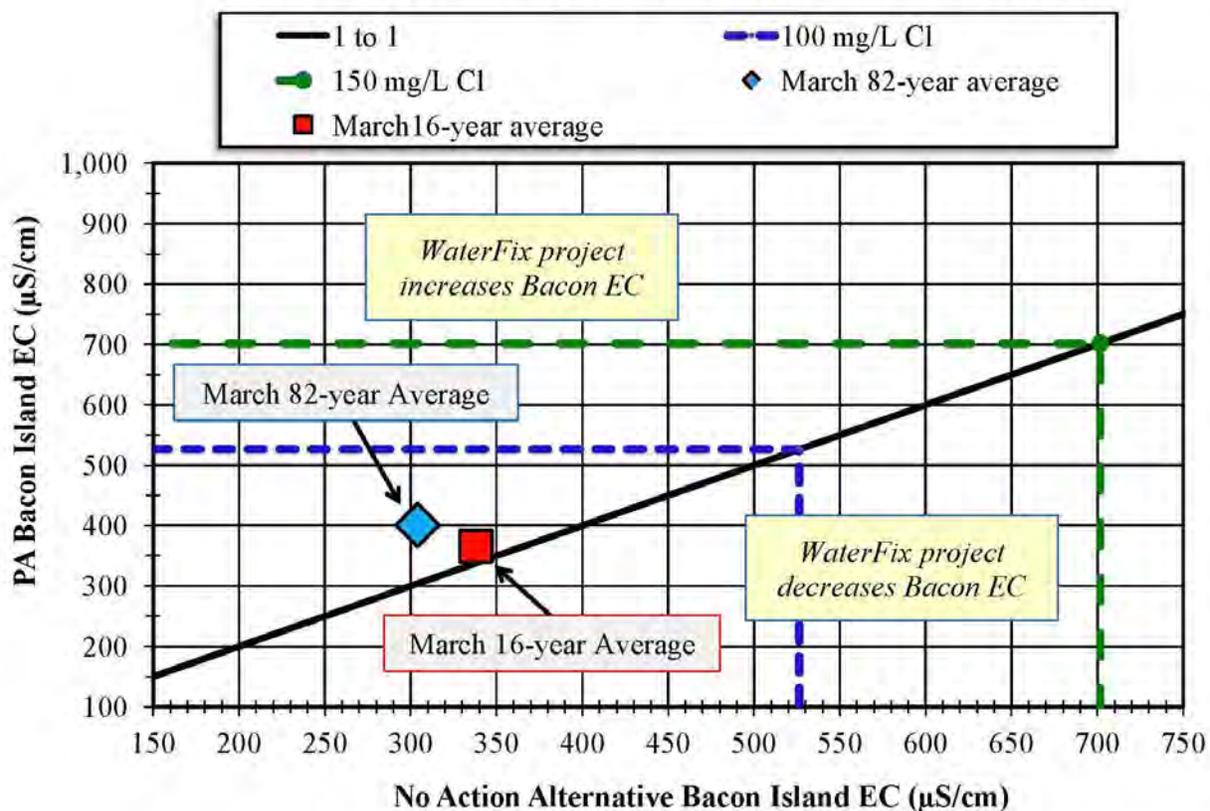


Figure 2: 16-year and 82-year averages of Bacon EC data for March from the Biological Assessment modeling with the Proposed Action EC plotted as a function of the No Action Alternative EC (red square and blue diamond, respectively). Because this location is close to a D-1641 Municipal and Industrial compliance location, equivalent chloride concentrations of 150 mg/L is also shown. The equivalent 100 mg/L chloride concentration is plotted for comparative purposes.

Old River at Bacon Island EC - March

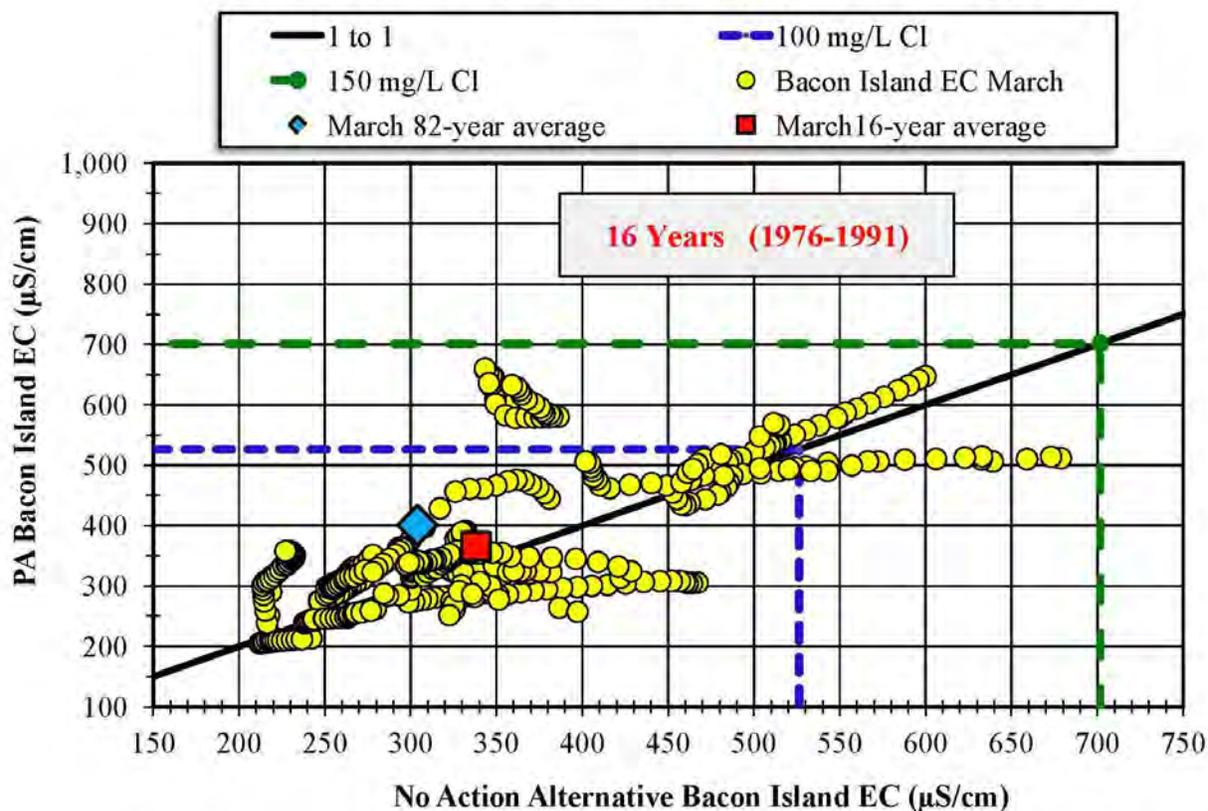


Figure 3: 16-year subset of daily-averaged Bacon EC data for March from the Biological Assessment modeling with the Proposed Action EC plotted as a function of the No Action Alternative EC (496 data points). Also shown are the corresponding 16-year and 82 year averages (red square and blue diamond). Because this location is close to a D-1641 Municipal and Industrial compliance location, equivalent chloride concentrations of 150 mg/L is also shown. The equivalent 100 mg/L chloride concentration is plotted for comparative purposes.

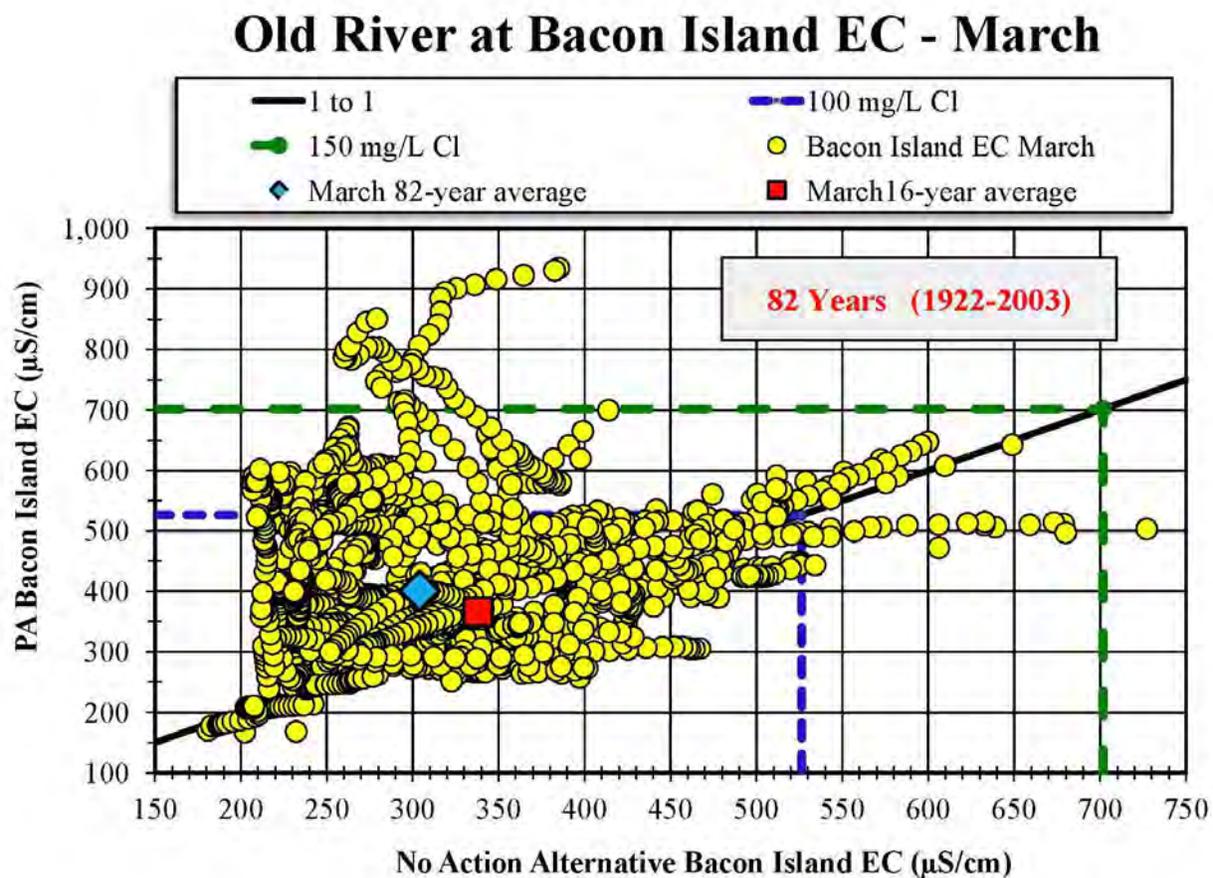


Figure 4: 82-years of daily-averaged Bacon EC data for March from the Biological Assessment modeling with the Project Action EC plotted as a function of the No Action Alternative EC (2,542 data points). Also shown are the corresponding 16-year and 82-year averages for March (red square and blue diamond). Because this location is close to a D-1641 Municipal and Industrial compliance location, equivalent chloride concentrations of 150 mg/L is also shown. The equivalent 100 mg/L chloride concentration is plotted for comparative purposes.

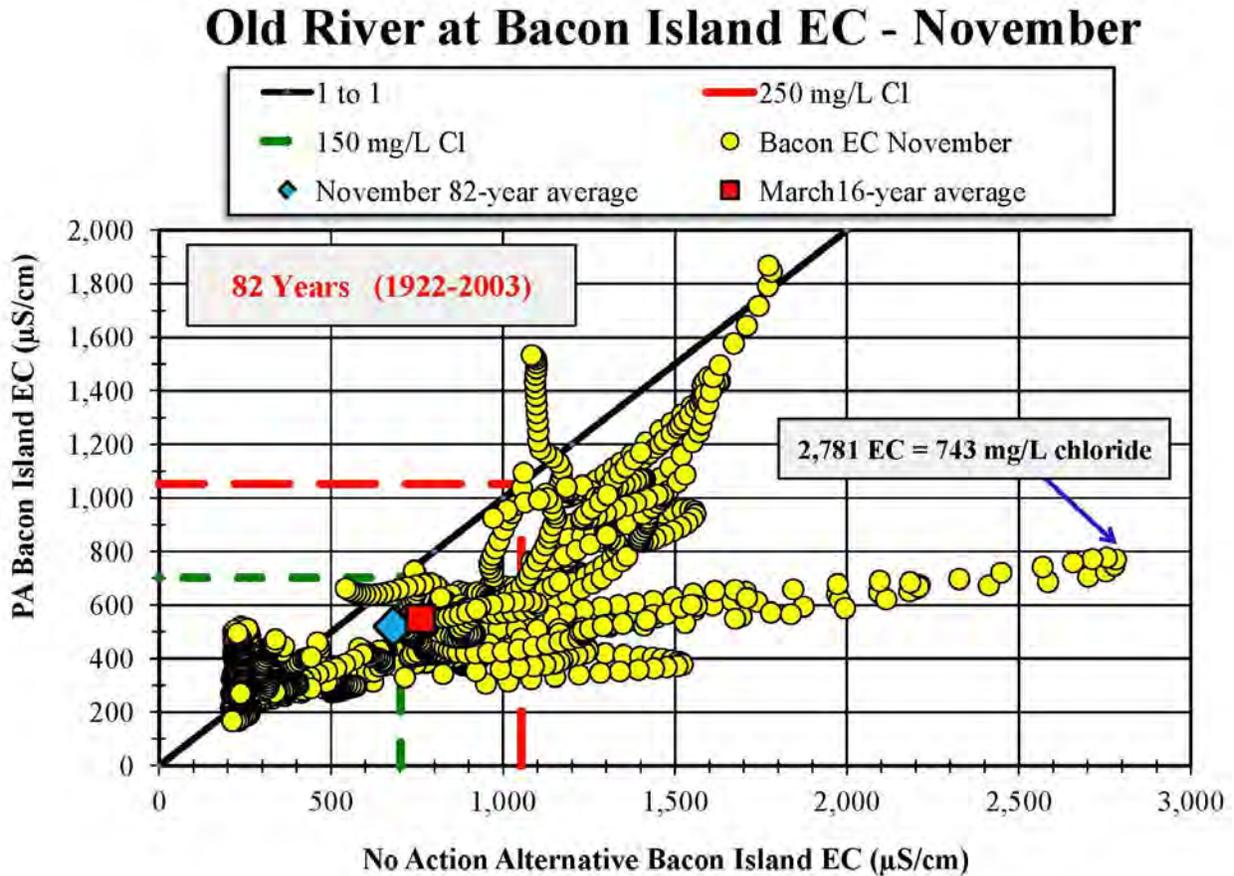


Figure 5: 82-years of daily-averaged Bacon EC data for November from the Biological Assessment modeling with the Project Action EC plotted as a function of the No Action Alternative EC. Also shown are the corresponding 16-year and 82 year averages for March (red square and blue diamond). Because this location is close to a D-1641 Municipal and Industrial compliance location, equivalent chloride concentrations of 250 mg/L and 150 mg/L are also shown.

November 2009 Conceptual Engineering Report Design for Screened Intake to Clifton Court Forebay

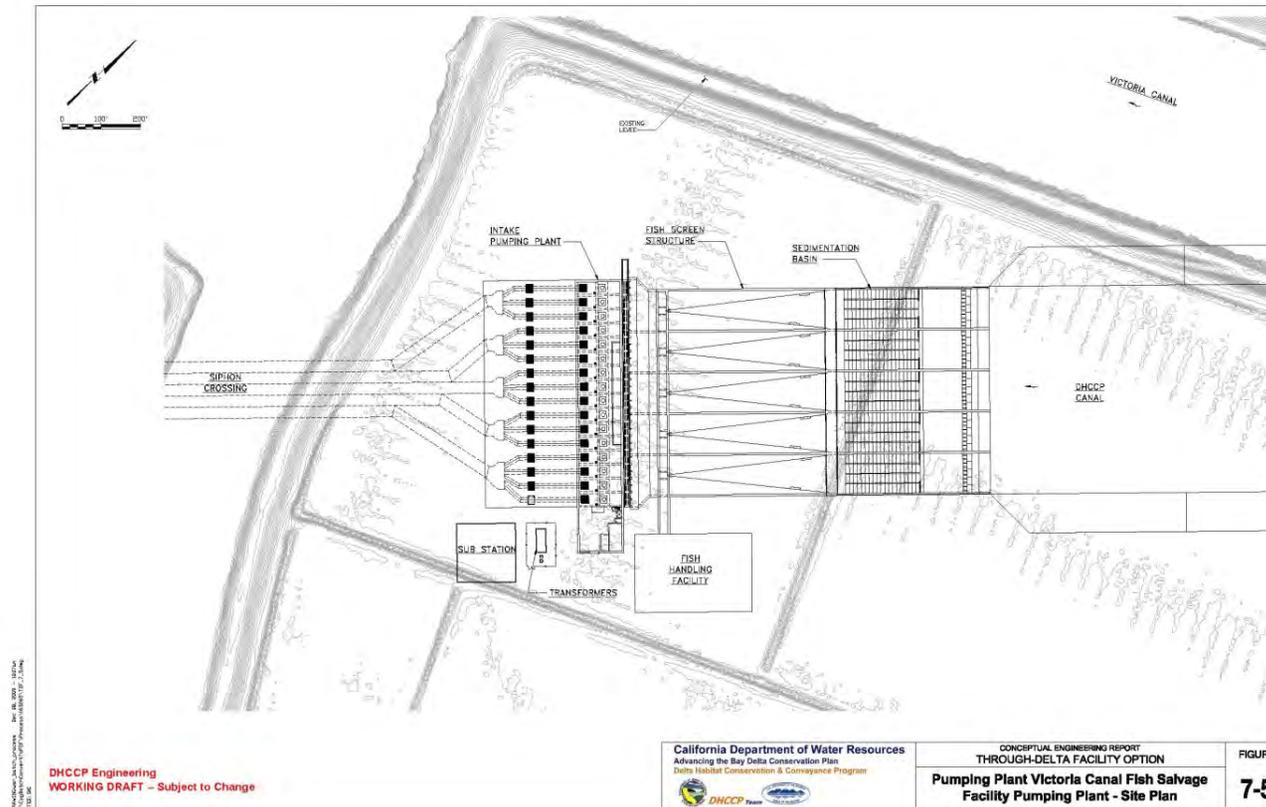


Figure 7-5: Pumping Plant Victoria Canal Fish Salvage Facility Pumping Plant – Site Plan

Source: DWR's November 2009 Conceptual Engineering Report – Through-Delta Facility Conveyance Option, Figure 7-5

http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Conceptual_Engineering_Report-Through_Delta_Option.sflb.ashx

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18
 19 BEFORE THE
 20 CALIFORNIA STATE WATER RESOURCES CONTROL BOARD

21 HEARING IN THE MATTER OF
 22 CALIFORNIA DEPARTMENT OF WATER
 RESOURCES AND UNITED STATES
 23 BUREAU OF RECLAMATION REQUEST
 FOR A CHANGE IN POINT OF
 24 DIVERSION FOR CALIFORNIA
 25 WATERFIX

PART 2 REBUTTAL TESTIMONY AND
 SUMMARY OF TESTIMONY OF DR.
 RICHARD A. DENTON, PH.D., P.E.,
 SUBMITTED ON BEHALF OF CONTRA
 COSTA COUNTY, CONTRA COSTA
 COUNTY WATER AGENCY, AND
 SOLANO COUNTY

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1. Declaration of Qualifications

I, Dr. Richard Denton, declare that I am a Water Resources Consultant and sole proprietor of Richard Denton and Associates. I have 45 years of experience in the areas of hydraulics and water quality. I received my Bachelor of Engineering (Civil) with First Class Honours in 1972 from the University of Canterbury, Christchurch, New Zealand. I received a Doctor of Philosophy (Ph.D.) in Civil Engineering in 1978 from the University of Canterbury. I am a registered Civil Engineer in the State of California (C47212).

From 1989 to 2006, I was an employee of the Contra Costa Water District (“CCWD”), Concord, California, and served for much of that time as Water Resources Manager. From 1982 to 1989, I was an Assistant Professor in Civil Engineering (Hydraulic and Coastal Engineering) on the faculty of the University of California at Berkeley. During the mid-80s, while at U.C. Berkeley, I prepared four detailed technical reports on the currents and water quality in San Francisco Bay under a contract from the State Water Resources Control Board (“SWRCB”).

I have been involved in SWRCB Bay-Delta water right and water quality hearings since 1989. I have extensive experience analyzing Central Valley operations and flow and salinity regimes in the Sacramento-San Joaquin Delta (“Delta”). I provided key input to the environmental review and water rights permitting for CCWD’s Los Vaqueros Project and development of the 1994 Bay-Delta Accord. Since 1996, I participated in development and permitting of the Grassland Bypass Project which regulated agricultural runoff and resulted in significant decreases in selenium and salinity loads from the west side of the San Joaquin Valley. I also served as chair of the CALFED Operations and Fish Forum from 2001 to 2006.

In 1995, I received the first annual Hugo B. Fischer Award from the California Water and Environmental Modeling Forum in recognition of my development and innovative application of a salinity-outflow model for the Delta. In 2010, I received a

1 Career Achievement Award from the California Water and Environmental Modeling
2 Forum.

3 As a Water Resources Consultant, I assisted CCWD's completion of the
4 environmental permitting of CCWD's Middle River Intake Project and Los Vaqueros
5 Enlargement Project. I am currently assisting Contra Costa County, the Contra Costa
6 County Water Agency, and Solano County on issues related to the California WaterFix
7 Project and efforts to restore the Delta ecosystem and increase California's water
8 supply reliability.

9 I am the author of 13 academic papers in peer-reviewed journals, 10 papers in
10 conference proceedings and 6 research reports. A copy of my statement of
11 qualifications has been accepted into the hearing record as Exhibit CCC-SC-2.

12 13 **2. Summary of My Detailed Rebuttal Testimony**

14 Preparation of detailed rebuttal testimony regarding the current WaterFix project
15 is very difficult without access to accurate and representative modeling of the current
16 version of project operations and its adverse effects on water quality in the Delta.

17 The most recent modeling study of the proposed WaterFix project released to the
18 SWRCB and the public, CWF H3+, does not represent the current version of the project.
19 CWF H3+ is the Project adopted by DWR that is the subject of the Petition for Change
20 in Point of Diversion requested by DWR and Reclamation. (Exhibit DWR-1010, Page 2,
21 Line 15)

22 Because SWP contractors are expected to fund most of the cost of the WaterFix
23 twin tunnels, almost all of the exports through the north Delta diversion facility ("NDD")
24 will be SWP water. This is different than what was assumed in CWF H3+.

25 If the twin tunnels are operating in the spring and summer primarily or exclusively
26 for the SWP, then CWF H3+ misrepresents the relative drawdown of the State Water
27 Project ("SWP") and Central Valley Project ("CVP") upstream reservoirs. The
28 corresponding environmental impacts due to changes in the flows and temperatures

1 downstream of the major upstream dams are also not simulated accurately or disclosed.

2 The CWF H3+ modeling also assumed a Rio Vista minimum flow requirement
3 from January through August. However, that flow requirement is not among Petitioners'
4 operating criteria for the WaterFix project, as currently proposed. This also makes the
5 CWF H3+ modeling unacceptable for the purposes of this Part 2 hearing.

6 The CWF H3+ modeling, and earlier modeling studies, used a redefined
7 export/inflow ("E/I") ratio that allows more water to be exported from the Delta than
8 allowed under D61641. This redefined E/I ratio does not apply to or limit exports
9 through the twin tunnels (isolated facility) in the north Delta, which means the E/I ratio's
10 original biological purpose, to protect against entrainment of fish, eggs and larvae, is not
11 achieved. The Petitioners' fishery expert, Dr. Marin Greenwood, testified in Part 2 that
12 eggs and larvae are present above the north Delta intakes.

13 The Petitioners have proposed the WaterFix project operating criteria be
14 modified in the future through adaptive management within a range bounded by the
15 Boundary 1 and Boundary 2 scenarios. However, the Boundary 1 alternative does
16 nothing to provide additional protection for fish and the Delta ecosystem: no Fall X2
17 requirements and no enhanced spring outflows. If the WaterFix project were to be
18 operated to Boundary 1 operating criteria, Delta outflows would be dangerously low,
19 especially in the Fall, resulting in even greater adverse impacts on water quality in the
20 Delta than disclosed for CWF H3+.

21 The CWF H3+ modeling, released to the public by the Petitioners as part of their
22 Part 2 case⁶ chief, fails to consistently increase exports in wetter months ("Big Gulp")
23 and increases exports above existing levels in drier months when Delta outflows are
24 very low and the Delta ecosystem is most vulnerable. This is the exact opposite of the
25 claim made by the Petitioners that the proposed WaterFix project will "*improve the*
26 *ecosystem through reduction and reverse flow occurrences, flow patterns that will*
27 *become more consistent with natural flow patterns, by increasing exports in the wetter*
28 *periods and decreasing them in the dryer [sic.] periods*" (Transcript, February 22,

1 2018, Page 44, Line12.) Instead of taking a “Little Sip” during drier periods, the
2 proposed WaterFix project takes a huge gulp.

3 The SWRCB should consider including a permit term that limits exports based on
4 Delta outflow so exports would indeed be reduced during drier periods (*i.e.*, achieve the
5 “Little Sip” concept), and to help improve, restore and sustain the Delta ecosystem.

6 The Petitioners’ claim that the CWF H3+ scenario is within the range of
7 Alternative 4A, scenarios H3 and H4, is incorrect and misleading. The CWF H3+
8 scenario has more stringent restrictions on south Delta exports in April and May and
9 less restriction on Old and Middle River (“OMR”) flows in October and November.
10 These major differences in operating criteria result in Delta outflows, south Delta
11 exports and Delta salinities for CWF H3+ that are well outside the range of scenarios H3
12 and H4.

13 The Petitioners have failed in Part 2 to present the CWF H3+ Delta inflow and
14 outflows in a form that informs the SWRCB whether the WaterFix project is consistent
15 with the SWRCB’s 2010 Delta Flow Criteria or the proposals being considered by the
16 SWRCB as part of the current update to the Bay-Delta Water Quality Control Plan.

17 The Part 2 proposed WaterFix project, CWF H3+, still shows up to 30%
18 reductions in the Sacramento inflow to the Delta at Freeport, and it shows daily
19 averaged chloride concentrations near the intake to the Contra Costa Canal that are
20 well in excess of the SWRCB’s D61641 Municipal and Industrial daily water quality
21 standard of 250 mg/L. These are the same problems I identified in my Part 2 case
22 chief testimony using earlier WaterFix modeling for the Biological Assessment, BA H3+.

23 Without accurate and representative modeling and analysis of the proposed
24 project, the SWRCB will lack the basis to make an accurate or informed decision about
25 the environmental, water quality and water supply impacts or benefits of the project, or
26 the impacts of the project on legal users of water. The SWRCB should reject the
27 WaterFix change petition until the Petitioners correct this myriad of problems with their
28 proposed project.

1 **3. The Current Modeling and Analyses (CWF H3+) Do Not Represent**
2 **Current Version of Proposed WaterFix Project.**

3 The California WaterFix Administrative Draft Supplemental Environmental Impact
4 Report/Environmental Impact Statement (the “ADSEIR/EIS”), released to the public by
5 the California Department of Water Resources (“DWR”) and U.S. Bureau of
6 Reclamation (“Reclamation”) on June 12, 2018 (Exhibit SWRCB6113), based its
7 analysis of the environmental impacts of the proposed project on the same modeling
8 study, CWF H3+, submitted into evidence by DWR in Part 2 of this hearing (Exhibits
9 DWR61077 and DWR61078).

10 Final internal review and approval for meeting the requirements of the California
11 Environmental Quality Act (“CEQA”) and National Environmental Policy Act (“NEPA”)
12 have not been completed by DWR and Reclamation, and the ADSEIR/EIS is not a
13 public draft environmental document. However, DWR is unlikely to revise the
14 ADSEIR/EIS to include an updated modeling study before release of the official public
15 California WaterFix Draft Supplemental Environmental Impact Report/Environmental
16 Impact Statement (the “Draft SEIR/EIS”).

17 The CWF H3+ modeling assumes that the federal CVP will divert up to 4,600
18 cubic feet per second (cfs) of water for export via the twin tunnels. This is the maximum
19 amount that the CVP can divert at the Jones Pumping Plant up into the Delta Mendota
20 Canal.

21 Figure 1 in CCC6SC652¹ shows the modeled CVP exports via the WaterFix twin
22 tunnels as a function of the total amount diverted through the twin tunnels, based on the
23 DWR’s CWF H3+ modeling data. The proposed maximum capacity of the two tunnels is
24 9,000 cfs. Tables 1 and 2 in CCC6SC652 present the 826year average export data by
25 month and the monthly6averaged CVP isolated facility export data, respectively.

26 On average, the CVP received about 40% of the total exports through the twin
27

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¹ Exhibit CCC-SC-52 is a true and correct copy.

1 tunnels (also referred to as the “isolated facility”). In many months, all of the water
2 going through the twin tunnels was for the CVP (100% share).

3 In the staged implementation (single tunnel) modeling released by DWR on
4 February 7, 2018², there was only a single, 6,000 cfs tunnel and the CVP share was
5 capped at only 1,000 cfs (CCC-SC-62, Table 3.)

6 The Metropolitan Water District of Southern California (“Metropolitan”) Board of
7 Directors is scheduled to vote on July 10, 2018, on a staff recommendation to pay for
8 the entire second tunnel and a share of the first tunnel, or 64.6% of the project cost
9 (Exhibit CCC-SC-67³). Metropolitan already voted to fund the second tunnel on April
10 10, 2018 but a revote was required for procedural reasons.

11 The CVP share of the twin tunnels’ diversions will therefore be much less than
12 assumed in CWF H3+, possibly even zero. This decision results in an inadequate
13 analysis of upstream SWP and CVP reservoir operations and the environmental
14 impacts in key fish species downstream of those reservoirs. The SWRCB did not
15 require the Petitioners to provide new modeling data that represents this significantly
16 reduced CVP share.

17 Because CWF H3+ assumes the CVP share of the twin tunnels can be up to
18 51% of the total capacity, the CWF H3+ modeling used in the ADSEIR/EIS and in Part 2
19 fails to adequately simulate the relative releases from the CVP upstream reservoirs
20 (Shasta and Folsom Reservoirs) and the SWP’s Oroville Reservoir, or the flows in the
21 rivers downstream of those reservoirs and down into the Delta (CCC-SC-62, Figure 2.)
22 If the CVP use of the twin tunnels is limited, releases of stored water from Shasta and
23 Folsom Reservoirs are likely to be less than in CWF H3+ modeling, and the drawdown
24 of Oroville Reservoir by the SWP is likely to be greater.

25 These water levels and downstream flows are very important for fish and senior
26

27 _____
28 ² <https://www.californiawaterfix.com/resources/updated-calsim-dsm2-and-biological-modeling-data/>

³ Exhibit CCC-SC-67 is a true and correct copy of selected slides from the document

1 water right holders in Northern California. Unless the Petitioners present updated and
 2 more detailed operations and water quality modeling reflecting the new SWP and CVP
 3 shares of twin tunnel diversions, the SWRCB will lack the basis to make an accurate or
 4 properly informed decision about the key hearing issues, such as the impacts on key
 5 fish species and legal users of water in the upstream tributaries.

6
 7 **4. The Current Modeling and Analyses (CWF H3+) Do Not Accurately**
 8 **Represent Sacramento Flows at Rio Vista during January through**
 9 **August.**

10 During cross-examination of DWR's expert witness, Eric Reyes, on February 27,
 11 2018, by Solano County's attorney, Daniel Wolk, Mr. Reyes acknowledged that DWR's
 12 CWF H3+ model study includes a minimum Rio Vista flow requirement of 3,000 cfs for
 13 January through August (the "Rio Vista Flow Standard"). (Transcript, February 27, 2018,
 14 Page 194 starting at Line 21.)

15 Mr. Reyes testified that he thought this was just a modeling assumption and not a
 16 part of the proposed WaterFix project. It was something that was just left in the model.

17 Unless DWR intends the Rio Vista Flow Standard to be an operating criterion
 18 and permit term, DWR has failed to provide the State Board with modeling that
 19 represents the actual proposed project.

20 Mr. Reyes stated his belief that there was only one month when WaterFix
 21 operations were controlled by the Rio Vista Flow Standard. (Transcript, February 27,
 22 2018, Page 198 starting at Line 16.) In fact, for CWF H3+ there are four months when
 23 flow and export operations in the Delta by the SWP and CVP were determined by the
 24 need to meet this Rio Vista Flow Standard. There are also two months when the
 25 September-December 1934 Rio Vista standard is not met and Rio Vista flows are
 26 less than 3,000 cfs, *i.e.*, September-October 1934 (see Exhibit CCC-SC-53⁴, Table 1).

27
 28 _____
⁴ CCC-SC-53 is a true and correct copy.

1 This is a clear modeling error that has not been explained by the Petitioners. The same
2 D61641 modeling error occurs in the No Action Alternative (“NAA”) for September and
3 October 1934.

4 Mr. Reyes testified that the Rio Vista Flow Standard “*was something done as a*
5 *modeling convenience because early editions of this were showing low outflows in*
6 *certain months. So that was difficult for the DSM-2 model to process, so we needed*
7 *something just to keep the flows higher until we essentially worked out what our issues*
8 *were. And those issues were worked out, however, the criteria was left in, just the*
9 *modeling.*” (Transcript, February 27, 2018, Page 197 starting at Line 4.)

10 The SWRCB needs the opportunity to review proposed WaterFix project
11 modeling that does not include this Rio Vista Flow Standard in order to make a fair and
12 legal determination regarding the proposed WaterFix project. The SWRCB needs to be
13 able to determine whether the proposed WaterFix project and north Delta diversions
14 would result in unreasonably low Rio Vista flows and Delta outflows, in both the
15 CALSIM II simulations and in actual future operations with the proposed WaterFix
16 project.

17 The SWRCB should also consider whether a Rio Vista Flow Standard permit
18 term is needed, January through August, to ensure the SWP operators do not cause
19 Delta outflows to become very low once the WaterFix project comes on line. As Mr.
20 Reyes testified (Transcript, February 27, 2018, Page 197, starting at Line 4), the earlier
21 modeling indicated this could be a problem.

22 Such unreasonably low outflows would result in large increases in seawater
23 intrusion and significant adverse impacts on water quality in the Delta.

24 Unless all operating criteria and D61641 standards are correctly simulated in the
25 WaterFix modeling, the SWRCB will lack the basis to make an accurate or properly
26 informed decision about the key hearing issues.

27 ///

28

1 **5. The Current Modeling and Analyses (CWF H3+) Do Not Accurately**
2 **Represent How the Proposed Project Will Actually Be Operated**
3 **Under Adaptive Management.**

4 The Petitioners have testified that the WaterFix adaptive management range
5 varies from the Boundary 1 to Boundary 2. (Exhibit DWR61010, Page 9, Line 3;
6 Transcript, February 22, 2018, Page 66, starting at Line 22.)

7 The Boundary 1 Scenario has essentially no additional environmental flows or
8 export constraints. Boundary 1 does not include the Fall X2 requirement from the U.S.
9 Fish and Wildlife Service 2008 Biological Opinion (Exhibit SWRCB687) and
10 recommended by the SWRCB in its 2010 Delta Flows Criteria Report (Exhibit SWRCB6
11 25) and the California Department of Fish and Wildlife's⁵ 2010 "Quantifiable Biological
12 Objectives and Flow Criteria for Aquatic and Terrestrial Species of Concern Dependent
13 on the Delta" (Exhibit SWRCB666).

14 The 826year averaged Delta outflows for Boundary 1 in September, October, and
15 November are much lower than the NAA (Exhibit CCC6SC654⁶, Figure 1). Figure 2 of
16 Exhibit CCC6SC667 shows how individual months in September that are between
17 18,000620,000 cfs in the NAA are reduced to as low as 3,000 cfs for Boundary 1. If
18 WaterFix were operated to these low Delta outflows under adaptive management, there
19 would be a corresponding increase in seawater intrusion in the fall, resulting in
20 significant degradation of Delta water quality (in terms of EC and chloride
21 concentrations). (see, e.g., Figure 1 and Table 1 in CCC6SC666).

22 Because the Petitioners are considering using adaptive management to enable
23 them to operate the proposed WaterFix project according to Boundary 1 operating
24 criteria, the proposed project could cause significant water quality impacts in the Delta,
25 beyond those reported by the Petitioners for the CWF H3+ modeling. The
26

27 ⁵ At that time, called the Department of Fish and Game.

28 ⁶ Exhibit CCC-SC-54 is a true and correct copy.

⁷ Exhibit CCC-SC-56 is a true and correct copy.

1 corresponding impacts on legal users of water could also be larger than disclosed by
2 the Petitioners in Part 1 for Scenarios H3 and H4 (or CWF H3+.)

3 The SWRCB must include permit terms in the revised SWP and CVP permits
4 that ensure that WaterFix adaptive management actions to improve conditions for fish
5 do not result in worsening of Delta water quality (as would occur operating to the
6 Boundary 1 Scenario under adaptive management) and increased impacts on other
7 legal users of water.

8
9 **6. The Current WaterFix Modeling (CWF H3+) Is Not Within the Range of**
10 **Alternative 4A, Scenarios H3 and H4.**

11 The Petitioners testified in Part 2 of this hearing that “*CWF H3+ is the Project*
12 *adopted by DWR that is the subject of the Petition for Change in Point of Diversion*
13 *requested by DWR and Reclamation.*” (Exhibit DWR61010, Page 2, Line 15). The
14 Petitioners further claim in Part 2 that CWF H3+ is within the range of alternatives
15 described in Part 1 and within the operational range of Alternative 4A, Scenarios H3 to
16 H4. (Exhibit DWR61008, Slide 5; Exhibit DWR61010, Page 8, Line 26.)

17 Under cross examination, the Petitioners’ witnesses acknowledged that the
18 flows, exports and salinities for the proposed WaterFix project CWF H3+ were outside
19 the range of scenarios H3 and H4 in some months (see, e.g., Transcript, February 27,
20 2018, Page 186, Line 8; Transcript, February 27, 2018, Page 201, starting at Line 4).

21 The Petitioners attempt to argue that their description of Alternative CWF H3+
22 being within the range of H3 and H4 only refers to operating criteria (e.g., Transcript,
23 February 22, 2018, Page 213, starting at Line 8.)

24 However, the SWRCB’s determination of whether there are significant adverse
25 impacts of the proposed project on the Delta ecosystem, the environment and legal
26 users of water should be based on the reservoir storage levels, the flows and
27 temperatures for fish in upstream tributaries and the Delta, the degradation of water
28 quality in the Delta due to reduced outflows, and other related parameters. These

1 parameters are the result of specific operating criteria, such as minimum flow limits and
 2 maximum EC and chloride standards, but the bottom line is their impacts on the
 3 environment and legal users of water.

4 The operating criteria for Scenarios H3 and H4, and the Biological Assessment
 5 modeling BA H3+ included October and November limits on flow reversals in Old and
 6 Middle River (OMR > 65,000 cfs). The operating criteria for CWF H3+ eliminated
 7 (“updated”) these OMR limits (Exhibit DWR61028, Slide 11). OMR limits are intended to
 8 benefit fish. The elimination of OMR limits in CWF H3+ significantly reduced Delta
 9 outflows in October compared to both H3 and H4, and significantly increased salinities
 10 in the Delta.

11 Scenarios H3 and H4 had specific OMR operating criteria in October and
 12 November, but CWF H3+ did not include such OMR operating criteria, so CWF H3+ is
 13 not within that range of operating criteria. More importantly, as is discussed below,
 14 degradation of Delta water quality in October, November and December is much greater
 15 in CWF H3+ than either H3 or H4.

17 **6.1 The WaterFix modeling and operations criteria have changed** 18 **significantly since the Scenario H3 and H4 model runs.**

19 It is important to remember that the Petitioners’ Delta conveyance project has
 20 been continually changing since the start of the original Bay Delta Conservation Plan
 21 (“BDCP”) in 2006. The BDCP proposed project had adverse water quality impacts for
 22 EC and chloride concentrations that were determined to be “*significant and*
 23 *unavoidable*” (Exhibit SWRCB65, Chapter 8 – Water Quality).

24 The WaterFix conveyance only project was announced publicly in April 2015.
 25 The Petitioners have determined that, with the proposed WaterFix project, those
 26 salinity related water quality impacts are less than significant (Exhibit SWRCB6110,
 27 Pages 1256128). That finding is based on mitigation measure WQ611: *Avoid, minimize*
 28 *or offset, as feasible, reduced water quality conditions*. DWR intends to achieve this

1 mitigation measure and “avoid” water quality impacts by adaptively managing diversions
2 at the north and south Delta intakes, and by adaptively managing the Head of Old River
3 barrier, if feasible (Exhibit SWRCB6110, Page 125).

4 When the Petitioners developed Scenarios H3 and H4, they assumed the 2009
5 National Marine Fisheries Service Biological Opinion (Exhibit SWRCB6104, Page 632
6 and Page 642 *et seq.*) requirements for the limits on the ratio of San Joaquin inflow to
7 south Delta exports (April 1 through May 31) would not need to be met for the WaterFix
8 project. (Exhibit DWR6116.)

9 However, in preparing the WaterFix Biological Assessment (Exhibit SWRCB6104)
10 and the BA H3+ modeling, the Petitioners complied with the NMFS 2009 Biological
11 Opinion’s San Joaquin River Inflow to Export Ratio requirement (Action IV.2.1).

12 The BA H3+ modeling also was the basis for the WaterFix Final EIR/EIS that was
13 released to the public on December 22, 2016.

14 Between the release of the WaterFix Final EIR/EIS to the public on December
15 22, 2016, and DWR’s later certification of the WaterFix Final EIR/EIS on July 21, 2017
16 (Exhibit SWRCB6109), DWR and Reclamation consulted further with the U.S. Fish and
17 Wildlife Service, National Marine Fisheries Service, and the California Department of
18 Fish and Wildlife. The corresponding biological opinions and Incidental Take Permit
19 were issued on June 23, 2017, June 16, 2017 and July 26, 2017, respectively (Exhibit
20 SWRCB6105, SWRCB6106 and SWRCB6107, respectively).

21 As part of those consultations with the fisheries regulatory agencies, the following
22 additional modifications were made to the proposed project and incorporated into the
23 certified WaterFix Final EIR/EIS (Exhibit SWRCB6109):

- 24 1. New Spring Delta outflow targets and criteria, March to May; and
- 25 2. Elimination of the 65,000 cfs minimum Old and Middle River flow (OMR)
26 targets for October and November.

27 This resulted in a new modeling study CWF H3+ that served as the basis of the
28 Petitioners’ testimony in Part 2 of this hearing, and that served as the basis for DWR’s

1 CEQA findings for the certified WaterFix Final EIR/EIS. The CWF H3+ modeling was
2 not made available to the public until November 30, 2017. This was the date that DWR
3 submitted its Part 2 Case6n6Chief, and it was the date when the Cases6n6Chief of all
4 other Part 2 parties were due. This deprived Contra Costa County, the Contra Costa
5 County Water Agency, and Solano County of the opportunity to review, prior to
6 submitting their Part 2 testimony, the full CWF H3+ modeling – *the modeling that DWR*
7 *relied on when preparing its Part 2 testimony*. As discussed in more detailed in section
8 6.3 below, there are significant adverse water quality impacts in CWF H3+ that were in
9 the modeling for previous versions of the WaterFix project such as BA H3+ and
10 Scenarios H3 and H4.

11 The removal of the October6November minimum OMR targets resulted in lower
12 Delta outflows in October and November.

13 The WaterFix proposed project operational criteria were also refined based on
14 2017 USFWS and NMFS biological opinions by including a new real6time operations
15 approach for the following (Exhibit DWR61008, Slide 6):

- 16 • North Delta Intake Bypass Flows
- 17 • South Delta export criteria for October6November
- 18 • Head of Old River Gate operations.

19 However, these real6time operations were not incorporated into the CWF H3+
20 modeling.

21
22 **6.2 In August 2017, the Petitioners failed to produce available**
23 **CWF H3+ full model runs after Contra Costa County, Contra**
24 **Costa County Water Agency, and Solano County requested**
25 **those data to inform their Part 2 testimony.**

26 The parties to Part 2 were seriously prejudiced in preparing their Part 2 testimony
27 and exhibits because the CWF H3+ modeling was not made available until November
28 30, 2017, even though it was the basis of DWR's certification of the WaterFix Final

1 EIR/EIS on July 21, 2017. Contra Costa County, Contra Costa County Water Agency,
 2 and Solano County specifically requested any updated WaterFix modeling in August
 3 2017, but were only directed to modeling data that were described as “*not a full run but*
 4 *instead just sensitivity information.*” (Exhibit CCC-SC-57⁸, email from B.G. Heiland
 5 (DWR) to Richard Denton, August 31, 2017.) DWR did not acknowledge that the CWF
 6 H3+ full model runs had already been completed by mid-May 2017.

7 The Zip file for the CWF H3+ CALSIM operations modeling output (Exhibit DWR-6
 8 1077) is dated 4/28/2017. The Zip file for the CWF H3+ DSM2 EC water quality
 9 modeling output (Exhibit DWR-61078) is dated 5/15/2017. These key WaterFix modeling
 10 data model runs were completed early enough that DWR could have made the model
 11 runs available to the parties and the public well before the November 30, 2017 deadline
 12 for submission of Part 2 cases⁸. Moreover, these full model runs were available
 13 at the time of Contra Costa County, Contra Costa County Water Agency, and Solano
 14 County’s request in August 2017. DWR failed to produce the available full model runs
 15 at a time when the agencies were preparing their Part 2 cases⁸.

16
 17 **6.3 The CWF H3+ operations criteria and resulting flow and water**
 18 **quality simulations model runs are very different than the**
 19 **Scenario H3 and H4 range.**

20 Modeling study CWF H3+ is the basis for the environmental analysis in the
 21 WaterFix ADSEIR/EIS, released to the public on June 12, 2018. There are three major
 22 differences in operations criteria between Alternative 4A, Scenarios H3 and H4, and the
 23 current version of the proposed WaterFix project, CWF H3+:

- 24 1. CWF H3+ complies with the April-May limits on the ratio of San Joaquin
 25 inflow to south Delta exports (Exhibit DWR-6116).
- 26 2. CWF H3+ has new Spring Delta outflow targets and criteria, March-May
 27

28 _____
⁸ Exhibit CCC-SC-57 is a true and correct copy of the document.

1 3. The 65,000 cfs minimum OMR flow targets for October and November in
2 Scenarios H3 and H4 and BA H3+ are eliminated.

3 These new operations criteria substantially reduced total south of Delta exports
4 in April and May and reduced Delta outflows in October relative to Scenarios H3 and
5 H4. This reduction in Delta outflows in October results in a corresponding increase in
6 seawater intrusion into the Delta and net degradation of water quality.

7 Figure 1 in Exhibit CCC-SC-58⁹ shows the October Delta outflows for CWF H3+
8 relative to the corresponding outflows from the NAA for water years 1922-2003. Also
9 plotted are the October outflows for Alternative 4A, Scenario H3 and H4, the basis of
10 the Petitioners' testimony in Part 1 of this hearing. The outflows for Scenarios H3 and
11 H4 are generally higher than the NAA, but the CWF H3+ outflows are the same or
12 slightly lower.

13 Figure 2 in Exhibit CCC-SC-58 shows the November Delta outflows for CWF H3+
14 relative to the corresponding outflows from the NAA for water years 1922-2003. Also
15 plotted are the November outflows for Alternative 4A, Scenario H3 and H4. Only outflow
16 data less than 16,000 cfs are plotted because changes in outflow at low outflow have
17 the greatest effect on seawater intrusion and water quality in the Delta. When Delta
18 outflows are less than 10,000 cfs, all of the with-project alternatives have Delta outflows
19 close or equal to the D61641 Delta outflow standards (Exhibit SWRCB-21) and are
20 lower than the NAA outflows.

21 Figure 2 in Exhibit CCC-SC-54 shows the 826-year averages Delta outflows for
22 each month for the NAA, CWF H3+ and Alternative 4A, Scenario H3 and H4. In
23 October, the long-term averaged outflows for Scenarios H3 and H4 are generally higher
24 than the NAA, but the CWF H3+ average outflow is slightly lower than the NAA.

25 Figure 1 in Exhibit CCC-SC-54 shows the 826-year averages Delta outflows for
26 each month for the NAA, CWF H3+, and Boundary 1 and Boundary 2. Boundary 1 is
27

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⁹ Exhibit CCC-SC-58 is a true and correct copy.

1 the worst case scenario for adaptive management of the proposed WaterFix project
2 because Delta flows are low, seawater intrusion into the Delta increases and there is
3 less protection for fish. Unlike the other WaterFix alternatives in Figure 1, Boundary 1
4 does not include the Fall X2 requirements (Exhibit DWR615).

5 Boundary 2 in Figure 1 (Exhibit CCC64) is representative of, but not as
6 stringent as, the SWRCB's 2010 Delta Flow Criteria report recommendations (Exhibit
7 SWRCB25). If Boundary 2 criteria were operated, WaterFix annual south of Delta
8 exports would be much less than either CWF H3+ or the NAA (CCC69, Figure 3).

9 In September, October and November, the Boundary 1 outflows are even less
10 than for CWF H3+, representing even larger seawater intrusion to the Delta than for the
11 CWF H3+ alternative. In all months, except April and May, the Boundary 2 outflows are
12 much higher than for CWF H3+ suggesting CWF H3+ will not leave enough unimpaired
13 flow in the Central Valley and Delta systems to meet the outflows recommended by the
14 SWRCB in its 2010 Delta Flow Criteria Report as necessary to restore and sustain key
15 fish species.

16 Figure 1 in Exhibit CCC65¹⁰ shows the increases in salinity (EC) in Old River
17 at Bacon Island relative to the No Action Alternative (NAA) due to the proposed Water
18 Fix project CWF H3+. Also shown are the increases in EC for Alternative 4A, scenarios
19 H3 and H4. This was the range of the WaterFix proposed project presented by the
20 Petitioners in Part 1 of this hearing. The version of the project for the Biological
21 Assessment and public release of the Final EIR/EIS, BA H3+, is also plotted. The
22 averaging is for the 16 years from October 1, 1975 through September 30, 1991. CWF
23 H3+ EC changes are well outside the range of H3 and H4 in October, November,
24 December, February, March, and April. There is significant degradation of water
25 quality, in terms of salinity, in October, November, March, April and June.

26 The Petitioners acknowledged these large increases in EC and chloride
27
28

¹⁰ Exhibit CCC-SC-55 is a true and correct copy.

1 concentration under cross-examination. (Transcript, February 22, 2018, starting at Page
2 199, Line 11.) Figure EC3 (Exhibit DWR61015, Page 22) suggests the 166-year
3 averaged EC at San Andreas Landing for the proposed WaterFix project, CWF H3+, will
4 be greater than the NAA from September-November and February-June. Water quality
5 degradation on individual days or months could be even greater. CWF H3+ is outside
6 the range of Alt. 4A, scenarios H3 and H4 (Part 1 proposed project) in October-
7 November and February-April.

8 Figure CL1 in Exhibit DWR61015, Page 24, suggests the 166-year averaged
9 chloride concentration at the Contra Costa Canal for the proposed WaterFix project,
10 CWF H3+, will be greater than the NAA from September-November, February-April, and
11 June. CWF H3+ is outside the range of Alternative 4A, scenarios H3 and H4 (Part 1
12 proposed project) from October-April.

13 The Petitioners have attempted in Part 2 to minimize these changes from the
14 Part 1 modeling (Scenarios H3 and H4) to the Part 2 modeling (CWF H3+), and the
15 corresponding significant increase in adverse impacts on the Delta ecosystem, the
16 environment and legal users of water.

17 In Exhibit DWR61028, Slide 4, the Petitioners state the comparison of CWF H3+
18 with BA H3+ (sensitivity analysis): "*showed that overall operations including upstream
19 storage, river flows, and water supply deliveries remained similar.*" In Exhibit DWR6
20 1028, Slide 6, the Petitioners testify the August 2016 Biological Assessment included
21 only one set of operations criteria (H3+) and claim "*the July 2017 NOD included slight
22 revisions to H3+.*"

23 This is not correct. One of those changes, elimination of the October-November
24 OMR limits, was a major change, and it produced significant decreases in Delta outflow
25 in October and large increases in salinity in the Delta in October, November and
26 sometimes December.

27 In the Petitioners' water quality PowerPoint (Exhibit DWR61027, Slide 4), the
28 Petitioners claim:

- 1 • CWF H3+ EC results generally fall between H3 and H4;
- 2 • CWF H3+ D61641 M&I and Ag Water Quality Objectives are met the
- 3 majority of the time; and
- 4 • Any small percentage of probability of exceedence is equal to or less than
- 5 the NAA except at Emmaton which has a slightly higher probability.

6 These claims also are not correct. Figures 1 and 2 in Exhibit CCC6SC65 clearly
 7 show that significant increases in salinity in the Delta relative to Scenarios H3 and H4 in
 8 October and November and significant water quality degradation in those months
 9 relative to the NAA. Since passage of the 2009 Delta Reform Act, it is State policy that
 10 the Bay6Delta should be managed to achieve the inherent objective of improving water
 11 quality to protect human health and the environment consistent with achieving water
 12 quality objectives in the Delta (Cal. Wat. Code, § 85020(e)).

13 Solano County, Contra Costa County and the Contra Costa County Water
 14 Agency submitted detailed CEQA/NEPA comments on the WaterFix Final EIR/EIS
 15 (released for public review and comment on December 22, 2016), including a comment
 16 by Solano County that *“the Final EIR/EIS is inadequate because it presents modeling*
 17 *data for a number of different versions of the preferred alternative (Alternative 4A), but*
 18 *not the current version of the Project.”* (Exhibit SWRCB6108, page 78.)

19 The Petitioners’ response to Solano County’s CEQA/NEPA comment was:

20 *“Commenter claims that the Delta outflow under Alternative 4A H3+*
 21 *scenario does not fall within H3 and H4 scenarios. This is incorrect.*
 22 *Changes in long-term average Delta outflow under Alternative 4A*
 23 *(ELT) as compared to the No Action Alternative (ELT) and Existing*
 24 *Conditions are shown in Figures 5-37 through 5-39 and Tables 5-*
 25 *10 through 5-12. As shown in Figure 5F.4-27, the incremental*
 26 *changes in Delta exports under H3+ compared to the No Action*
 27 *Alternative are found to be within the H3 and H4 scenarios.”*

28 This response to Solano County’s comment is inadequate. The figures referred

1 to in the Petitioners' response (Exhibit SWRCB6108, page 78) are based on H3+
2 modeling, but it is BA H3+ modeling, not the project that was adopted, CWF H3+. The
3 responses to this comment should have been based on a comparison with the adopted
4 and then "*current version*" of the proposed WaterFix project.

5 It is clear from the Delta outflow and Delta water quality data for the CWF H3+
6 alternative in Exhibits CCC6SC654 and CCC6SC655, and the Petitioners' own testimony
7 (Exhibit DWR61015), that, in some months, the CWF H3+ Delta outflows and Delta EC
8 and chloride concentrations are indeed well outside the range of Scenarios H3 and H4.

9 The Petitioners describe these changes in Figure 1 of Exhibit DWR61010, but
10 either (1) ignore the application of the April6May limit on the San Joaquin inflow to south
11 Delta exports ratio, or (2) incorrectly categorize the April6May limit as "*updated spring*
12 *outflow criteria*." Limiting exports from the south Delta as required by the 2009 NMFS
13 Biological Opinion (Exhibit SWRCB684) can result in increased Delta outflows, but not in
14 every case. The effect of reducing exports from the south Delta could sometimes be
15 offset by increased exports from the new north Delta intakes, or releases from upstream
16 reservoirs could be reduced.

17 The Petitioners have made significant changes to their project since Part 1 but
18 have failed to adequately analyze and disclose those changes. The changes have
19 resulted in reductions in Delta outflows at key times of the year, reduced exports in
20 April6May which resulted in increased exports in later months (Exhibit CCC6SC659¹¹,
21 Figures 1 and 2), and significant adverse impacts on EC and chloride concentrations in
22 the Fall.

23 Without detailed information about these significant impacts and a commitment
24 by the Petitioners to fully mitigate those impacts, the SWRCB will lack the basis to make
25 an accurate or informed decision about the key hearing issues.
26
27

28 _____
¹¹ Exhibit CCC-SC-59 is a true and correct copy.

1 **7. The Petitioners Incorrectly Redefine the SWRCB’s D-1641**
 2 **Export/Inflow Standard to Eliminate North Delta Exports from This**
 3 **Standard.**

4 The Petitioners have arbitrarily redefined the export/inflow ratio in Water Rights
 5 Decision 1641 (“D61641”) to allow more water to be exported (Exhibit SWRCB621,
 6 pages 1846187.) The current definition of the export/inflow ratio in D61641 is (total
 7 exports) divided by (total Delta inflow), where all the exports currently come from the
 8 south Delta.

9 The Petitioners have redefined the export/inflow ratio as (south Delta exports)
 10 divided by (total Delta inflow, minus North Delta exports). (Exhibit SWRCB6102, 2016
 11 Final BDCP/California WaterFix EIR/EIS, Chapter 3, pages 3638.)

12 This redefinition would allow the Petitioners to export more water than the official
 13 D61641 definition, especially in June. A detailed analysis of the CWF H3+ modeling
 14 data shows that the total south6fDelta exports for CWF H3+ exceeded the exports that
 15 would have been allowed if the WaterFix project had been modeled using the original
 16 SWRCB D61641 definition of the E/I ratio in 57 months out of the total 82 x 12 = 984
 17 months, October 1921 through September 2003. (Exhibit CCC6SC661¹².)

18 The Petitioners’ redefinition of the export/inflow ratio means that exports through
 19 the north Delta intakes would be unconstrained by the export/inflow standard. There
 20 would be no limit on total exports due to the export/inflow standard during periods when
 21 exports were only being made through the north Delta intakes. If south Delta exports
 22 are zero, the export/inflow ratio as redefined by the Petitioners is also zero.

23 This is unacceptable because it eliminates the D61641 protection against
 24 entrainment of eggs and larvae at the Delta export pumps and intakes, in this case, at
 25 the proposed north Delta intakes. It is contrary to the State’s coequal goal of policy of
 26 protecting, restoring, and enhancing the Delta ecosystem (Cal. Wat. Code, § 85054)

27
 28 _____
¹² Exhibit CCC-SC-61 is a true and correct copy.

1 and the State policy of restoring the Delta ecosystem, including its fisheries and wildlife,
2 as the heart of a healthy estuary and wetland ecosystem. (Cal. Wat. Code, § 85020
3 (c).)

4
5 **7.1 The original biological objective for the export/inflow ratio was**
6 **to reduce entrainment of fish, egg, and larvae entrainment.**

7 The November 3, 1994 “Biological Explanation of the Joint Water Users
8 Proposed Bay-Delta Standards”¹³ formed the basis for development of the December
9 1994 Bay-Delta Accord and the new Bay-Delta standards in D61641. I was a contributor
10 to that proposal. Key excerpts from the Biological Explanation are given in Exhibit
11 CCC-SC-62¹⁴.

12 The Biological Explanation document makes clear that the goal of the
13 export/inflow limits was to reduce fish, egg and larvae entrainment and mortality at the
14 pumps. The Biological Explanation document, at page 2619, states that the Biological
15 Objective of the Export/Inflow ratio is to: *“Reduce fish, egg, and larvae entrainment and*
16 *mortality at the pumps through export restrictions and intensive real-time*
17 *monitoring/response designed to detect presence of fish in areas adjacent to the*
18 *pumps.”*

19 The Biological Explanation document, at page 2619, states that the Intended
20 Benefits of the Export/Inflow ratio include that *“exports should decrease during those*
21 *years when fresh water inflow to the Delta is decreased and a larger percentage of fish*
22 *and other aquatic organisms are geographically distributed further upstream where their*
23 *susceptibility to export losses is increased.”* (Exhibit CCC-SC-62.)

24
25 _____
26 ¹³ The November 3, 1994 “Biological Explanation of the Joint Water Users Proposed Bay-Delta
27 Standards” can be downloaded from the following link:
28 https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plan/s/1995wqcp/admin_records/part05/368.pdf

¹⁴ Exhibit CCC-SC-62 is a true and correct copy of selected pages from the document.

1
2 **7.2 The Petitioners' fishery expert testified eggs and larvae of fish**
3 **species would occur at the north Delta intakes.**

4 Petitioners' fishery expert in Part 2, Dr. Marin Greenwood, provided testimony
5 that eggs and larvae would be present above the north Delta intakes and therefore
6 susceptible to entrainment at that location:

- 7 • *"CWF H3+ NDD are outside the main range of Delta Smelt and Longfin*
8 *Smelt and therefore are limited in their potential to cause adverse effects*
9 *such as entrainment of larvae. However, there is a potential for restricted*
10 *access of smelts to shallow water habitat upstream of the NDD and this*
11 *potential effect will be mitigated with 1,750 acres of restoration."* (Exhibit
12 Exhibit DWR61012, Page 4, Line 2.)
- 13 • *Striped Bass and American Shad egg/larval entrainment at NDD*
14 – *Most spawning upstream of NDD*
15 ▪ *Striped Bass eggs/larvae drift downstream to Delta*
16 ▪ *Many American Shad rear upstream*
17 – *Some protection from spring flow criteria (less exports)*
18 (Exhibit DWR61029, Slide 34.)
- 19 • *"BDCP-covered fishes in my testimony (White Sturgeon, Sacramento*
20 *Splittail, Pacific and River Lamprey) spawn upstream of the Delta and*
21 *generally move downstream into the Delta and adjacent areas as larvae or*
22 *juveniles, as do Striped Bass and American Shad."* (Exhibit DWR61012,
23 Page 51, Line 16.)
- 24 • *"Entrainment of Striped Bass and American Shad early life stages (eggs*
25 *and larvae) was found to be a significant and unavoidable impact in the*
26 *FEIR/S. Striped Bass spawn in and upstream of the Delta. Eggs and larvae*
27 *move downstream at small sizes that could make them susceptible to*
28 *entrainment at the NDD. The FEIR/S (Exhibit SWRCB-102, Section*

1 11.3.5.2, *Impact AQUA-201, p. 11-3537*) found that the entrainment of
2 *Striped Bass at the NDD would constitute a significant and unavoidable*
3 *impact of the CWF H3+, based primarily on assessment of ten spring*
4 *(March, April, May, or June) simulated monthly periods of DSM2 particle*
5 *tracking modeling results for the H3 operational scenario.” (Exhibit*
6 *SWRCB-102, Section 11.3.4.2, Table 11-1A-96, p. 11-679.)” (Exhibit DWR6*
7 1012, Page 52, Line 16.)

8 Export/inflow limits are needed at both the south and north Delta intakes to
9 protect against entrainment of eggs and larvae of Delta smelt and other key fish
10 species.

11 In Part 1, the Petitioners (Jennifer Pierre) dismissed the effect of the change in
12 definition of the export/inflow ratio as inconsequential. (Transcript, Friday, July 29, 2016,
13 Page 233, Line 10.) The CWF H3+ data presented in Exhibit CCC6SC61 suggest
14 additional water is able to be exported, primarily in the month of June. Redefining D6
15 1641 standards to allow additional delta exports in months when the additional exports
16 would not otherwise be permitted is not inconsequential.

17

18 **7.3 The Petitioners even used a third definition of the**

19 **export/inflow ratio in Scenarios H2 and H4.**

20 The Petitioners appear to have made an additional, unexplained, assumption: in
21 the case of Alternative 4A, Scenarios H2 and H4, the Sacramento River inflow was
22 assumed to be upstream, rather than downstream, of the proposed north Delta intakes.
23 (Exhibit SWRCB6102, Chapter 3, Page 3639, Footnote 57.)

24 *“In computing the E/I ratio for Scenarios H1 and H3, the*
25 *Sacramento River Inflow is considered to be downstream of the*
26 *north Delta intakes. However, in computing the E/I ratio for*
27 *Scenarios H2 and H4, the Sacramento River inflow was assumed*
28 *to be upstream of the proposed north Delta intakes.”*

1 Scenario H4 was a version of the proposed project presented in Part 1 of this
2 hearing. This is an arbitrary third definition of the export/inflow ratio in D61641.

3 The WaterFix project must operate to the original definition of the export/inflow
4 ratio to help reduce the entrainment of eggs and larvae at the north Delta intakes.
5 Unless new modeling is provided that complies with the D61641 standard, the SWRCB
6 will lack the basis to make an informed decision.

7 The SWRCB should include a permit term in any new or revised SWP and CVP
8 water rights permits that clearly defines the export/inflow ratio, as applied to DWR and
9 Reclamation operations, as (total north and south exports) divided by (total Delta
10 inflow).

11
12 **8. New Version of Proposed Project (CWF H3+) Does Not Comply with**
13 **“Big Gulp, Little Sip” Concept.**

14 The Petitioners claim in Part 2 of this hearing that the proposed WaterFix project,
15 as represented by CWF H3+, will “*reduce water exports in drier years when Delta*
16 *aquatic resources are subject to increased stresses; and increase Delta exports in*
17 *wetter years when aquatic resources are not as affected by stresses in the Delta.*”
18 (Exhibit DWR61010, Page 12, Line 2.)

19 During their oral testimony, the Petitioners claimed WaterFix will “*improve the*
20 *ecosystem through reduction and reverse flow occurrences, flow patterns that will*
21 *become more consistent with natural flow patterns, by increasing exports in the wetter*
22 *periods and decreasing them in the dryer [sic.] periods*” (Transcript, February 22,
23 2018, Page 44, Line 12.)

24 This “*Big Gulp, Little Sip*” concept was one of the early Planning Principles
25 adopted by the Steering Committee for the original BayDelta Conservation Plan
26 (BDCP), *i.e.*, “*Divert more water in the wetter periods and less in the drier periods.*”
27 (Exhibit CCC6SC612, Bay Delta Conservation Plan, March 2009 brochure, “An Overview
28 and Update,” Page 6.) The BDCP and WaterFix project proponents often promoted this

1 “Big Gulp, Little Sip” concept. (Exhibit CCC6SC613.)

2 In my written case6n6chief testimony (Exhibit CCC6SC66, Page 11, Line 21), I
3 discussed how the WaterFix BA H3+ modeling did not comply with either the “Big Gulp”
4 or “Little Sip” portion of the concept. The proposed WaterFix project cannot consistently
5 capture extra water for export reductions during wet periods when Delta outflows are
6 very high. Similarly, in many dry months when Delta outflows are very low and the
7 Delta ecosystem is stressed, the WaterFix project would increase south6f6Delta
8 exports above the existing typical combined permitted capacity of 11,280 cfs. In some
9 cases, dry6period total exports would be increased by as much as 30 percent.

10 The version of the proposed WaterFix project submitted by the Petitioners for
11 Part 2 of this hearing, CWF H3+, likewise fails to comply with the “Big Gulp, Little Sip”
12 concept. (Exhibit CCC6SC663¹⁵).

13 To ensure the proposed WaterFix project does not rely on exports from the Delta
14 during dry periods, the SWRCB should limit total exports based on Delta outflow. For
15 example, the SWRCB could limit total SWP and CVP south6f6Delta exports to 1.5
16 times the Delta outflow (the red diagonal line in Figure 1 of Exhibit CCC6SC663). An
17 example of this kind of limit was previously shown in Figure 5 in Exhibit CCC6SC617.

18 A limit on exports based on Delta outflow would reduce exports during drier
19 periods (i.e., achieve the “Little Sip” concept) and help improve, restore and sustain the
20 Delta ecosystem.

21
22 **9. The Proposed WaterFix Project, CWF H3+, Sometimes Reduces**
23 **Rather than Increases Sacramento Inflows to the Delta at Freeport.**

24 In my case6n6chief written testimony (Exhibit CCC6SC66, Page 17, Line18), I
25 discussed how the WaterFix project (based on BA H3+ modeling) sometimes reduced
26 Sacramento River inflows to the Delta (well above the proposed North Delta Intakes) by
27

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¹⁵ Exhibit CCC-SC-63 is a true and correct copy.

1 as much as 30 percent.

2 As shown in Figure 1 of Exhibit CCC-SC-64¹⁶, the new proposed WaterFix
 3 project (CWF H3+) also reduces Sacramento River flows at Freeport by as much as 30
 4 percent.

5 The SWRCB, in its 2010 Delta Flow Criteria Report (Exhibit SWRCB-25),
 6 recommended significant increases of Sacramento inflow to the Delta and Delta outflow
 7 would be necessary in January through June in the Delta ecosystem for fishery
 8 protection, under existing conditions. Some of the reductions in flows, as measured at
 9 Freeport, caused by the proposed WaterFix project occur during the January through
 10 June period.

11 It is not sufficient to control the flow in the Sacramento River downstream of the
 12 NDD using percentage bypass rules. This would control how much of the inflow at
 13 Freeport can be diverted into the twin tunnels and what percentage should be left in the
 14 river to protect migrating anadromous fish species, but does not require absolute
 15 Sacramento inflow targets. The WaterFix project should be setting enhanced inflow
 16 targets such as those recommended in 2010 by the SWRCB and California Department
 17 of Fish and Wildlife, not reducing Sacramento inflows to the Delta.

18 Before the SWRCB can make an informed decision on the Petitioners' petition,
 19 the Co-Hearing Officers should require the Petitioners to analyze and disclose the
 20 reduction in inflows to the Delta at Freeport due to the WaterFix project, and to present
 21 this information as part of this hearing, so that the corresponding significant adverse
 22 environmental impacts of these flow reductions on the Bay-Delta ecosystem can be fully
 23 understood.

24 ///

25 ///

26 ///

27

28

¹⁶ Exhibit CCC-SC-64 is a true and correct copy.

1 **10. Petitioners have Eliminated Minimum Old and Middle River (OMR)**
2 **Flow Limits of -5,000 cfs for October and November Without**
3 **Explaining the Consequences.**

4 In my case's chief written testimony (Exhibit CCC-SC-63, Page 20), I discussed
5 how the WaterFix modeling (BA H3+ and earlier versions like Alternative 4A, Scenario
6 H3 and H4) had artificially high Delta outflows in October, which resulted in
7 underestimation of adverse water quality impacts in the Delta in October, November,
8 and sometimes December.

9 To simulate a 14-day shut down in south Delta exports during the October pulse
10 flow on the San Joaquin River (modeled as October 16-31) in BA H3+ (Exhibit DWR-
11 1075, Exhibit DWR-1076), the Petitioners assumed that Old and Middle River (OMR)
12 flows would be limited to a minimum of 5,000 cfs during the whole month of October.
13 (See Exhibit DWR-15, p. 6, Table 3, footnote c.) The same 5,000 cfs minimum OMR
14 limit was also applied in November in the earlier CALSIM II modeling studies.

15 However, the most recent version of the WaterFix project modeling (CWF H3+)
16 has removed these 5,000 cfs minimum OMR flows. In the July 2017 "Developments
17 after Publication of the Proposed Final Environmental Impact Report" (Exhibit SWRCB-
18 108 at Page 130), the Petitioners describe this change as follows:

19 *"Changes to south Delta export constraints: In the Final EIR/EIS*
20 *and in the BA, operational criteria included additional Old and*
21 *Middle River (OMR) flow requirements and south Delta export*
22 *restrictions during October and November. For the proposed action,*
23 *these OMR flow requirements and the south Delta export*
24 *restrictions were removed."*

25 The Petitioners have not explained why these south Delta export restrictions,
26 based on OMR flows, were removed, or whether CWF H3+ model study accurately
27 simulates the 14-day shut down in south Delta exports during the October pulse flow on
28 the San Joaquin River. What is apparent, however, is that removing these October and

1 November OMR restrictions reduces Delta outflows in October in particular, and causes
2 significant adverse increases in EC and chlorides concentrations in the Delta in the fall,
3 relative to the NAA.

4 As shown in Figure 1 in Exhibit CCCSC58, the outflows in October for
5 Scenarios H3 and H4 are generally higher than the NAA, but the CWF H3+ outflows are
6 lower. November Delta outflows for Scenarios H3 and H4 and CWF H3+ are all
7 generally lower than the NAA. (Figure 2 in Exhibit CCCSC58.)

8 The Petitioners have failed through the CEQA/NEPA process, and through this
9 Change Petition hearing process, to fully disclose the degradation of water quality in the
10 Delta (increased EC and chloride concentrations) that would occur with the WaterFix
11 CWF H3+ version of the proposed project.

12 For example, in Exhibit DWR61027, Slide 4, the Petitioners present the following
13 bullets:

- 14 • CWF H3+ EC results generally fall between H3 and H4
- 15 • CWF H3+ D61641 M&I and Ag Water Quality Objectives are met the
16 majority of the time
- 17 • Any small percentage of probability of exceedance is equal to or less than
18 the NAA except at Emmaton which has a slightly higher probability

19 In Slide 5 (Exhibit DWR61027), the Petitioners merely acknowledge that
20 exceptions to CWF H3+ falling between H3 and H4 occur when (Petitioners' bullets):

- 21 • Higher spring outflow requirements resulted in less exports and as a result
22 higher interior Delta salinity (south of the SJR)
- 23 • Removal of export constraints in the fall results in lower Delta Outflow and
24 higher salinity.

25 The Petitions fail to disclose significant adverse water quality impacts in the
26 Delta. It is not sufficient to state that the proposed project will meet legally required D6
27 1641 water quality objectives a majority of the time. The Petitioners should have
28 acknowledged that there will be large increases in EC at Emmaton relative to the NAA

1 from October through December (Exhibit DWR61027, Slide 18).

2 The elimination of the OMR limits for October and November result in large increases
3 in chloride concentration at the intake to the Contra Costa Canal relative to the version
4 of the WaterFix project presented in Part 1 of this hearing, Alternative 4A, Scenarios H3
5 and H4 (Exhibit DWR61027, Slide 24). The largest increases occur in October and
6 November, but the chloride concentrations for CWF H3+ are outside the range of, and
7 higher than, the chlorides for H3 and H4 for October through April (Exhibit DWR61027,
8 Slide 24).

9 The Responses to Comments on the WaterFix Final EIR/EIS (Exhibit SWRCB6
10 102) also appear to be based on the earlier BA H3+ modeling and not on the CWF H3+
11 modeling that was supposed to represent the adopted project in the certified WaterFix
12 Final EIR/EIS. By changing their project between the public release of the WaterFix
13 Final EIR/EIS and the certification of the WaterFix Final EIR/EIS, and by not
14 acknowledging these changes in their Responses of Comments, the Petitioners have
15 failed to disclose these significant adverse water quality impacts to the public and the
16 SWRCB.

17 The ADSEIR/EIS, released on June 12, 2018 (Exhibit CCC666¹⁷), further
18 exacerbates this failure to disclose and adequately mitigate significant adverse water
19 quality impacts. The water quality chapter, Chapter 8, only consists of three pages
20 (Exhibit CCC665¹⁸) and compares the new proposed project with modified facilities
21 with the adopted project CWF H3+. The adverse impacts of CWF H3+ relative to both
22 the public WaterFix Final EIR/EIS (BA H3+) and the NAA are not disclosed.

23 The environmental documents prepared by the Petitioners fail to adequately
24 disclose the significant adverse impacts of the proposed WaterFix project on Delta
25 water quality and fail to provide the basis for the SWRCB to make an accurate or fully
26 informed decision on the municipal, industrial and environmental water quality impacts

27 _____
28 ¹⁷ Exhibit CCC-SC-66 is a true and correct copy of this document.

¹⁸ Exhibit CCC-SC-65 is a true and correct copy of this document.

1 of the WaterFix project.

2
3 **11. Petitioners do not Disclose Whether CWF Delta Inflows and Outflows**
4 **Are Consistent with the SWRCB's 2009 Delta Flow Criteria**
5 **Recommendations.**

6 In my case'n chief written testimony (Exhibit CCC6SC63, Page 36), I discussed
7 how the Petitioners have previously failed to disclose how the ratios of Delta inflows and
8 outflows to unimpaired flow for the WaterFix alternatives compare with the SWRCB's
9 2010 Delta Flow Criteria (Exhibit SWRCB625). I provided evidence based on an earlier
10 WaterFix modeling study, BA H3+, that showed the simulated WaterFix Delta outflows
11 are typically well below SWRCB's recommendation of 75 percent of unimpaired flow
12 during January through June (Exhibit CCC6SC635.)

13 California Water Code section 85086(c)(2) states: "*Any order approving a change*
14 *in the point of diversion of the State Water Project or the federal Central Valley Project*
15 *from the southern Delta to a point on the Sacramento River shall include appropriate*
16 *Delta flow criteria and shall be informed by the analysis conducted pursuant to this*
17 *section. The flow criteria shall be subject to modification over time based on a science-*
18 *based adaptive management program that integrates scientific and monitoring results,*
19 *including the contribution of habitat and other conservation measures, into ongoing*
20 *Delta water management."*

21 The Petitioners case'n chief for Part 2 of this hearing again failed to provide
22 evidence in a form (e.g., percentages of unimpaired flow) that would allow the SWRCB
23 to determine whether CWF H3+ is consistent with the 2010 inflow and outflow
24 recommendations of the SWRCB and California Department of Fish and Wildlife
25 (Exhibits SWRCB625 and SWRCB666, respectively).

26 The Petitioners acknowledge that this hearing will include consideration of
27 "appropriate Delta flow criteria" as described in the Delta Reform Act and stated by
28 Hearing Officers in the California WaterFix Hearing Ruling Regarding Scheduling of Part

1 2 and Other Procedural Matters, August 31, 2017, page 12. (Exhibit DWR61010, Page
2 10, Line 17.)

3 The Petitioners offer the increased spring Delta outflow criteria in CWF H3+ as
4 benefiting aquatic resources consistent with the USFWS and NMFS Biological Opinions
5 and the Delta Reform Act. (Exhibit DWR61010, Page 10, Line 21.) However, no
6 evidence is provided that discloses whether these increases in CWF H3+ are sufficient
7 to match the SWRCB's 2010 Delta Flow Criteria recommendations.

8 In fact, the 826year average Delta outflows in March in CWF H3+ are lower than
9 the outflows in Alternative 4A, scenario H4. (Exhibit CCC6SC68, Figure 3.)

10 Unless the Petitioners provide evidence and testimony regarding the
11 percentages of unimpaired flow that apply to different WaterFix alternatives, the
12 SWRCB will lack the basis to make accurate or fully informed decisions about the
13 whether the flows are sufficient to full protect fish species and about other key issues for
14 this hearing.

15
16 **12. Excessive Exceedances of Water Quality Standards Render the**
17 **Water Quality Modeling Useless for Analyzing and Disclosing Water**
18 **Quality Impacts of Proposed WaterFix Projects.**

19 Figure 1 of Exhibit CCC6SC60 shows the full 826year subset of daily6averaged
20 Old River at Bacon EC data from the WaterFix proposed project CWF H3+ modeling for
21 the month of November. As was shown in Exhibit CCC6SC65, Figure 2, the long6term
22 averaged salinities for CWF H3+ at this location were the highest in November
23 compared to all other months.

24 The data plotted are for the water years 1922 through 2003 (82 x 30 = 2,460 data
25 points). Data above the 1:1 diagonal line represent adverse water quality impacts of the
26 proposed WaterFix project. Data points below the diagonal line represent improvements
27 in water quality.

28 My case6n6chief testimony was based on the Biological Assessment modeling

1 for the Proposed Action, BA H3+ (Exhibit CCC-SC-28, Figure 5). That earlier WaterFix
2 alternative assumed OMR minimum flows of 6,000 cfs in October and November. This
3 resulted in artificially high outflows in the fall which resulted in an unrealistic
4 improvement in water quality. The current WaterFix proposed project CWF H3+
5 eliminated these OMR restrictions in October and November. The Delta outflows were
6 much lower resulting in significant water quality degradation in the Delta with respect to
7 salinity (Exhibit CCC-SC-55, Figure 2.)

8 Figure 1 in Exhibit CCC-SC-60¹⁹ shows based upon the water quality modeling
9 for the WaterFix project that the project is still fatally flawed. The daily EC values are
10 often well in excess of 1,053 VS/cm, which is the equivalent of 250 mg/L chloride
11 concentration (according to the conversion equations in Exhibit DWR-609). The D61641
12 compliance location in this area for both the 250 and 150 mg/L chloride standards is off
13 Rock Slough at the intake to the Contra Costa Canal. The water quality at this
14 compliance location is strongly influenced by the water quality at the Bacon Island
15 station. The highest EC value for the No Action Alternative is 2,846 VS/cm, which is the
16 equivalent of 761 mg/L chloride concentration.

17 These extremely high EC values should not be dismissed as anomalies as the
18 Petitioners have suggested (Exhibit DWR-66, Page 3, Line 7.) They are too frequent
19 and persistent. Having chloride concentrations as high as 761 mg/L in an area where
20 the maximum allowable daily value is 250 mg/L renders the water quality impact
21 analysis invalid.

22 In real-time operations of the Delta by the SWP and CVP project operators, the
23 250 mg/L standard would be met, by among other things, increasing Delta outflow. To
24 reduce chloride concentrations from 700 mg/L or more down to 250 mg/L would require
25 a significant amount of additional outflow which would typically reduce the amount of
26 water that could be exported at that time. Those export losses are often made up in
27

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¹⁹ Exhibit CCC-SC-60 is a true and correct copy.

1 subsequent months in realtime Delta operations or by additional reservoir releases.
2 This could then shift adverse impacts to subsequent months, something that is not
3 disclosed in this flawed modeling study.

4 Unless the daily D61641 Municipal and Industrial water quality standards are met
5 in the WaterFix operations and water quality modeling, the SWRCB will lack the basis to
6 make an accurate or properly informed decision about the key hearing issues.

7
8 **13. Petitioners do not Present an Operations and Water Quality Analysis**
9 **of the Proposed WaterFix Project When the Enhanced Spring**
10 **Outflows Are Provided Through Contracts with Willing Sellers.**

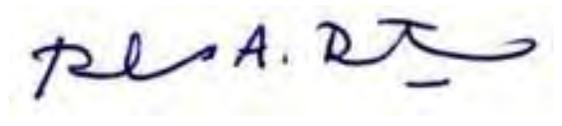
11 The enhanced Spring outflows that were incorporated into CWF H3+ require that
12 water to meet these outflow targets be purchased from willing sellers in the tributaries
13 upstream of the Delta (Transcript, February 22, 2018, Page 69, starting at Line 16.) The
14 Petitioners have not presented any evidence that there are any willing sellers who will
15 contribute to compliance with the Biological Opinion Spring Outflow Criteria and have
16 contracted with DWR to provide that water. The Petitioners have also failed to identify a
17 dedicated funding source for these water purchases.

18 The Petitioners modeled the enhanced Spring flows by reducing exports, not as
19 less local diversion or additional reservoir releases upstream (which would result if there
20 were voluntary water transfers). The Petitioners need to present modeling showing the
21 environmental impacts of the WaterFix project for a range of conditions from full access
22 to willing sellers to no willing sellers. The Petitioners should also clarify how the SWP
23 and CVP will share the responsibility for meeting these enhanced Spring flows.
24 (Transcript, February 22, 2018, Page 72, Line 1.)

25 Without this information, the SWRCB will lack the basis to make an accurate or
26 fully informed decision about the WaterFix project will have adverse impacts on key fish
27 species, the Delta ecosystem and legal users of water.

28

Executed on this 11th day of July, 2018, in Oakland, California.

A handwritten signature in blue ink, appearing to read "R.A. Denton", is written on a light-colored rectangular background.

Richard A. Denton, Ph.D., P.E.

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Daily-Averaged Old River at Bacon Island EC in November for CWF H3+

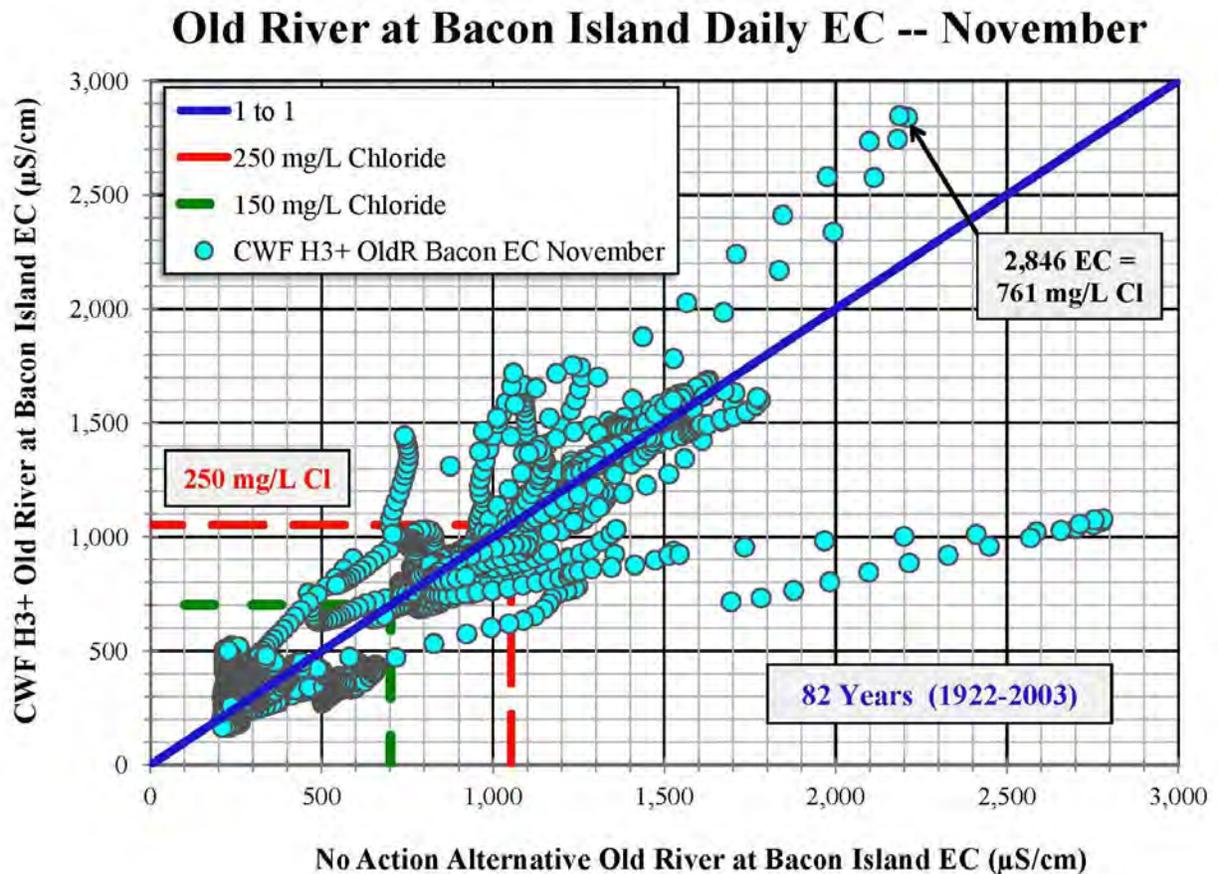


Figure 1: Daily-averaged Old River at Bacon Island EC for November for the proposed WaterFix project CWF H3+ plotted as a function of the No Action Alternative (NAA). The data are from the full 82-year CALSIM II modeling period, October 1, 1921 through September 30, 2003. Because this location is close to a D-1641 Municipal and Industrial water quality compliance location (the intake to the Contra Costa Canal), equivalent chloride concentrations of 250 mg/L and 150 mg/L are also shown. For many days in November, the chloride concentrations for both CWF H3+ and the NAA are well in excess of the 250 mg/L year-round maximum.

Proposed WaterFix Project Would Increase Exports During Drier Periods

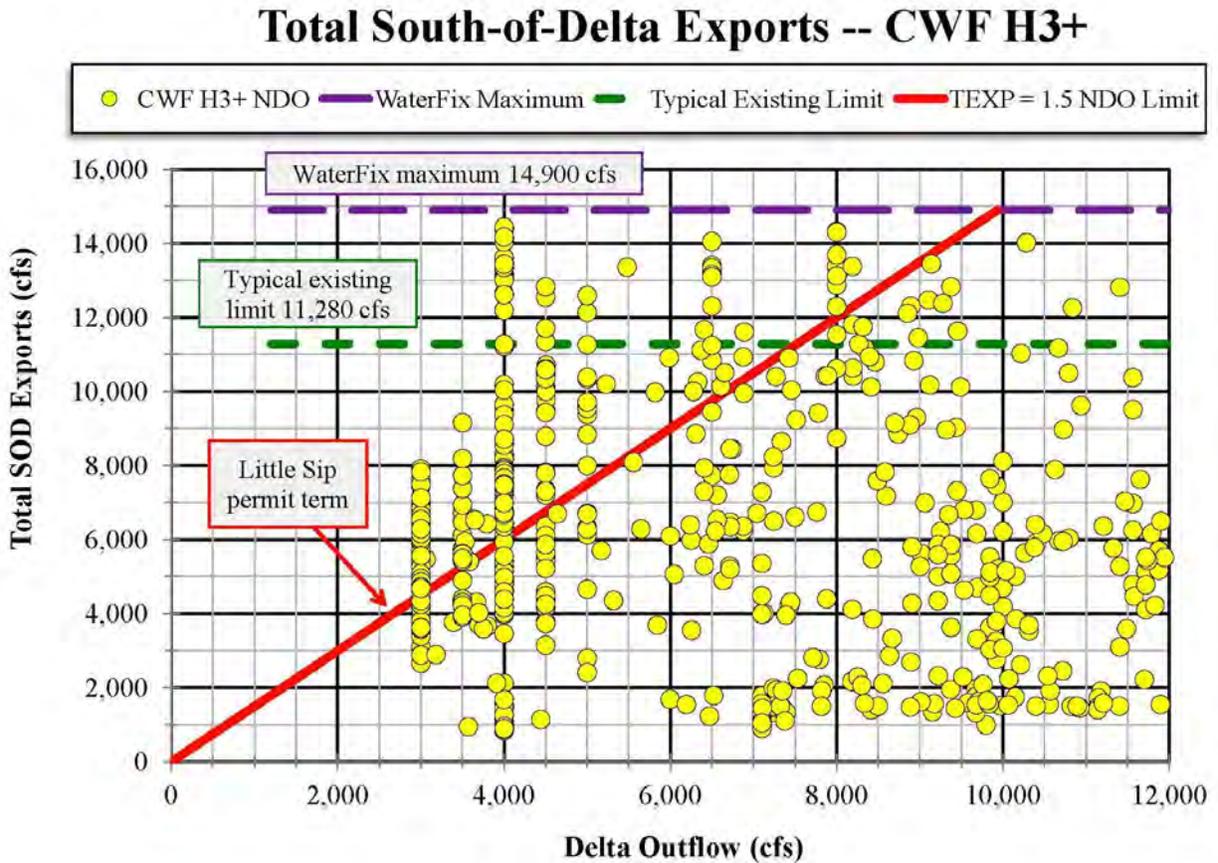


Figure 1: Monthly-averaged total South-of-Delta exports for the proposed WaterFix project CWF H3+ as a function of the corresponding Delta outflow. The data represent the modeling period, October 1, 1921 through September 30, 2003. Only data for outflows less than 12,000 cfs are plotted to highlight the proposed WaterFix operations during drier periods. The WaterFix project increases exports beyond existing levels when Delta outflows are very low and the Delta ecosystem is most vulnerable. This is the exact opposite of the “Little Sip” concept. The suggested 1.5 times Delta outflow limit would help ensure operations consistent with the “Little Sip” concept.

Proposed WaterFix Project Reduces Sacramento River Inflows at Freeport

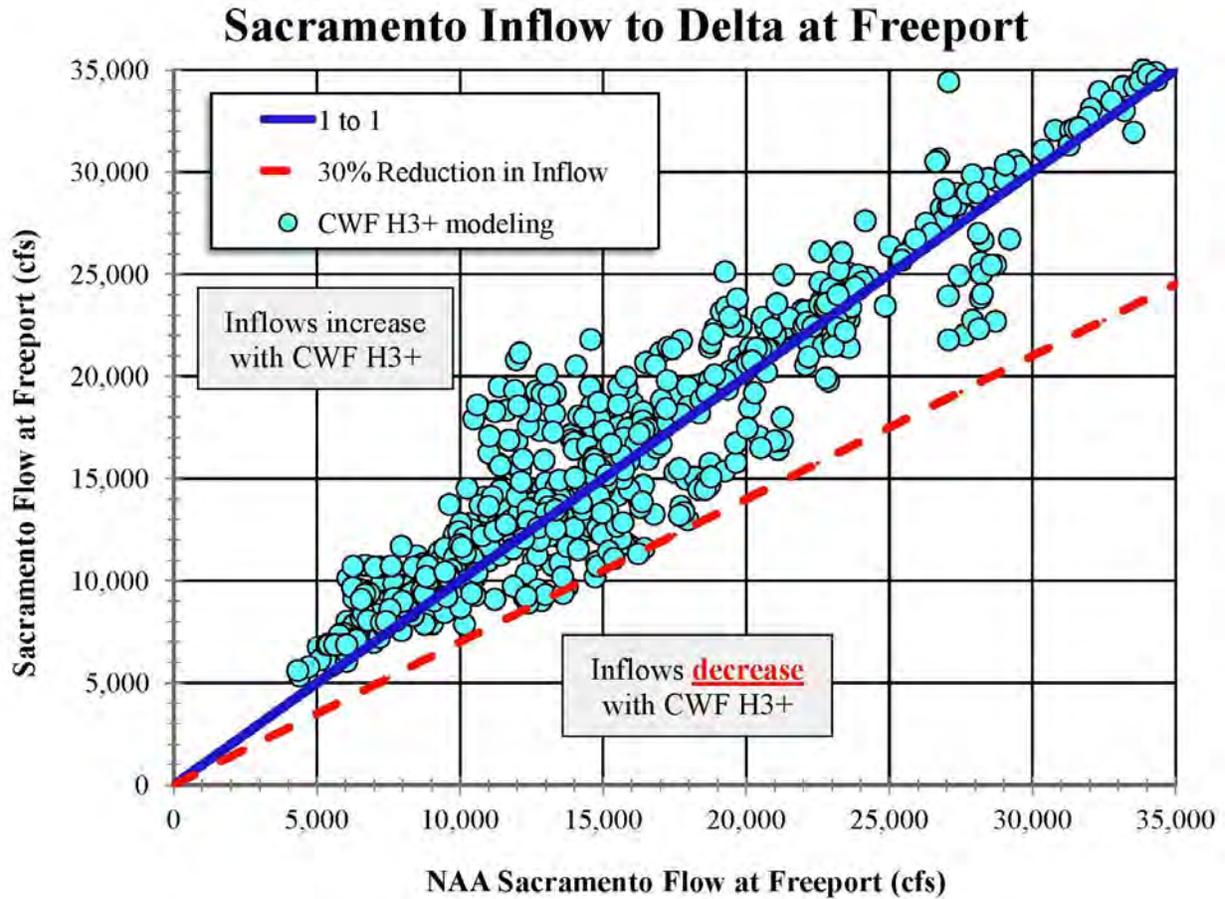


Figure 1: Monthly-averaged Sacramento River flows into the Delta at Freeport for the proposed WaterFix project CWF H3+ as a function of the corresponding No Action Alternative (NAA) flows. The data are for the period, October 1, 1921 through September 30, 2003. Only flows less than 35,000 cfs are plotted. The WaterFix project would reduce inflows to the Delta at Freeport by as much as 30% in some months.

Historical Trends in Fall X2 from DAYFLOW

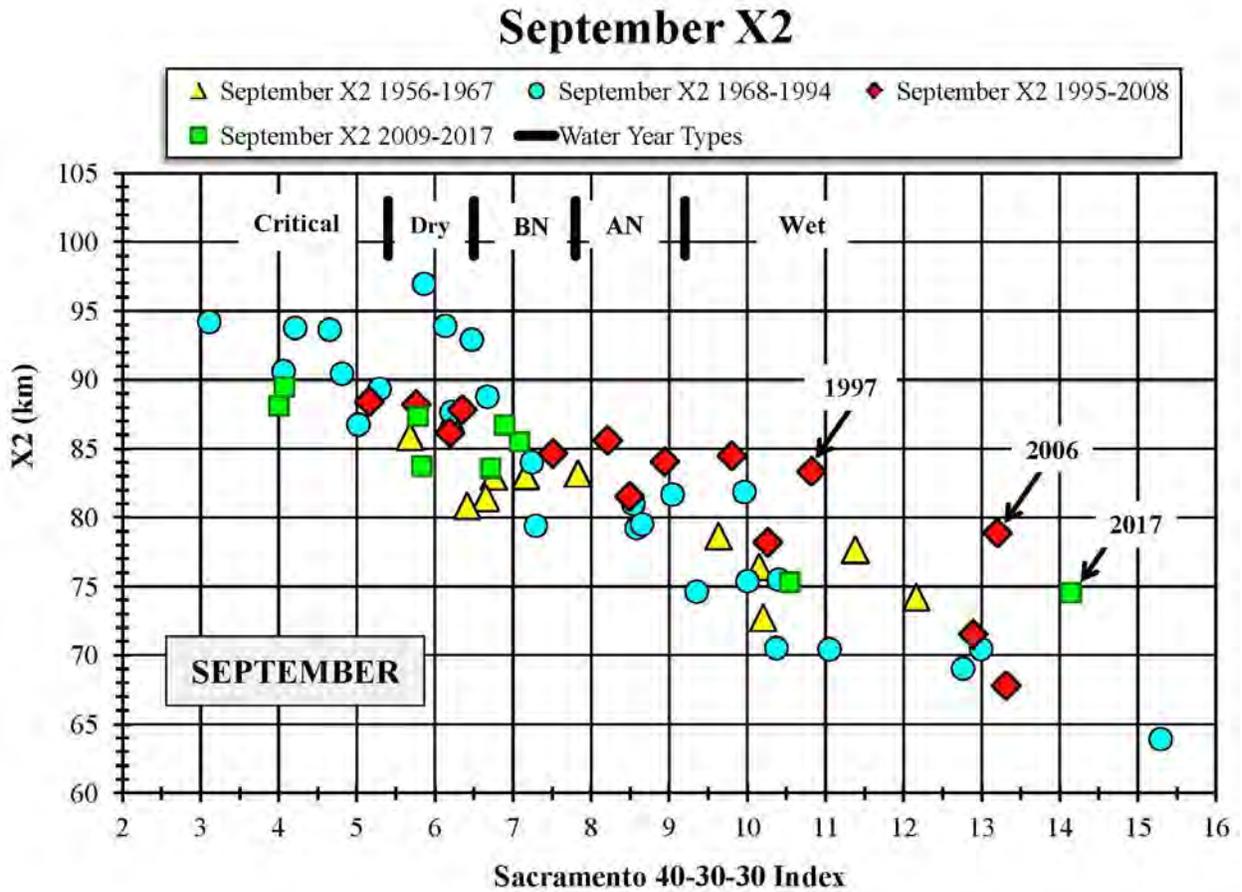


Figure 1: Historical monthly-averaged X2 for the month of September as a function of the Sacramento 40-30-30 water year index for the period 1956-2017. The data are categorized into four periods: Pre-SWP (1956-1967); Pre-Bay-Delta Accord (1968-1994), Post-Accord (1995-2008); and Post-2008-2009 Biological Opinions (2009-2017).

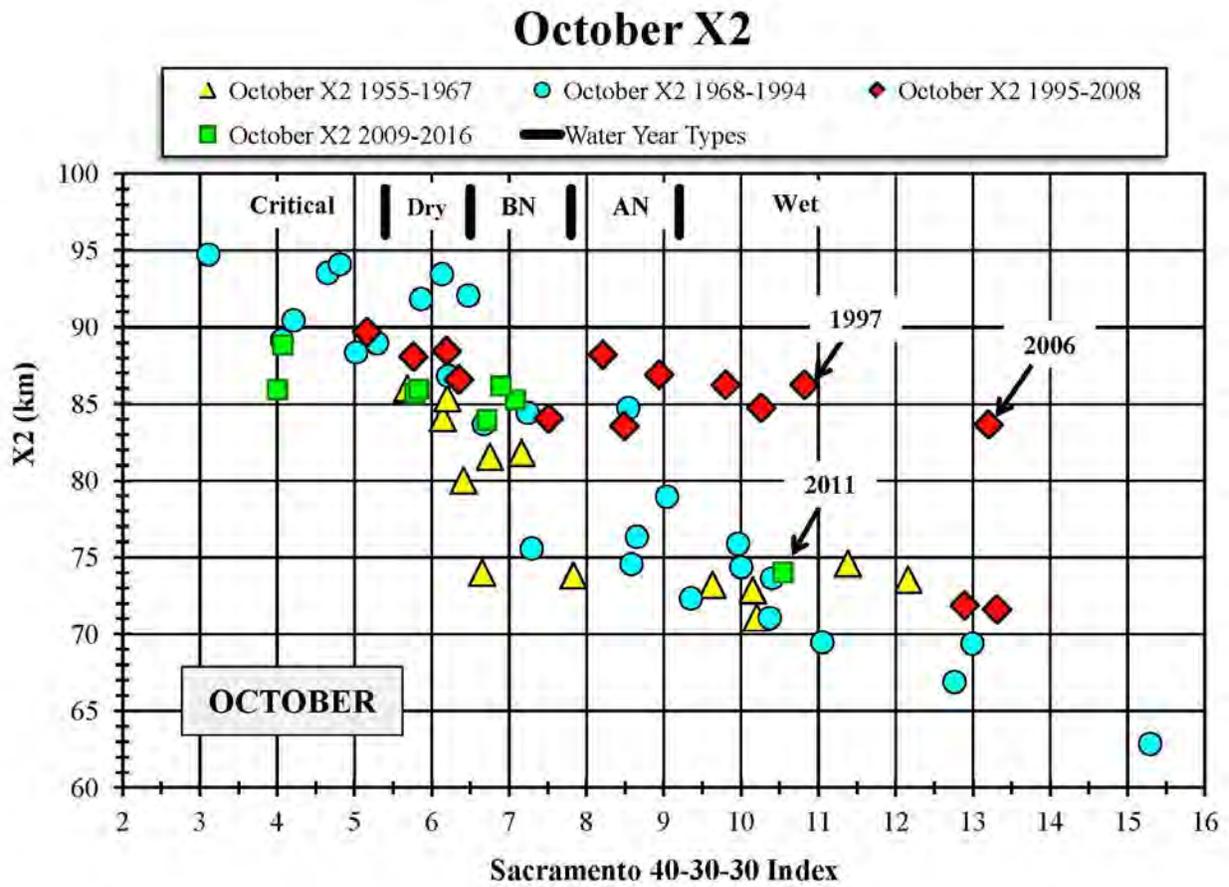


Figure 2: Historical monthly-averaged X2 for the month of October as a function of the Sacramento 40-30-30 water year index for the period 1955-2016. The data are categorized into four periods: Pre-SWP (1955-1967); Pre-Bay-Delta Accord (1968-1994), Post-Accord (1995-2008); and Post-2008-2009 Biological Opinions (2009-2016).

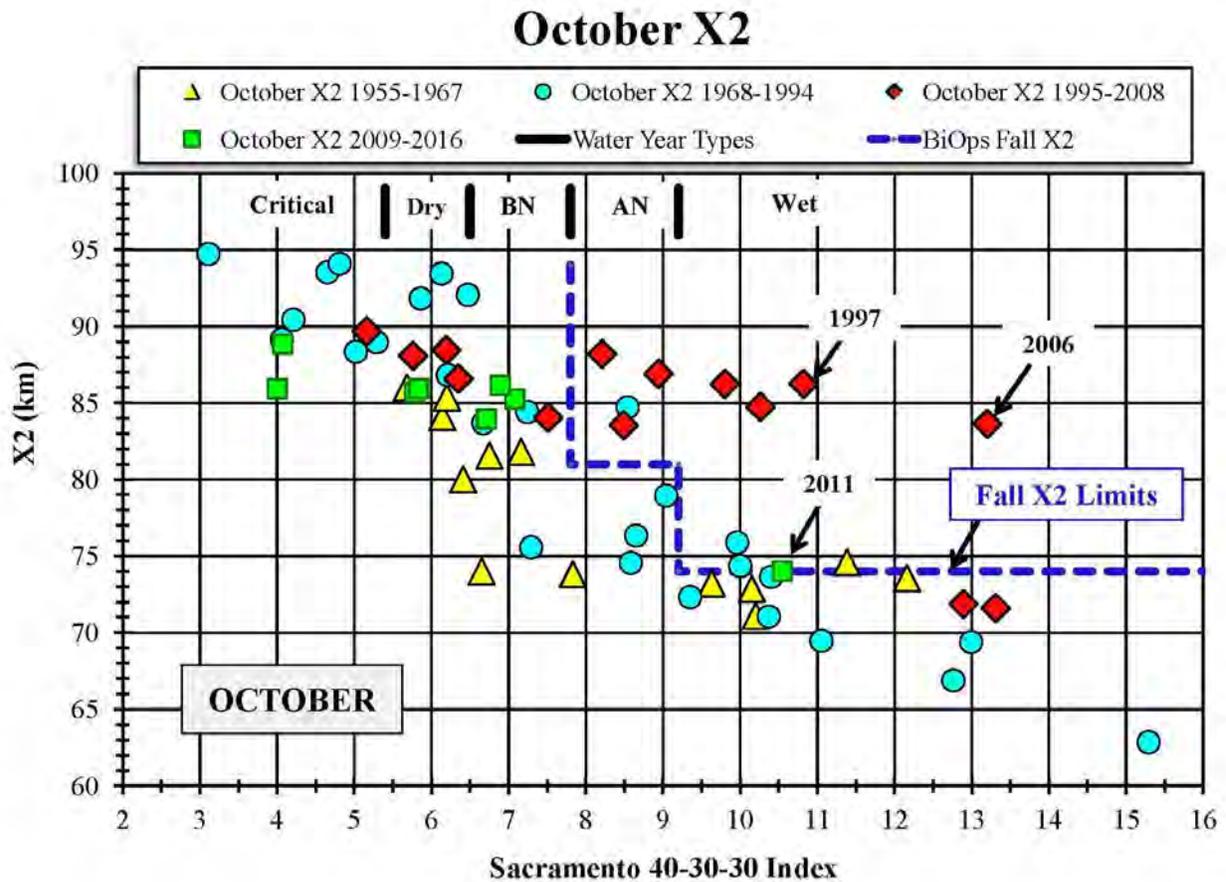


Figure 3: Historical monthly-averaged X2 for the month of October as a function of the Sacramento 40-30-30 water year index for the period 1955-2016. The data are categorized into four periods: Pre-SWP (1955-1967); Pre-Bay-Delta Accord (1968-1994), Post-Accord (1995-2008); and Post-2008-2009 Biological Opinions (2009-2016). The Fall X2 limits for wet and above normal years (74 km and 81 km, respectively) from the USFWS Biological Opinion (SWRCB-87, page 282) is also shown. There were a number of years after 1994 when the October X2 was much higher than the previous historical trend.

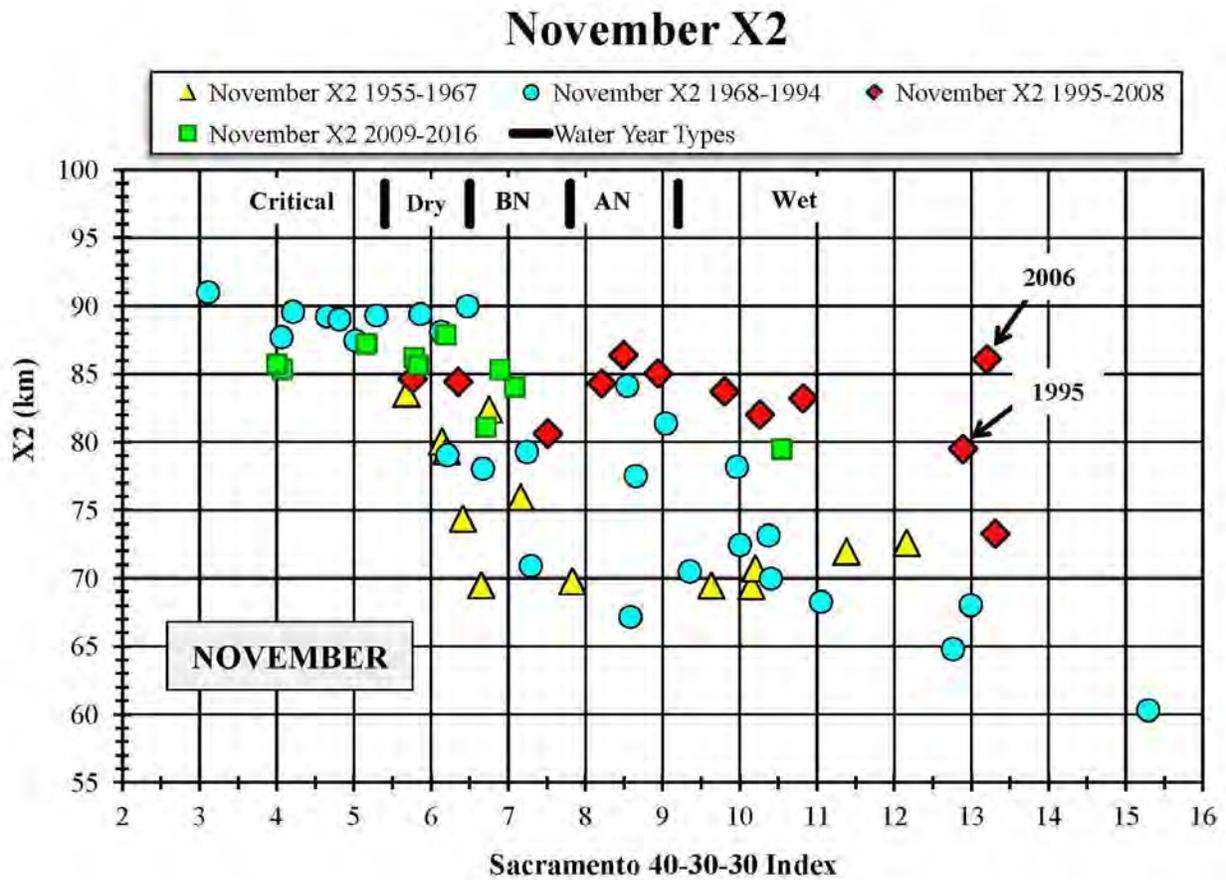


Figure 4: Historical monthly-averaged X2 for the month of November as a function of the Sacramento 40-30-30 water year index for the period 1955-2016. The data are categorized into four periods: Pre-SWP (1955-1967); Pre-Bay-Delta Accord (1968-1994), Post-Accord (1995-2008); and Post-2008-09 Biological Opinions (2009-2016).

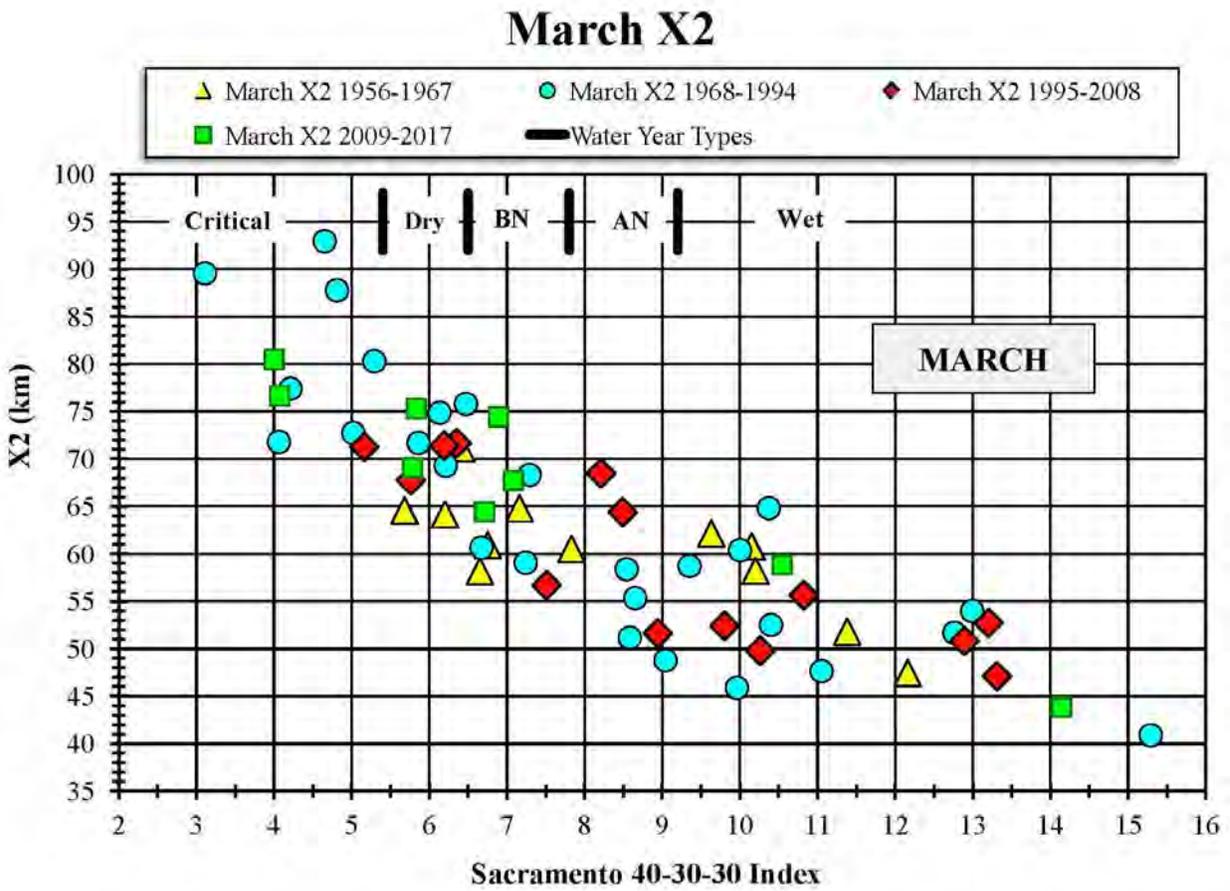


Figure 5: Historical monthly-averaged X2 for the month of March as a function of the Sacramento 40-30-30 water year index for the period 1956-2017. The data are categorized into four periods: Pre-SWP (1956-1967); Pre-Bay-Delta Accord (1968-1994), Post-Accord (1995-2008); and Post-2008-2009 Biological Opinions (2009-2017).

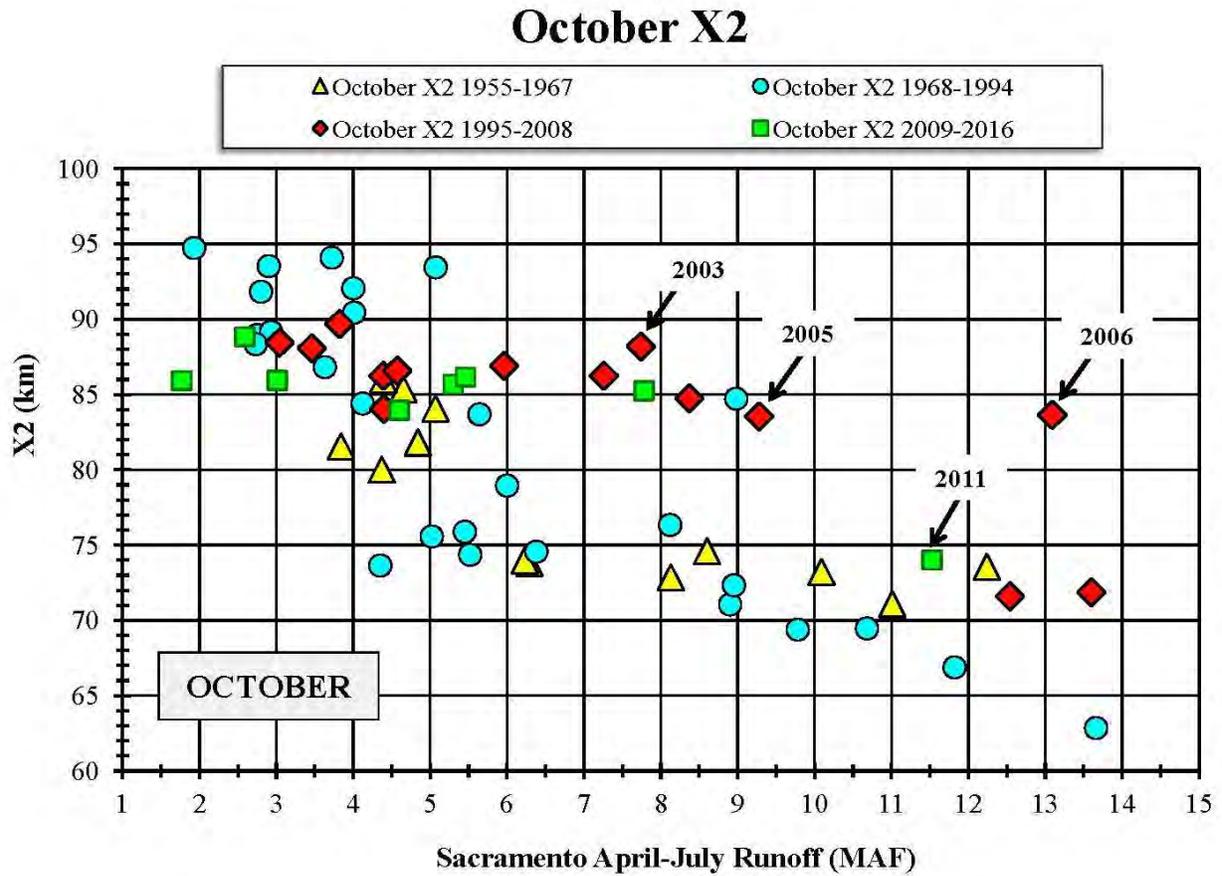


Figure 6: Historical monthly-averaged X2 for the month of October as a function of the Sacramento April-July unimpaired runoff for the period 1955-2016. The data are categorized into four periods: Pre-SWP (1955-1967); Pre-Bay-Delta Accord (1968-1994), Post-Accord (1995-2008); and Post-2008-2009 Biological Opinions (2009-2016).

**AGREEMENT FOR MITIGATION OF IMPACTS
TO CONTRA COSTA WATER DISTRICT FROM CONSTRUCTION AND
OPERATION OF BAY DELTA
CONSERVATION PLAN/ CALIFORNIA WATERFIX**

This Agreement for Mitigation of Impacts to Contra Costa Water District (“CCWD”) from Construction and Operation of the Bay Delta Conservation Plan / California WaterFix (this “**Agreement**”), by and between CCWD and the California Department of Water Resources (“DWR” and, together with CCWD, each a “**Party**” and, collectively, the “**Parties**”), is made as of the reference date of March 24, 2016. Capitalized terms not otherwise defined in this Agreement shall have the meanings set forth in Section 12.

RECITALS

- A. WHEREAS**, DWR and the United States Bureau of Reclamation (“**Reclamation**”) together have prepared a 2013 Draft Environmental Impact Report / Environmental Impact Statement (“**DEIR/S**”) and a 2015 Partially Recirculated Draft Environmental Impact Report / Supplemental Environmental Impact Statement (“**2015 RDEIR/SDEIS**”) for a project titled the Bay Delta Conservation Plan (“**BDCP**”), which includes Action Alternative 4A, called the California WaterFix (“**CWF**”) (collectively, “**BDCP/CWF**”);
- B. WHEREAS**, the BDCP/CWF includes as one of its components a facility to convey water from one or more water diversion intakes located along the Sacramento River (“**Northern Intakes**”) to the State and/or Federal pumping facilities in the south Delta (“**Conveyance Facility**”);
- C. WHEREAS**, in addition to the Conveyance Facility, the CWF includes the following components and parameters:
1. maximum diversion of a total of up to 9,000 cubic feet per second from a total of one or more new Northern Intakes;
 2. requirements to allow sufficient flow to bypass the new Northern Intakes and remain in the Sacramento River as specified in Table 4.1-2 of the 2015 RDEIR/SDEIS and Table 3-16 in the DEIR/S;
 3. continued use of existing State and Federal intakes in the south Delta to minimize water quality degradation by refraining from diverting from the Northern Intakes above a low-level pumping quantity of 300 cubic feet per second per intake during the months of July, August, and September of each calendar year unless the rate of diversions from the South Delta channels are at least approximately 3,000 cubic feet per second;
 4. coordinated operation of the State Water Project and Federal Central Valley Project facilities to: (i) meet the Delta outflow requirements in place as of the effective date of this Agreement as specified in State Water Resources Control Board Water Rights Decision 1641 (“**D-1641**”) Table 3 at pp. 183-187 and in the

United States Fish & Wildlife Service December 2008 Biological Opinion on the Effects of Long Term Coordinated Operations of the Central Valley and State Water Project on Delta Smelt and its Designated Critical Habitat, Reasonable and Prudent Alternative Component 3 at pp. 282-283 and Action 4 in Attachment B: (ii) the Rio Vista flow requirements in place as of the effective date of this Agreement as specified in D-1641 Table 3 at p. 184, and (iii) the additional Rio Vista flow requirements for at least 3,000 cubic feet per second from January to August of each calendar year, as specified in the 2015 RDEIR/SDEIS Table 4.1-2 at p. 4.1-9; and

5. up to 305 total acres of tidal wetland restoration located at Sherman Island, Cache Slough and the North Delta, where such restoration is required as mitigation for impacts of the BDCP/CWF and provided that tidal wetland restoration located at Sherman Island will not exceed 59 acres unless DWR demonstrates to CCWD's satisfaction that the tidal wetlands restoration mitigation will cause no adverse net water quality impacts at CCWD's intakes at any time;
- D. WHEREAS**, CCWD submitted comments on the 2015 RDEIR/SDEIS expressing its position that the BDCP/CWF would result in significant water quality, water supply and construction-related impacts to CCWD and its customers, and that the 2015 RDEIR/SDEIS was inadequate in other respects. Among other comments, CCWD expressed its concerns that construction of the BDCP/CWF could damage CCWD Facilities on and near Victoria Island; and that operation of the BDCP/CWF could cause salinity, algae and other contaminants to increase at CCWD's intakes. Increased salinity, algae and other contaminants at CCWD's intakes in turn could (a) adversely affect the quality of water delivered to CCWD's customers; (b) prevent CCWD from diverting water from one or more of its intakes during periods of degraded water quality; and (c) increase CCWD's water supply, energy and infrastructure costs due to changes in the timing of CCWD's diversions, periodic changes in the intakes used by CCWD to access water meeting CCWD's water quality objectives, and replacement of some or all of CCWD's water supply.
- E. WHEREAS**, DWR and Reclamation have filed a joint water rights petition before the State Water Resources Control Board ("**State Board**") that seeks to add three new points of diversion and/or points of re-diversion to specified water rights permits for the State Water Project and Central Valley Project in connection with the CWF ("**CWF Change of Point of Diversion**"). The State Board has bifurcated its proceedings on the CWF Change of Point of Diversion into multiple parts, and CCWD has filed a protest to the petition ("**Water Rights Protest Claims**").
- F. WHEREAS**, Reclamation has participated in informal consultation on the CWF under Section 7(a)(2) of the Endangered Species Act, 16 U.S.C. § 1536(a)(2), with the U.S. Fish & Wildlife Service and National Marine Fisheries Service and to that end has made available a working draft Biological Assessment for the CWF, which is anticipated to result in a final Biological Assessment and a Biological Opinion that will be critical to how the CWF will be operated.

- G. WHEREAS**, absent an enforceable and binding agreement to mitigate impacts of the BDCP/CWF to CCWD and its customers and to fully offset increased costs to CCWD resulting from operation of the BDCP/CWF, CCWD has threatened to commence litigation arising under the California Environmental Quality Act (“CEQA”), National Environmental Policy Act, California Water Code, Federal and State Endangered Species Acts, and other statutes and regulations to challenge actions and final decisions by DWR, Reclamation and other permitting agencies regarding the BDCP/CFW.
- H. WHEREAS**, without admitting to any liability arising from CCWD’s alleged harms above in Recital D, DWR desires to settle the Parties’ disagreements in lieu of litigation and to ensure that the BDCP/CWF provides the mitigation under CEQA, and resolves CCWD’s water right protest as a legal user of water, the Parties have agreed on measures to, among other things, (i) mitigate the impacts identified under CEQA of the BDCP/CWF, if approved, on CCWD and its customers, and (ii) fully offset any increased costs to CCWD and its customers resulting directly or indirectly from the BDCP/CWF, if approved, all as more fully set forth in this Agreement.
- I. WHEREAS**, the Parties recognize that DWR has not decided whether or on what conditions to approve the BDCP/CWF as a project under CEQA, and the Parties intend that, except with regard to the mitigation measures that must be implemented to address impacts to CCWD and its customers if DWR approves the BDCP/CWF, this Agreement in no way affects the independent judgment to be exercised and findings required to be made by DWR or CCWD under CEQA in the event the BDCP/CWF, is approved and implemented.
- J. WHEREAS**, this Agreement is intended to protect CCWD and its customers in the event that DWR approves and implements the BDCP/CWF; by entering into this Agreement CCWD does not endorse or otherwise support approval and implementation of the BDCP/CWF.
- K. WHEREAS**, DWR will benefit from CCWD’s withdrawal of its water rights protest prior to DWR’s selection of an action alternative and approval of the BDCP/CWF and prior to approval of the water rights petition, incidental take permits and other permits and approval that will govern construction and operation of the BDCP/CWF; therefore, this Agreement is intended to bind DWR and its successors and assigns to comply with the terms of this Agreement including but not limited to conveyance of Qualifying Water to CCWD in the amounts specified by this Agreement, regardless of the physical features, components or operational parameters approved and permitted for the BDCP/CWF and regardless of whether CCWD exercises its right to comment upon, oppose or challenge actions, approvals and permits for an alternative or project modification that both (i) deviates from the components and parameters specified in Recital C, above and (ii) has the potential to harm water quality at CCWD’s intakes.
- L. WHEREAS**, operation of the BDCP/CWF could adversely affect CCWD in a manner that is not addressed by this Agreement if the BDCP/CWF is approved, permitted or modified in a manner that deviates from the project components and parameters specified in Recital C, above; accordingly, this Agreement is not intended to prevent CCWD from

commenting on, opposing, or challenging any action, permit or approval that both (i) deviates from the project components and parameters specified in Recital C, above (b) has the potential to harm water quality at CCWD's intakes.

M. WHEREAS, the Parties recognize that to fully implement this Agreement, other agreements, permits and approvals are contemplated including but not limited to: an agreement between CCWD and the East Bay Municipal Utility District ("**EBMUD**") to allow water to be conveyed to CCWD through EBMUD's Freeport Intake ("**Freeport Intake**") and the interconnection between EBMUD's Mokelumne Aqueduct and CCWD's Los Vaqueros Pipeline; State Board approval of a water rights petition to identify the Freeport Intake as a point of diversion for water diverted pursuant to CCWD's Los Vaqueros water right; State Board approval of a water rights petition to identify the new Northern Intakes as points of diversion for water diverted pursuant to CCWD's Los Vaqueros water right; a Warren Act Contract between CCWD and Reclamation for conveyance through the Folsom South Canal of water diverted at the Freeport Intake under the Los Vaqueros water right; and cooperation from Reclamation with regard to implementation of CCWD's water supply contract with Reclamation in a manner that is consistent with the terms of this Agreement.

N. WHEREAS, two of CCWD's customers, the City of Antioch ("**Antioch**") and the City of Brentwood ("**Brentwood**"), as well as the East Contra Costa Irrigation District ("**ECCID**"), which supplies water to CCWD and to Brentwood, have submitted comments on the 2015 RDEIR/SDEIS expressing their concerns that they could be adversely affected by the BDCP/CWF in a manner that would not be fully addressed by mitigation of impacts to CCWD; two of these agencies (Antioch and ECCID) have existing agreements with DWR to address water quality at their intakes, and complete mitigation for water quality impacts to all of its customers and partners is important to CCWD; therefore, this Agreement requires DWR to contact each of these agencies and, if agreeable to these agencies, to commence negotiations regarding potential impacts to these agencies beyond the impacts to CCWD that are addressed by this Agreement, it being understood that this Agreement is not intended to address potential impacts of the BDCP/CWF to Antioch, ECCID or Brentwood except to the extent such impacts are indirectly addressed as a practical matter by the CEQA mitigation measures provided for in this Agreement to mitigate the impacts of the BDCP/CWF on CCWD.

NOW, THEREFORE, THE PARTIES MUTUALLY AGREE AS FOLLOWS:

1. EFFECTIVENESS, CEQA REVIEW AND TERM OF AGREEMENT

1.1 Effective Date. This Agreement shall be effective as of the date that it is executed by both Parties, except to the extent expressly provided below in subsection 1.1.1.

1.1.1 CCWD's obligations under Section 5.1 of this Agreement shall become effective only if, after completing CEQA review of the BDCP/CWF, DWR selects and approves a BDCP/CWF action alternative that does not deviate from the components and parameters of the CWF that are described in Recital C above (a "**Conforming Action Alternative**").

1.1.2 The Parties agree and acknowledge that DWR must complete CEQA review before it can construct, operate or use the BDCP/CWF. In conducting its CEQA review, DWR reserves all of its rights, powers and discretion under CEQA with regard to the BDCP/CWF, including, to the extent permitted under applicable law, but without limiting any of DWR's obligations under this Agreement, (i) the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; (ii) the authority to deny approval of the BDCP/CWF based on any significant environmental impact that cannot be mitigated; and (iii) the authority to approve the BDCP/CWF notwithstanding any significant environmental impact that cannot be mitigated, if DWR determines that these impacts are outweighed by the project's social, economic or other benefits. CCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by CCWD on whether and how to approve any connection to or use of any Conveyance Facility that is part of the BDCP/CWF. Notwithstanding the discretion identified in this Section, if DWR approves the BDCP/CWF or any modification to the BDCP/CWF, DWR shall implement the terms of this Agreement.

1.1.3 The Parties further agree and acknowledge that DWR also must complete CEQA review before it can construct, operate or use any Interconnection Facilities. Pursuant to this Agreement, DWR will identify construction and operation of the Interconnection Facilities as mitigation measures in the Final EIR/EIS for the BDCP/CWF, and will include an evaluation of the environmental effects of such mitigation in the Final EIR/EIS for the BDCP/CWF. In conducting its CEQA review, DWR reserves all of its rights, powers and discretion under CEQA with regard to the Interconnection Facilities, including, to the extent permitted under applicable law, but without limiting any of DWR's obligations under this Agreement, (i) the authority to adopt mitigation measures and/or an alternative project design, configuration, capacity or location in order to reduce any identified significant environmental impacts; (ii) the authority to deny approval of the Interconnection Facilities based on any significant environmental impact that cannot be mitigated (in which case DWR also must deny approval of the associated Conveyance Facility); and (iii) the authority to approve the Interconnection Facilities notwithstanding any significant environmental impact that cannot be mitigated, if DWR determines that these impacts are outweighed by the project's social, economic or other benefits. CCWD similarly reserves all of its rights, powers and discretion under CEQA with regard to any decision by CCWD on whether and how to approve any operation or use of the Interconnection Facilities. Notwithstanding the discretion identified in this Section, if DWR approves the BDCP/CWF or modifications to the BDCP/CWF,

DWR shall implement the terms of this Agreement including but not limited to the duty to construct the Interconnection Facilities.

- 1.2 Term. Unless this Agreement is earlier terminated by mutual written agreement of the Parties, this Agreement shall remain in effect for the entire duration that the BDCP/CWF and/or any amendment, modification, supplement or replacement thereof is in operation, including, without limitation, during any lapse thereof or any cessation of use of any Conveyance Facility that is later followed by the design, construction, operation or use of the same or a new or modified Conveyance Facility. For the avoidance of doubt, this Agreement shall be effective from and after the effective date hereof, including, without limitation, at any such time that is prior to the design, construction, operation or use of any Conveyance Facility; provided, however, this Agreement will automatically terminate if all of the following occur: (i) DWR permanently withdraws its CWF Change in Point of Diversion application; (ii) for a period of twenty (20) years following execution of this Agreement, DWR does not receive State Board approval for a CWF Change in Point of Diversion or any other change in point of diversion for a Conveyance Facility; and (iii) for a period of twenty (20) years following execution of this Agreement, DWR does not commence construction of the Conveyance Facility.

2. CONSTRUCTION OF CONVEYANCE FACILITY AND INTERCONNECTION FACILITIES

2.1 Provisions Applicable to the Design, Construction and Maintenance of the Conveyance Facility and the Interconnection Facilities.

2.1.1 Coordination between CCWD and DWR regarding Design, Construction, and Maintenance Schedules. DWR shall coordinate with CCWD on the schedules for design, construction and maintenance of the portion of the Conveyance Facility located on or beneath Victoria Island, San Joaquin County (“**Conveyance Facility on Victoria Island**”) and the Interconnection Facilities (as defined in Section 2.3.1).

- (a) DWR shall provide a detailed schedule to CCWD for completion of design of the Conveyance Facility and Interconnection Facilities. DWR shall include as part of the design schedule sufficient time to enable completion of the review and comment periods provided by this Agreement prior to advertising the Conveyance Facility and Interconnection Facilities for bid and construction.
- (b) No later than one hundred twenty (120) days prior to the commencement of construction of the Conveyance Facility on Victoria Island or Interconnection Facility, whichever occurs first, and no later than ninety (90) days prior to the commencement of construction or other ground-disturbing

activities associated with maintenance of the Conveyance Facility on Victoria Island, DWR shall provide to CCWD a detailed proposed construction schedule for each facility, including the proposed scope of construction or maintenance activities, proposed dates for such construction or maintenance, construction or maintenance activities (including dewatering as described in Section 2.2.2), a schedule of typical equipment and materials and the proposed construction contractor. CCWD shall provide written comments on the proposed construction or maintenance schedules to DWR within thirty (30) days of CCWD's receipt of each proposed schedule. DWR agrees to implement all CCWD comments except to the extent implementation of one or more comments would cause substantial delay in designing, constructing or maintaining the Conveyance Facility on Victoria Island or Interconnection Facilities or would result in a substantial increase in construction or maintenance costs. To the extent DWR objects to any of CCWD's written comments, within fifteen (15) days of DWR's receipt of said comments, DWR shall notify CCWD in writing of its objection and the Parties shall meet and confer in good faith to resolve the dispute. If the Parties cannot resolve the dispute within twenty-one (21) days of DWR's written notice of objection, the matter may be submitted by either Party to arbitration pursuant to Section 7 of this Agreement.

- (c) The schedule specified in Section 2.1.1(b), above, may be changed by the Parties by mutual consent.

2.1.2 Review of Documents. Unless noted otherwise in this Agreement or unless revised by the Parties by mutual written agreement, the following review and comment process shall apply:

- (a) Any review or approval of documents by CCWD contemplated by this Agreement, including but not limited to review of project designs, technical studies, third party contracts, and contractor submittals, shall be completed within fifteen (15) working days of receipt of those documents by CCWD from DWR. If CCWD has comments on a document, CCWD shall provide such comments to DWR in writing.
- (b) Within fifteen (15) working days of receipt of said comments, DWR shall notify CCWD in writing to the extent DWR objects to any of CCWD's written comments, and the Parties shall meet and confer in good faith to resolve the dispute.

- (c) If the Parties cannot resolve the dispute within twenty-one (21) working days of DWR's written notice, the matter may be submitted to arbitration pursuant to Section 7 of this Agreement.
- (d) If CCWD does not return comments to DWR within fifteen (15) working days of CCWD's receipt of contractor submittals, DWR will respond to the contractor submittals within the timeframe stipulated in the construction contract and will not delay response waiting for CCWD comments.

2.1.3 CCWD Review of Third Party Contracts. CCWD shall have the right to review construction, maintenance and similar contracts between DWR and third parties relating to the Conveyance Facilities within 1,000 feet of the easement for CCWD's Middle River Pipeline on Victoria Island and relating to the Interconnection Facilities (each a "Third Party Contract"). In furtherance of the foregoing, DWR shall provide CCWD with drafts of each Third Party Contract in a timely manner such that CCWD can review and provide comments on such drafts. DWR shall consider all such comments in good faith; provided that, to the extent any provisions of such Third Party Contracts conflict with the terms of this Agreement, DWR shall not include them in the final contracts without the written consent of CCWD. Unless otherwise agreed to by CCWD, each Third Party Contract will contain provisions acceptable to CCWD relating to the conduct of the construction or maintenance at or affecting any CCWD Facility, including, without limitation, compliance with CCWD's environmental, health and safety programs, and the right of CCWD to require DWR to halt construction activities that could cause material damage to CCWD's property, inspection and other rights.

2.1.4 Reimbursement of CCWD Costs for Review and Coordination. Promptly upon written notice thereof from CCWD, including a reasonably detailed description of such costs, DWR shall reimburse CCWD the cost of any CCWD staff time or third-party consultant costs relating to review of documents including but not limited to project designs, technical studies, third party contracts, and contractor submittals; pre-construction and post-construction inspections; reasonable observation and inspection during construction and maintenance; or any other activities to implement this Agreement relating to design, construction and maintenance of the Conveyance Facility on Victoria Island and Interconnection Facilities.

2.1.5 Avoidance of Western Area Power Administration Facilities. Construction and maintenance of the Conveyance Facility on Victoria Island and Interconnection Facilities has the potential to impact Western Area Power Administration facilities that provide power to the CCWD Facilities on or near Victoria Island (the "**WAPA Facilities**"), including

power lines and towers. DWR shall implement measures which in the reasonable opinion of CCWD are sufficient to protect the WAPA Facilities from potential damage when siting, constructing and maintaining the Conveyance Facility on Victoria Island and Interconnection Facilities, including with respect to access roads and Western Area Power Administration right-of-ways.

- 2.1.6** Continued Access to CCWD Facilities. DWR shall ensure that CCWD has free and safe access to CCWD Facilities at all times during construction and maintenance of the Conveyance Facility and Interconnection Facilities.
- 2.1.7** Pre-Construction and Post-Construction Inspections. Prior to the commencement of construction of the Conveyance Facility on Victoria Island or the Interconnection Facilities, whichever occurs first, CCWD shall conduct a pre-construction inspection of those CCWD Facilities that could be affected by construction of the Conveyance Facility on Victoria Island and the Interconnection Facilities. Following completion of construction of the Conveyance Facility on Victoria Island and the Interconnection Facilities, CCWD shall conduct a post-construction inspection of those same CCWD Facilities to determine whether damage to those CCWD Facilities occurred as a result of construction activities.
- 2.1.8** Damage to CCWD Facilities and Access Roads. Upon written notice from CCWD describing such costs in reasonable detail, DWR shall promptly reimburse CCWD for all costs incurred by CCWD due to damage caused by construction and maintenance of the Conveyance Facility on Victoria Island and the Interconnection Facilities, including but not limited to the costs of repair or replacement of CCWD Facilities. In addition, DWR shall repair or replace any access roads and levees damaged by construction and maintenance of the Conveyance Facility on Victoria Island and the Interconnection Facilities. If DWR fails to immediately repair or replace said access roads and levees, CCWD shall have the option of conducting such repairs or replacement and DWR shall promptly reimburse CCWD for the costs of such repair or replacement, upon written notice from CCWD describing such costs in reasonable detail.
- 2.1.9** Loss of Water Supply. Any loss of CCWD water supply directly or indirectly caused by (i) construction or maintenance by DWR or its third party contractors of the Conveyance Facility, (ii) construction or maintenance by DWR or its third party contractors of any other component of the BDCP/CWF, or (iii) construction or maintenance by DWR or its third party contractors of the Interconnection Pump Station; or (iv) construction by DWR or its third party contractors of the Interconnection Pipeline and Interconnection Valve, shall be the

responsibility of DWR, and may be recouped through delivery of the same amount of water to CCWD via the interconnection between the East Bay Municipal Utility District (“**EBMUD**”) Mokelumne Aqueduct and CCWD’s Los Vaqueros Pipeline at DWR’s sole expense, or in another manner reasonably satisfactory to CCWD and at DWR’s expense.

2.1.10 Levee Subsidence. The Parties shall work in good faith to establish a set of protocols, protective measures and monitoring to address potential levee subsidence associated with construction and maintenance of the Conveyance Facility on Victoria Island and the Interconnection Facilities. Construction of the Conveyance Facility on Victoria Island or the Interconnection Facilities shall not commence until such protocols and protective measures are established to the Parties’ mutual satisfaction.

2.1.11 Hazardous Materials. DWR shall use, store and dispose of Hazardous Material to be used to construct the facilities described in Section 2 of this Agreement by DWR or DWR’s Related Parties only in compliance with any and all applicable federal, state or local environmental health or safety laws, statute, ordinance, rule, regulation or requirement (“**Environmental Laws**”). DWR shall, at DWR’s sole cost and expense, promptly undertake such removal or remedial action as may be required by Environmental Law with regard to any non-de minimis violation of any Environmental Law with regard to any Hazardous Material used by DWR or DWR’s Related Parties. “**Hazardous Material**” shall mean any asbestos-containing materials, petroleum, explosives, toxic materials, or any other substances regulated as hazardous wastes, hazardous materials, hazardous substances, or toxic substances under any Environmental Laws, including but not limited to any substance, pollutant or contaminant listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601, et seq., and the regulations promulgated pursuant to the Act.

2.2 Provisions Relating to the Conveyance Facility on Victoria Island.

2.2.1 Victoria Island Safe Haven Shaft. DWR shall notify CCWD in writing in the event DWR determines that a safe haven shaft is required in conjunction with sub-surface construction and tunneling on Victoria Island. Prior to the construction of any safe haven shaft, DWR shall provide CCWD engineering drawings and data, specifications, materials, maps, hydrologic data and seismic studies relating to such shaft and such other information as may be reasonably requested by CCWD in order to review and evaluate DWR’s proposal. The location and design of such shaft shall be coordinated with CCWD pursuant to the process described in Section 2.1.2 of this Agreement.

- 2.2.2** Dewatering. DWR shall ensure that it designs and implements dewatering in conjunction with the construction and maintenance of pipelines/tunnels, shafts and other components of the Conveyance Facility to prevent damage to the CCWD Facilities that may result from dewatering. The minimum amount of dewatering necessary to implement construction and maintenance shall be effectuated only upon (i) a written settlement monitoring and corrective action plan coordinated between and executed by the Parties with direct input by CCWD regarding allowable settlement trigger points, and (ii) the placement of instrumentation on the CCWD Facilities at a site to be mutually agreed by the Parties, at DWR's sole expense, for the monitoring of settlement.
- 2.2.3** Dewatering Discharge. DWR shall neither cause nor permit any dewatering that takes place pursuant to Section 2.2.2 to have an adverse impact on the CCWD Facilities or water quality.
- 2.2.4** Restrictions on Parking and Stockpiling. DWR shall ensure that no construction and maintenance equipment shall park on or over CCWD Facilities and no construction and maintenance material shall be stockpiled on CCWD-owned property or within CCWD easements without CCWD's prior written authorization. DWR shall ensure that equipment and materials hauling activities over CCWD Facilities do not result in excessive loading, and DWR shall submit calculations and measures to reduce loads, such as trench plates, to CCWD for review and approval in advance of commencing any equipment and materials hauling activities over CCWD Facilities.
- 2.2.5** Tunnel Design to Avoid Ground Settlement. The design of the Conveyance Facility tunnels on Victoria Island shall be based on DWR's geotechnical analysis and shall include measures sufficient to avoid ground settlement within 1,000 feet of the easement for CCWD's Middle River Pipeline. CCWD shall have the right to review such geotechnical analysis, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement. CCWD shall provide to DWR levels of ground settlement that can be tolerated at CCWD Facilities, to be included in the design documents used for bidding and construction of the Conveyance Facility on Victoria Island.

2.3 Design and Construction of the Interconnection Facilities.

- 2.3.1** DWR Obligation to Design and Construct Interconnection Facilities. To ensure the Secondary Method for conveying water to CCWD, as described further in Section 3.3 of this Agreement, is available for conveyance of Qualifying Water, as defined in Section 3.4 of this

Agreement, DWR shall design and construct the “**Interconnection Facilities.**”

- (a) Unless modified by mutual written agreement of the Parties, the Interconnection Facilities shall consist of the following facilities: (i) a direct connection to the Conveyance Facility, pumping station, and appurtenant facilities (collectively “**Interconnection Pump Station**”) on Victoria Island with capacity to convey Qualifying Water to CCWD’s Old River Pipeline at a normal operating capacity of 150 cubic feet per second, and with sufficient pressure for the water to reach CCWD’s Existing Transfer Pump Station while the Old River Pipeline is operating at a total flow rate of up to 320 cubic feet per second; (ii) a pipeline and appurtenant facilities with a normal operating capacity of 150 cubic feet per second to convey the water from the Interconnection Pump Station on Victoria Island to CCWD’s Middle River Pipeline (“**Interconnection Pipeline**”), (iii) a valve between the Interconnection Pipeline and CCWD’s Middle River Pipeline (“**Interconnection Valve**”); and (iv) all instrumentation and communication equipment needed for CCWD to remotely monitor all Interconnection Facilities and operate all CCWD-owned facilities.
- (b) DWR shall design and construct the Interconnection Facilities in coordination with CCWD. DWR shall provide CCWD engineering drawings and data, specifications, materials, maps, hydrologic data and seismic studies relating to the Interconnection Facilities and such other information as may be reasonably requested by CCWD in order to review and evaluate DWR’s proposal. The location and design of such Interconnection Facilities shall be coordinated with CCWD pursuant to the process described in Section 2.1.2 of this Agreement.
- (c) Prior to the commencement of construction of the Interconnection Facilities, DWR and CCWD may consider and mutually agree to increase the Interconnection Facilities’ normal operating capacity to 250 cubic feet per second, with responsibility for the costs associated with the increased capacity to be determined during negotiation of such mutual agreement. Further, during design of the Interconnection Facilities, DWR and CCWD may consider and mutually agree to a different design for the Interconnection Facilities under which the Interconnection Pipeline conveys water to CCWD’s Old River Pipeline from a new pump station connected to the Conveyance Facility at the Subdivided Clifton Court Forebay. The amount of mitigation water to be conveyed in any year is specified in

Section 3.6 and 3.7 and would be the same regardless of the size or capacity of the Interconnection Facilities.

- (d) As part of its CEQA review for the BDCP/CWF, DWR shall evaluate the Interconnection Facilities, including a capacity of 250 cubic feet per second. The Interconnection Facilities are intended as a mitigation measure to be included in the Final EIR/EIS for the BDCP/CWF. The Parties recognize that, if after DWR completes the Final EIR/EIS and approves the BDCP/EIR, DWR later elects to pursue an alternative design for the Interconnection Facilities that differs from the design selected by DWR at the time DWR certifies the Final EIR/EIS and approves the BDCP/CWF, additional CEQA review may be required. Further, this Agreement does not obligate DWR to pay the cost of CEQA review if CCWD later proposes to modify the Interconnection Facilities after they have been constructed.
- 2.3.2** Interconnection Facilities Design to Include Liquefaction Analysis. The design of the Interconnection Facilities shall include a liquefaction analysis that (i) evaluates potential impacts of liquefaction, and (ii) describes mitigation measures to protect the Interconnection Facilities, the appurtenant structures and the connection point between the Interconnection Facilities and the CCWD Facilities. CCWD shall have the right to review such liquefaction analysis, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement.
- 2.3.3** Interconnection Facilities Design to Reflect Differential Settlement and Flexibility of Connections. The design of the Interconnection Facilities shall (i) evaluate and address potential differential settlement, and (ii) incorporate flexible connections between CCWD Facilities and the Interconnection Facilities to account for long-term settlement, seismic motion and/or sea level rise impacts. CCWD shall have the right to review such differential settlement analysis, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement.
- 2.3.4** CCWD Design Review. Design of the Interconnection Facilities that may affect one or more existing CCWD Facilities is subject to review by a third party of CCWD's choice and at DWR's expense as part of the value engineering or peer review process for BDCP/CWF. CCWD shall be invited as a participant of any Value Engineering workshops held in conjunction with the Interconnection Facilities design.
- 2.3.5** Design Standards. The Interconnection Facilities shall be designed using the current standards for design criteria and the current seismic loading and performance requirements including site-specific seismic

use criteria at the time of design and construction for a critical facility. All electrical and mechanical equipment shall be designed to ensure immediate post-earthquake functionality following the maximum credible earthquake for the site. The design as completed by DWR shall be sealed by an overall Engineer of Responsible Charge and the appropriate discipline engineers utilized on the project, with all registered engineers being so registered in the State of California. The design shall be completed using the professional standard of care for such projects within California. CCWD shall have the right to review all design documents, including a detailed surge analysis demonstrating that CCWD Facilities will be protected from any potentially damaging operations, during the design preparation and prior to issuance of the final design for the Interconnection Facilities.

2.3.6 Costs. DWR shall secure fee title or permanent easements for, and design and construct all components of the Interconnection Facilities, in each case at its sole cost.

2.3.7 Interconnection Pump Station. After completion of construction of the Interconnection Facilities, DWR shall own, operate and maintain the Interconnection Pump Station. DWR shall inspect the Interconnection Pump Station at least once per year per all manufacturers' recommended maintenance schedules for corrosion, coatings, safety, drainage, security, electrical and mechanical functionality, structural and geotechnical performance, and any other conditions necessary to ensure reliable and safe facility operation. DWR shall promptly provide the results of such inspections to CCWD. DWR shall be responsible for repairing and replacing all components of the Interconnection Pump Station at its sole cost so that it is capable of operating in good condition and at its design capacity at all times.

2.3.8 Interconnection Pipeline and Interconnection Valve. After completion of construction of the Interconnection Pipeline and Interconnection Valve, DWR shall transfer ownership of the Interconnection Pipeline and Interconnection Valve to CCWD and CCWD shall be responsible for operation and maintenance of the Interconnection Pipeline and Interconnection Valve.

- (a)** DWR shall retain the fee title or easement for the real property on which the Interconnection Pipeline and Interconnection Valve are located, but shall ensure that CCWD has full and complete access to the Interconnection Pipeline and Interconnection Valve for the purposes of inspecting, maintaining and replacing such Interconnection Pipeline and Interconnection Valve. Alternatively DWR may elect to transfer the fee title or easement for the Interconnection Pipeline and Interconnection Valve to CCWD.

- (b) CCWD shall regularly inspect the Interconnection Pipeline and Interconnection Valve, and shall promptly provide the results of such inspections to DWR. CCWD shall be responsible for repairing and replacing all components of the Interconnection Pipeline and Interconnection Valve so that they are capable of operating in good condition and at their design capacity at all times; provided, however, that DWR shall be responsible for repairing and replacing at its sole cost all components of the Interconnection Pipeline and Interconnection Valve that are defective due to construction or latent defects.

2.3.9 Interconnection Pipeline Easement. The Interconnection Pipeline shall be constructed in an easement dedicated to its purpose. DWR shall ensure that all easements for the Interconnection Pipeline and Interconnection Valve provide the ability for CCWD to access such facilities without undue burden or delay and without prior written approval, in order to operate, maintain, renew, replace or install facilities and appurtenances. DWR shall provide all easements and land agreements to CCWD for its review in advance of finalizing such easements and land agreements. The pipeline shall be designed by DWR to pressures and flow rates as approved by CCWD. The connection of the Interconnection Pipeline to CCWD Facilities shall be as approved and coordinated by CCWD.

2.3.10 Victoria Island Pump Station. The location of a pump station on Victoria Island, if needed to transfer flows from the Conveyance Facility to the CCWD Facilities, shall be subject to approval by CCWD. In requesting approval from CCWD for the location of a Victoria Island Pump Station, DWR shall provide CCWD prior to the construction of the pump station design with engineering drawings and data, power supply design, specifications, materials, maps, hydrologic data, seismic studies and any other information reasonably requested by CCWD in order to properly evaluate DWR's proposal. CCWD shall have the right to review such documents pertaining to the pump station, and DWR shall respond to comments by CCWD, pursuant to the process described in Section 2.1.2 of this Agreement.

2.3.11 Elevation of Equipment Associated with Interconnection Facilities. DWR shall ensure that any shafts, permanent pumping equipment or permanent electrical equipment associated with the Interconnection Facilities shall be located on or accessed from a finished grade consistent with U.S. Army Corps of Engineers criteria for flood protection and levee breach, and sufficient for protection in the event of sea level rise as identified at the time the design is completed and for the design life of the Interconnection Facilities, assumed for purposes of this provision to be 50 years.

- 2.3.12** Restrictions on Parking and Stockpiling. DWR shall ensure that no construction and maintenance equipment shall park on or over CCWD Facilities and no construction material shall be stockpiled on CCWD-owned property or within CCWD easements without CCWD's prior written authorization. DWR shall ensure that equipment and materials hauling activities over CCWD Facilities do not result in excessive loading, and DWR shall submit calculations and measures to reduce loads, such as trench plates, to CCWD for review and approval in advance of commencing any equipment and materials hauling activities over CCWD Facilities.
- 2.3.13** Control of Connections and Valves. All connections and valves at the CCWD Facilities shall be solely controlled and operated by CCWD.
- 2.3.14** Selection of Construction Contractor. The procedure for selection of a contractor for the construction of the Interconnection Facilities contemplated by this Agreement shall conform with then-applicable State law with regard to public works contracts.
- 2.3.15** Construction Observation Rights. CCWD shall have access to the construction site and the right to reasonably observe and comment on construction at all times during the construction of the Interconnection Facilities. Specific points of connection and coordination with CCWD Facilities shall be scheduled as part of the construction schedule and a detailed connection plan provided by DWR to CCWD a minimum of 90 days prior to the connection occurring to allow sufficient time to review, comment and accept the connection plan by CCWD. DWR shall provide CCWD all construction contractor submittals for review, and shall provide as-built documents as well as operations and maintenance manuals for all equipment to be owned and operated by CCWD.
- 2.3.16** Testing Plans. CCWD and DWR shall jointly develop multiple startup and testing procedures for the Interconnection Facilities and any pumping equipment and movement of water through the Interconnection Facilities once they have been accepted for testing and operations by both Parties.
- 2.3.17** Operational Date. The Interconnection Facilities shall be fully operational no later than the first day of operation of any Conveyance Facility.
- 2.3.18** Instrumentation. DWR shall as part of the design and construction of the Interconnection Facilities incorporate SCADA systems into its facility that can communicate with and be controlled by CCWD using a mutually agreed upon platform and communication protocols.

2.3.19 Operation, Maintenance, Repair, and Replacement of the Interconnection Facilities. DWR shall at its expense obtain all permits and other approvals necessary for the operation, maintenance, repair, and replacement of the Interconnection Facilities. DWR shall provide CCWD with copies of all permits issued and other approvals necessary for the Interconnection Facilities, including all necessary CEQA compliance documents. CCWD and DWR may only operate the Interconnection Facilities valves that they own. The Parties shall coordinate operations of their separate facilities with the operation of the Interconnection Facilities. Water supplied through the Interconnection Facilities shall be measured upstream of the point of interconnection by the flow meters located at the Interconnection Pump Station, which will be calibrated as needed to the mutual satisfaction of both Parties. The expense of calibration shall be shared equally by both Parties. The Parties shall schedule a meeting in advance of operation and confirm at that meeting the procedures by which the Interconnection Facilities shall be operated to deliver water. Each Party shall be given unrestricted access to its respective Interconnection Facilities at all times without prior notice. DWR and CCWD agree neither party has the right or obligation to operate or maintain the other party's Interconnection Facilities. Each party shall have the sole responsibility for the security of its respective property at all times. Each Party shall have responsibility for operating, maintaining, and repairing its respective Interconnection Facilities. Each Party may operate, repair or replace any of the physical works of the other's Interconnection Facilities with the prior written agreement of the other Party. Either Party may perform or contract for work on its own property, including its easement(s) or right(s) of way, in regard to its own Interconnection Facilities. The other Party shall cooperate with such work, conduct its own operations in such a manner as not to cause any unnecessary delay or hindrance, and adjust and coordinate its work so as to permit proper completion of all work in the area.

2.3.20 Future Agreements. The Parties may enter into separate, future agreements concerning the use of the Interconnection Facilities for purposes beyond the scope of this Agreement, with costs associated with such use to be determined in corresponding agreements.

3. CEQA MITIGATION OF CCWD WATER QUALITY AND SUPPLY IMPACTS BY CONVEYANCE OF WATER TO CCWD FROM AN ALTERNATE HIGH-QUALITY SOURCE

3.1 Conveyance of Mitigation Water. To mitigate for water quality and water supply impacts arising from the water quality impacts to CCWD from the construction, operation or use of any Conveyance Facility, DWR shall convey water to CCWD (i) meeting the water quality requirements of Section 3.4 of this Agreement, (ii) in the minimum amounts specified in Section 3.6 of this Agreement and

(iii) according to the schedule specified in Sections 3.7 and 3.8 of this Agreement. The method of conveying the water to CCWD shall be as specified in Section 3.2 or Section 3.3 of this Agreement, and the cost of conveying the water shall be borne by DWR as specified in Section 3.5 of this Agreement. CCWD shall identify whether the water conveyed to it by DWR is: (a) water diverted pursuant to CCWD's CVP Contract Supply, provided that it is within CCWD's then current allocation and schedule; (b) water diverted under CCWD's Los Vaqueros water right, provided that it is within the amount and season then authorized in the LV Water Right Permit and providing the Delta is then in surplus conditions; (c) transfer water purchased by CCWD, provided that CCWD has purchased the transfer water and obtained all necessary permits and approvals, or (d) or any combination of (a), (b) or (c). This Agreement does not increase the total amount of water that CCWD otherwise would be entitled to divert pursuant to its CVP Contract Supply, Los Vaqueros water right, or any water transfers. This Agreement also does not change any existing approval process for identification, scheduling, or allocation of water diverted pursuant to CCWD's CVP Contract Supply, Los Vaqueros water right, or any water transfers. Water conveyed to CCWD pursuant to this Agreement may be used as CCWD deems appropriate in its sole discretion.

3.2 Primary Method of Conveyance. The primary method of conveying the water described in Section 3.1 ("**Primary Method**") shall be through EBMUD's Freeport Intake and the interconnection between EBMUD's Mokelumne Aqueduct and CCWD's Los Vaqueros Pipeline.

3.2.1 CCWD will use reasonable efforts to enter into a separate agreement with EBMUD under which the Freeport Intake and CCWD interconnection with EBMUD's Mokelumne Aqueduct could be used to convey water to CCWD pursuant to this Agreement (such separate agreement, the "**CCWD/EBMUD Use Agreement**").

3.2.2 The Parties acknowledge that delivery of water to CCWD via the Freeport Intake and interconnection between CCWD and EBMUD's Mokelumne Aqueduct may be constrained by EBMUD's scheduling or other requirements imposed by EBMUD or regulatory agencies.

3.3 Secondary Method of Conveyance. The secondary method of conveying the water described in Section 3.1 ("**Secondary Method**") shall be through the Interconnection Facilities described in Section 2.3.1.

3.3.1 The Secondary Method shall be used if (i) DWR determines the Primary Method is impractical for scheduling or financial reasons, (ii) no CCWD/EBMUD Use Agreement is then in effect, or (iii) EBMUD determines that capacity at the Freeport Intake is not then available.

3.4 Water Quality Requirements. Regardless of whether the Primary Method or Secondary Method is used, the water to be conveyed to CCWD pursuant to this

Agreement shall, to the extent feasible, contain a maximum of 30 mg/L chlorides and a maximum of 4 mg/L total organic carbon (“Qualifying Water”). DWR shall maintain a water quality station at the Subdivided Clifton Court Forebay (if the Interconnection Pump Station is located at the Clifton Court Forebay), or at the Intermediate Forebay (if the Interconnection Pump Station is located on Victoria Island), to monitor chloride and total organic carbon and report the daily data in real-time on the California Data Exchange Center (“CDEC”) or a similar future database mutually acceptable to the Parties. If data is not available to determine whether Qualifying Water is available, CCWD shall have the sole discretion to determine whether to accept delivery of the water to be conveyed to CCWD pursuant to this Agreement. Prior to the conveyance of water to CCWD through either the Primary Method or the Secondary Method, the Parties shall evaluate existing conditions for concentrations of chlorides and organic carbon and may, by mutual agreement, amend this Agreement to modify the amount of chlorides or total organic carbon authorized for, and acceptable to, CCWD as Qualifying Water.

3.5 Costs of Conveyance to CCWD’s Existing Transfer Pump Station. Regardless of whether the Primary Method or Secondary Method is used for conveyance of water to CCWD, DWR shall bear all costs associated with conveyance to CCWD of the quantity and quality of water required by this Agreement (including, without limitation, all associated energy costs). If the Primary Method is used to convey water to CCWD, DWR shall pay EBMUD the amount charged by EBMUD for conveyance of the water from the Freeport Intake to CCWD Facilities at a pressure sufficient to lift the conveyed water to CCWD’s Existing Transfer Pump Station. If the Secondary Method is used to convey water to CCWD, DWR shall pay the costs associated with conveyance through the Conveyance Facility and from the Interconnection Pump Station to the Interconnection Valve at a pressure sufficient to lift the conveyed water to CCWD’s Existing Transfer Pump Station.

3.6 Water Conveyance to Be Scaled. The annual amount of Qualifying Water to be conveyed to CCWD shall be scaled to actual BDCP/CWF operations in each water year as follows.

3.6.1 The annual amount of Qualifying Water to be conveyed by DWR to CCWD shall be determined by the fraction of Unimpaired Sacramento River Runoff that is exported from the Delta by the CVP and SWP, in conjunction with the fraction of those exports diverted at the northern intakes, as described in the following table. Based on the BDCP modeling for the 2013 DEIR/DEIS and 2015 RDEIR/SDEIS and taking into account replacement of the requirements of the 1967 Agreement between DWR and CCWD pertaining to CCWD’s Mallard Slough Intake, the quantity of Qualifying Water to be conveyed by DWR to CCWD is expected to range between 2 and 50 thousand acre-feet (“TAF”) per water year. Exhibit A attached hereto sets forth examples of the application of the methodology set forth in this Section 3.6 and

Section 3.7 for determining the annual amount of Qualifying Water to be conveyed by DWR to CCWD in a given water year.

Annual Amount of Water to be Conveyed [TAF]

		Northern Exports / Total Exports							
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Total Exports / Sacramento River Runoff	0	2	2	5	5	5	5	5	5
	0.1	2	8	9	10	11	13	16	18
	0.2	5	10	13	15	17	20	23	26
	0.3	5	15	19	23	27	32	37	42
	0.4	5	19	25	31	37	43	49	50
	0.5	6	23	31	42	47	50		

Green shading represents the operating range in the BDCP modeling for the 2013 DEIR/DEIS and 2015 RDEIR/SDEIS. The darker the shading, the more often the operations are expected to occur.

3.6.2 If more Northern Exports or Total Exports are taken by DWR and/or Reclamation in a water year than are shown in the table in subsection 3.6.1 above, DWR and CCWD shall meet and confer to attempt to determine, by mutual agreement, an appropriate amount of Qualifying Water to be conveyed by DWR to CCWD in the next water year to mitigate water quality impacts to CCWD that occurred during the water year. If such mutual agreement cannot be reached within thirty (30) days after the end of such water year, then the minimum annual amount of Qualifying Water to be conveyed by DWR to CCWD in the next water year shall be 50,000 acre feet.

3.7 Initial Mitigation Conveyance to CCWD. In order to create a positive water balance in the Los Vaqueros Reservoir and to mitigate initial impacts of BDCP/CWF operations, DWR shall convey 30,000 acre-feet of Qualifying Water to CCWD before the beginning of the first planned full water year of operation of any part of the BDCP/CWF that could affect CCWD’s intake water quality. For the purposes of this Section 3.7, parts of the BDCP/CWF that could affect CCWD’s intake water quality include but are not limited to: the Conveyance Facility and other BDCP/CWF project components or BDCP/CWF permit conditions that could result in a substantial change to Delta hydrodynamics. Subsequently, the annual amount of Qualifying Water to be conveyed to CCWD shall be calculated in arrears in accordance with Section 3.6 after September 30th of each water year and shall be conveyed to CCWD by September 30th of the following water year.

3.8 Coordination of Scheduled Conveyance. The Parties shall collaborate to schedule Qualifying Water conveyance from DWR to CCWD pursuant to this Agreement.

- 3.8.1** The Parties agree to continue their current practice of regular operational coordination meetings.
- 3.8.2** After September 30th but no later than October 31st of each water year, DWR shall provide written notice to CCWD regarding the quantity of Qualifying Water that DWR must convey to CCWD based on application of the methodology specified in Sections 3.6 and 3.7 to conditions that occurred during the water year then most recently ended. To the extent CCWD objects to DWR's calculation of the annual amount of Qualifying Water to be conveyed, and within sixty (60) days of receipt of said notice, CCWD shall notify DWR in writing of its objection and the Parties shall meet and confer in good faith to resolve the objection. If the Parties cannot resolve the dispute within twenty-one (21) days of CCWD's written notice of objection, the matter may be submitted by either Party to arbitration pursuant to Section 7 of this Agreement.
- 3.8.3** Not later than seven (7) days after written notice from CCWD to DWR, DWR shall commence delivery of Qualifying Water to CCWD in the quantity requested by CCWD in such notice (a "**Conveyance Request**") and shall maintain delivery to CCWD at a rate of at least 150 cubic feet per second until the requisite amount of Qualifying Water is fully delivered to CCWD unless (i) a corresponding amount of Qualifying Water is not then available from both (A) the Primary Method due to EBMUD's refusal or inability to convey the requisite quantity of Qualifying Water and (B) the Secondary Method due to restraints or restrictions imposed by applicable regulatory authorities having jurisdiction over operation of the Conveyance Facility that fully prevent the conveyance of any water through the Conveyance Facility from the Northern Intakes, or (ii) the full amount of Qualifying Water to be delivered by DWR to CCWD for such water year under this Agreement already has been conveyed to CCWD. If DWR fails to commence conveyance to CCWD of the requisite amount of Qualifying Water requested by CCWD pursuant to this Section 3.8.3 within seven (7) days after its delivery of a Conveyance Request or fails to maintain delivery to CCWD at the requisite rate until the requisite amount of Qualifying Water is fully delivered to CCWD, and such conveyance by DWR is not then excused due to the circumstances described under the preceding clauses (i) and (ii), then, upon further written notice from CCWD to DWR, the Parties shall meet and confer in good faith to resolve the matter. If the Parties cannot resolve the matter within five (5) days of CCWD's written notice, the matter may be submitted by either Party to arbitration pursuant to Section 7 of this Agreement.

3.8.4 If at any time DWR is unable to convey the requisite quantity of Qualifying Water that is requested by CCWD pursuant to the preceding subsection 3.8.3 due to the circumstances described in clause (i) thereof, then DWR shall convey such requisite quantity of Qualifying Water to CCWD on the first date that is acceptable to CCWD on which the circumstances described in clause (i) of subsection 3.8.3 no longer apply.

3.8.5 DWR may deliver more Qualifying Water to CCWD than required for a given water year upon the written concurrence of CCWD. Upon CCWD's written concurrence, and upon the negotiation of terms in a separate agreement, the excess Qualifying Water delivered during a given water year may be credited against the amount of Qualifying Water that DWR is required to deliver for the subsequent water year.

3.9 Remedy for DWR Failure to Deliver Required Water. This section 3.9 does not apply if a Force Majeure event described in Section 3.10 prevents DWR from conveying Qualifying Water. In any other event if DWR fails to convey the full amount of Qualifying Water required to be conveyed to CCWD under Sections 3.6 and 3.7 of this Agreement within a given water year, despite CCWD's timely scheduling of delivery of such water and its ability to accept such water, the Parties shall meet and confer to attempt to resolve that year's water deficit by mutually agreeable and reasonable means. If the Parties cannot reach agreement within thirty (30) days after the conclusion of said water year and the failure to convey Qualifying Water within said water year was not due to an excusable event as defined in Sections 3.8.3(i)(A) and (B), which event prevented DWR from conveying the full amount of Qualifying Water to CCWD by the end of said water year, DWR shall pay CCWD, no later than thirty (30) days after the conclusion of said water year, an amount equal to twice what it would have cost to convey the water deficit for said water year through the Freeport Intake and the interconnection between EBMUD's Mokelumne Aqueduct and CCWD's Los Vaqueros Pipeline, as determined by CCWD, acting reasonably and in good faith, and set forth in a written notice to DWR. As a further remedy, DWR shall, not later than September 30th of the following water year, also convey 30,000 acre-feet of Qualifying Water for delivery to the Los Vaqueros Reservoir; provided, however, that if the Los Vaqueros Reservoir cannot then accommodate 30,000 acre feet of water, then DWR shall convey so much of such 30,000 acre feet of Qualifying Water as the Los Vaqueros Reservoir can then accommodate, with the remainder conveyed in in the next succeeding water year or, if the Los Vaqueros Reservoir cannot accommodate the remainder in such next succeeding water year, then at the earliest time as the Los Vaqueros Reservoir can accommodate such remainder. DWR shall have no obligation under this Section 3.9 if DWR fails to convey the full amount of Qualifying Water required to be conveyed to CCWD under Sections 3.6 and 3.7 of this Agreement within a given water year because either (i) CCWD fails to request and schedule delivery of such water, or (ii) CCWD informs DWR that it is not able to accept delivery of such water.

3.10 Force Majeure. If, due to Force Majeure as defined herein below, DWR is prevented from conveying the full amount of Qualifying Water required within a given water year to CCWD through both the Primary Method and the Secondary Method, DWR's payment of the remedy required under Section 3.9 shall be excused for the particular water year in which the Force Majeure conditions prevented such conveyance. However, DWR shall be required to convey the full amount of Qualifying Water required to be conveyed to CCWD pursuant to Section 3.6 of this Agreement within one water year of cessation of the Force Majeure conditions that prevented conveyance. "Force Majeure" shall include war; acts of terrorism; insurrection; strikes or lock-outs not caused by, or outside the reasonable control of, the Party claiming Force Majeure; riots; earthquakes; fires; floods; levee failure; casualties; acts of the public enemy; epidemics; quarantine restrictions; or litigation that fully enjoins required performance. If either Party is rendered wholly or partly unable to timely perform its obligations under this Agreement because of a Force Majeure event, that Party shall be excused from the performance affected by the Force Majeure event (but only to the extent so affected); provided that (i) the Party affected by the Force Majeure event, as soon as reasonably practicable after obtaining knowledge of the occurrence of the claimed Force Majeure event, gives the other Party prompt oral notice, followed by a written notice reasonably describing the Force Majeure event, (ii) the suspension of or extension of time for performance is of no greater scope and of no longer duration than is required by the Force Majeure event and (iii) the Party affected by such Force Majeure event uses all reasonable efforts to mitigate or remedy its inability to perform as soon as reasonably possible.

3.11 Evaluation and Adoption of Mitigation Measures. The following sections of this Agreement shall be adopted by DWR as CEQA mitigation measures to address the adverse environmental effects of the BDCP/CWF or any alternative thereto, upon CCWD and its customers: Sections 2.3.1, 3.1, 3.2, 3.3, 3.3.1, 3.4, 3.5, 3.6, 3.6.1, 3.6.2, 3.7, 3.8, 3.8.1, 3.8.2, 3.8.3, 3.8.4 and 3.8.5. The Final Environmental Impact Report for the BDCP/CWF shall identify such mitigation measures and evaluate the construction, operational and cumulative impacts of such mitigation measures.

4. EFFECT OF THIS AGREEMENT ON THE 1967 AGREEMENT BETWEEN DWR AND CCWD

4.1 Effect of this Agreement on 1967 DWR-CCWD Agreement. When DWR commences annual conveyance of water to CCWD pursuant to this Agreement, this Agreement shall replace and supersede the 1967 Agreement between CCWD and DWR ("**1967 Agreement**") regarding payment for the effect of State Water Project operation on water quality at CCWD's Mallard Slough intake, a copy of which is attached hereto as Exhibit B. Until DWR commences annual conveyance of water to CCWD pursuant to this Agreement, the 1967 Agreement shall remain in full force and effect and DWR shall continue to make the payments to CCWD specified by the 1967 Agreement.

5. CCWD'S NON-OPPOSITION TO BDCP/CWF

5.1 No Challenge to Environmental Document or Project Approval for Conforming Action Alternative. CCWD's Board of Directors shall not take a formal Board action in opposition to the approval of any Conforming Action Alternative. Board members are not prohibited from discussing the BDCP/CWF as individuals and with other organizations. If DWR and Reclamation approve any Conforming Action Alternative, CCWD shall not file a legal challenge to the Final Environmental Impact Report/Environmental Impact Statement for the Conforming Action Alternative, or assert any related cause of action or voluntarily join any related lawsuit as a petitioner. By no later than five (5) days after the effective date of this Agreement CCWD shall submit to DWR a letter stating that the full and complete implementation of this Agreement will address the concerns expressed in CCWD's comment letters regarding the effects that operation of a Conforming Action Alternative would have on water quality at CCWD's intakes and the potential for damage to CCWD Facilities caused by construction of a Conforming Action Alternative.

5.2 No Protests of Water Right Petitions for Conforming Action Alternative.

5.2.1 Effective upon the effective date of this Agreement, CCWD hereby releases, to the fullest extent permitted by applicable law, DWR from any and all Water Rights Protest Claims which CCWD now has or has ever had against DWR with respect to the CWF Change of Point of Diversion. For the avoidance of doubt, this release shall not include claims to enforce the terms of this Agreement.

In connection with the release contained in the preceding paragraph, CCWD waives all rights it has or may have under any applicable law, statute or ordinance, as well as under any other common law principles of similar effect, which prohibits the waiver of unknown claims, including California Civil Code Section 1542, which provides as follows:

A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her must have materially affected his or her settlement with the debtor.

5.2.2 In furtherance of the foregoing, CCWD shall file a letter with the California State Water Resources Control Board to withdraw its water rights protest to the CWF Change of Point of Diversion, and any materials submitted by CCWD in connection with such protest by no later than five (5) days after the effective date of this Agreement.

- 5.3** CVP Cost Allocation Negotiations or Challenges. Except with regard to the Water Rights Protest Claims waived in section 5.2, this Agreement shall have no effect on CCWD's right to negotiate with, or bring potential claims against, Reclamation regarding cost allocations or water supply allocations for CVP water. Further, this Agreement shall have no effect on CCWD's right to negotiate with, or bring claims against, CVP contractors regarding cost allocations for CVP water.
- 5.4** Non-Project Restoration. This Agreement shall have no effect on CCWD's right to comment on, or bring potential claims against, any wetlands restoration project beyond the up to 305 acres of tidal wetlands restoration located at Sherman Island, Cache Slough and the North Delta that is required as mitigation for impacts of the CWF, of which no more than 59 acres of tidal wetlands restoration would be constructed at Sherman Island unless DWR demonstrates to CCWD's satisfaction that the tidal wetlands restoration mitigation will cause no adverse net water quality impacts at CCWD's intakes at any time. The Parties recognize that the BDCP as originally proposed included more than 305 acres of wetlands restoration; however, wetlands restoration beyond the up to 305 acres needed to mitigate impacts of the Conveyance Facility is not part of the CWF, and CCWD does not waive any right to comment on, oppose or challenge approval of such wetland restoration program or projects, nor does CCWD waive any right to comment on, oppose or challenge approval of wetland restoration program or projects exceeding 59 acres at Sherman Island unless DWR demonstrates to CCWD's satisfaction that the tidal wetlands restoration mitigation will cause no adverse net water quality impacts at CCWD's intakes at any time.
- 5.5** Future Projects. Except as specified in Section 5.1, this Agreement shall have no effect on CCWD's right to comment on, oppose, or bring claims against, any future project including, without limitation, a future project or project change that deviates from the Conforming Action Alternative or any future changes to any water quality control plan.

6. DWR'S NON-OPPOSITION TO CCWD PROJECTS AND ENCOURAGEMENT OF STAKEHOLDER SUPPORT

- 6.1** Los Vaqueros Water Right Petition - Freeport Intake Point of Diversion. The Parties recognize that for DWR to convey to CCWD water diverted pursuant to CCWD's Los Vaqueros water right through the Primary Method for conveyance, the Freeport Intake must be added as a point of diversion on CCWD's Los Vaqueros water right, and other approvals may be needed. DWR shall support a water right petition filed by CCWD to add the Freeport Intake as a point of diversion on CCWD's Los Vaqueros water right to be used to convey to CCWD up to the amount of water necessary to implement this Agreement, and DWR shall support any other related approvals needed to convey CCWD's water to CCWD through the Primary Method for conveyance.

- 6.2** Los Vaqueros Water Right Petition - Intakes for Conveyance Facility. The Parties recognize that for DWR to convey to CCWD water diverted pursuant to CCWD's Los Vaqueros water through the Secondary Method for conveyance, the Northern Intakes that will be used for any Conveyance Facility must be added as points of diversion on CCWD's Los Vaqueros water right, and other approvals may be needed. DWR shall support a water right petition filed by CCWD to add the Northern Intakes as points of diversion on CCWD's Los Vaqueros water right to be used to convey to CCWD up to the amount of water necessary to implement this Agreement, and DWR shall support any other related approvals needed to convey CCWD's water to CCWD through the Secondary Method for conveyance. The water right petitions described in Sections 6.1 and 6.2 are hereafter collectively referred to as the "**LV Water Right Petitions**".
- 6.3** LV Water Right Petitions - Conveyance Facility Users. DWR acknowledges that the changes to CCWD's Los Vaqueros water right as contemplated by the LV Water Right Petitions are essential for full implementation of this Agreement. Therefore, DWR shall require SWP contractors who participate in the Conveyance Facility, as a condition to use of the Conveyance Facility, to agree not to oppose the LV Water Right Petitions. Nothing in this Agreement would bind SWP contractors from protesting or objecting to other CCWD applications to the State Water Resources Control Board that are not necessary to implement this Agreement or that request changes to quantities of water beyond the amount that is necessary to implement this Agreement.
- 6.4** Index for Measurement of Old and Middle River Flow Requirements. DWR shall collaborate with CCWD to advocate for the use of an index for measurement of compliance with requirements for net flow in the Old and Middle Rivers, such as those in the 2008 U.S. Fish and Wildlife Biological Opinion and 2009 National Marine Fisheries Service Biological Opinion on the operations of the State Water Project and Central Valley Project, that allows diversions at CCWD's screened intakes while preserving protections for fish, provided that there is no injury to DWR's use of its water right permits.
- 6.5** Encouragement of Stakeholder Support for Regional CCWD Water Supply Reliability Projects. DWR, in collaboration with CCWD, shall facilitate discussions with the State Water Project and Central Valley Project contractors and other appropriate stakeholders on the following future regional water supply projects: (i) the enlargement of CCWD's 160,000 acre foot Los Vaqueros Reservoir, and (ii) the Bay Area Regional Desalination Project, including any water rights petitions filed for that project.
- 6.6** Antioch. DWR will within thirty (30) days following the effectiveness of this Agreement contact Antioch, which has an existing agreement with DWR to address water quality at Antioch's intakes, and, if Antioch agrees, DWR will enter into and diligently pursue negotiations with Antioch regarding potential additional impacts to water quality (and, in turn, water quantity of suitable quality) at Antioch's intakes due to the BDCP/CWF.

- 6.7** East Contra Costa Irrigation District. DWR will within thirty (30) days following the effectiveness of this Agreement contact ECCID, which has an existing agreement with DWR to address water quality at ECCID's intakes, and, if ECCID agrees, DWR will enter into and diligently pursue negotiations with ECCID regarding potential additional impacts to water quality (and, in turn, water quantity of suitable quality) at ECCID's intakes due to BDCP/CWF.
- 6.8** Brentwood. DWR will within thirty (30) days following the effectiveness of this Agreement contact the City of Brentwood, which serves ECCID water and is dependent on ECCID's existing agreement with DWR to address water quality at ECCID's intakes, and, if Brentwood agrees, DWR will enter into and diligently pursue negotiations with Brentwood regarding potential impacts to water quality (and, in turn, water quantity of suitable quality) affecting Brentwood due to BDCP/CWF.

7. ARBITRATION OF DISPUTES ARISING UNDER THIS AGREEMENT

- 7.1** Any controversy or claim arising out of or relating to this Agreement shall be resolved as provided in this Section 7, except to the extent expressly provided elsewhere in this Agreement or if equitable relief is sought by CCWD pursuant to Section 11.8. The Parties shall first negotiate in good faith to resolve the dispute. In the event the Parties are unable to resolve the dispute within thirty (30) days, such dispute shall be settled by final and binding arbitration pursuant to the commercial arbitration rules of the American Arbitration Association ("AAA"), except to the extent the remaining provisions of this Section 7 conflict with those rules, in which case the provisions of this Section 7 shall control. To the extent allowed by the arbitrator, any arbitration shall comply with the following:
- 7.1.1** The place of arbitration shall be within the City and County of San Francisco, California;
 - 7.1.2** The Parties shall agree on a single arbitrator. If the Parties cannot agree on a single arbitrator within ten (10) days following submission of the dispute to arbitration, then the Parties shall each appoint one person who together will select a third person. The three persons shall constitute the arbitration panel to hear and resolve the matter submitted to it.
 - 7.1.3** Written notice of the referral to arbitration will be given within five (5) business days by the referring Party to the other Party setting out the issues for resolution, the Party's position with regard to such issues, the dollar amount involved (if any) and the remedy sought. The other Party will respond within ten (10) business days of receipt of such notice by giving the referring Party notice of any counterclaims, the Party's position with regard to all issues, the dollar amount involved (if any) and the remedy sought;

- 7.1.4** The arbitration will commence within sixty (60) calendar days of the referral before the persons appointed above under subsection 7.1.3;
- 7.1.5** All documents, materials and information in the possession of each Party that are in any way relevant to the issues in dispute will be made available to the other Party forthwith hereunder. Each Party will be entitled, on an expedited basis, to propound written discovery and to obtain testimony of witnesses by deposition to the same extent as a civil litigant in a suit filed in the Superior Court under the then-prevailing California Code of Civil Procedure. To the extent possible, the arbitrators will not be bound by the rules of civil procedure or evidence and will consider such writing and oral presentations as reasonable business persons would use in the conduct of their day-to-day affairs, and may require the Parties to submit some or all of their case by written declaration or such other manner of presentation as the arbitrators may determine to be appropriate;
- 7.1.6** The decision of the arbitrators will be in writing and, upon the request of either Party, the arbitrators shall specify the factual and legal basis for the award;
- 7.1.7** In rendering the award, the arbitrators shall determine the rights and obligations of the Parties according to the laws of the State of California. The Parties acknowledge that by agreeing to arbitration, they are giving up the right to a jury trial;
- 7.1.8** During the arbitration process, the costs of arbitration, including any administration fees, arbitrators fees and costs for the use of facilities during the hearings, shall be borne equally by the Parties to the arbitration;
- 7.1.9** A decision of the arbitrators will be final and binding and the arbitrators may require remedial measures and injunctive or other equitable relief as part of any award; provided, however, that the arbitrators shall not have the power to alter, amend, modify or change any of the terms of this Agreement or to grant any remedy that is otherwise prohibited by the terms of this Agreement or not available in a court of law. The arbitrators may award legal fees and costs (including arbitration costs) to the prevailing party; and
- 7.1.10** Reference to arbitration must be made within two (2) years of the act, omission or occurrence giving rise to the referral.

8. INDEMNIFICATION

- 8.1.1** DWR shall indemnify CCWD and its Related Parties (each such Person being called an “Indemnitee”) against, and hold each Indemnitee harmless from, any and all losses, claims, damages, obligations,

liabilities and related expenses (including the fees, charges and disbursements of any counsel for any Indemnitee), incurred by, claimed, alleged or asserted against any Indemnitee by any Person (including DWR), arising out of, in connection with, or as a result of (i) the execution or delivery of this Agreement, or any agreement or instrument contemplated hereby, the performance by the Parties hereto of their respective obligations hereunder or thereunder or the consummation of the transactions contemplated hereby or thereby, (ii) the construction, operation or maintenance of the BDCP/CWF including but not limited to any Conveyance Facility; (iii) the construction, operation or maintenance of the Interconnection Pump Station; (iv) the construction of the Interconnection Pipeline or Interconnection Valve, (v) relating to crops, crop losses, livestock or structures, (vi) the use or release of Hazardous Material in, on, under or about the properties and facilities described in Section 2 of this Agreement directly or indirectly caused by DWR or DWR's Related Parties, (vii) the violation by DWR or DWR's Related Parties of any Environmental Law, (viii) the assertion by any Governmental Authority that there has been a violation by DWR or DWR's Related Parties of any Environmental Law, or (ix) any actual or prospective claim, litigation, investigation or proceeding relating to any of the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by CCWD, and regardless of whether any Indemnitee is a party thereto; provided that such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities or related expenses are determined by a court of competent jurisdiction by final and non-appealable judgment to have resulted from the gross negligence or willful misconduct of such Indemnitee. DWR's obligations under this Section 8 shall survive the termination of this Agreement.

8.1.2 CCWD shall indemnify DWR and its Related Parties (each such Person being called an "Indemnitee") against, and hold each Indemnitee harmless from, any and all losses, claims, damages, obligations, liabilities and related expenses (including the fees, charges and disbursements of any counsel for any Indemnitee), incurred by, claimed, alleged or asserted against any Indemnitee by any Person (including CCWD) as a result of (i) the operation or maintenance of the Interconnection Pipeline or Interconnection Valve or (ii) any actual or prospective claim, litigation, investigation or proceeding relating to the foregoing, whether based on contract, tort or any other theory, whether brought by a third party or by DWR, and regardless of whether any Indemnitee is a party thereto; provided that such indemnity shall not, as to any Indemnitee, be available to the extent that such losses, claims, damages, liabilities or related expenses are determined by a court of competent jurisdiction by final and non-appealable judgment to have resulted from the gross negligence or willful misconduct of such

Indemnitee. CCWD's obligations under this Section 8 shall survive the termination of this Agreement.

9. REPRESENTATIONS AND WARRANTIES

Each Party represents and warrants to the other Party as follows:

9.1 Due Authorization and Enforceability. Such Party has full power, right and authority to execute, perform and deliver this Agreement and all other documents and agreements executed or to be executed by such Party in connection with the transactions contemplated hereby and thereby and to consummate the transactions contemplated hereby and thereby. The execution and delivery by such Party of this Agreement and each other document and agreement contemplated hereby, the performance by such Party of its obligations hereunder and thereunder, and the consummation by it of the transactions contemplated hereby and thereby have been duly authorized by all necessary governmental, agency or other action by such Party. This Agreement constitutes, and each other document and agreement to be executed by such Party in connection with the transactions contemplated hereby when so executed and delivered will constitute, a valid and binding obligation of such Party, enforceable in accordance with its terms, except (i) as limited by applicable bankruptcy, insolvency, reorganization, moratorium, and other laws of general application affecting enforcement of creditors' rights generally, and (ii) as limited by laws relating to the availability of specific performance, injunctive relief, or other equitable remedies.

9.2 No Conflicts. Such Party has made, obtained or been granted all approvals, consents, filings, registrations, notices, waivers and exemptions required to be obtained by it under any applicable law and regulation with respect to its execution and delivery of this Agreement and all other ancillary documents and agreements in connection with the transactions contemplated hereby and with respect to its performance of its obligations hereunder and thereunder and the consummation of the transactions contemplated hereby and thereby. The execution and delivery of this Agreement and all other documents and agreements executed or to be executed by such Party and the consummation by it of the transactions contemplated hereby or thereby will not conflict with or result in any breach or violation of any of the terms and conditions of, or constitute (or with notice or lapse of time or both constitute) a default under or a violation of, any statute, regulation, order, judgment or decree applicable to such Party, or any instrument, contract or other agreement to which such Party is a party or to which any of its assets may be bound or subject.

10. TRANSFER OF CONVEYANCE FACILITY OR INTERCONNECTION FACILITIES BY DWR

10.1 No Transfer Without Consent. DWR shall not assign, license, transfer or otherwise dispose of any of its right, title or interest in any Conveyance Facility or the Interconnection Facilities to any other Person without the prior written

- 11.3** Counterparts and Serial Signatures. This Agreement may be signed by the Parties in different counterparts and the signature pages combined to create a document binding on each and all Parties. Signatures delivered by electronic means shall be binding. Notwithstanding the preceding sentence, either Party may rescind its signature at any time prior to the date the Agreement has been fully executed by the Parties and this Agreement shall not be binding upon such rescinding Party. A Party that elects to rescind its signature pursuant to this Section 11.3 shall do so by providing written notice to the other Party in compliance with Section 11.2 of this Agreement.
- 11.4** Governing Law. This Agreement shall be governed and construed under the laws of the State of California.
- 11.5** Severability. If a court of competent jurisdiction finds any provision of this Agreement to be illegal, invalid, or unenforceable as to any circumstance, such finding shall not make the offending provision illegal, invalid, or unenforceable as to any other circumstance. If feasible, the offending provision shall be considered modified so that it becomes legal, valid, and enforceable. If the offending provision cannot be so modified, it shall be considered deleted from this Agreement. Unless otherwise required by law, the illegality, invalidity, or unenforceability of any provision of this Agreement shall not affect the legality, validity, or enforceability of any other provision of this Agreement.
- 11.6** Successors and Assigns. This Agreement shall be binding upon the Parties hereto, as well as their respective successors and assigns. Neither Party may assign this Agreement in whole or in part without the prior written consent of the other Party, and any such attempted assignment without such prior written consent shall be void ab initio. Nothing in this Agreement, expressed or implied, shall be construed to confer upon any Person (other than the Parties and their respective successors and assigns permitted hereby) any legal or equitable right, remedy or claim under or by reason of this Agreement.
- 11.7** Survival. All covenants, agreements, representations and warranties made in this Agreement shall survive the execution and delivery of this Agreement.
- 11.8** Equitable Relief. Notwithstanding anything expressed or implied to the contrary in this Agreement, each Party acknowledges that a breach or threatened breach of its obligations under this Agreement would give rise to irreparable harm to the other Party, for which monetary damages would not be an adequate remedy, and hereby agrees that in the event of a breach or a threatened breach by either Party of any such obligations, the non-breaching Party shall, in addition to any and all other rights and remedies that may be available to it in respect of such breach, be entitled to equitable relief, including a temporary restraining order, an injunction, specific performance and any other relief that may be available from a court of competent jurisdiction (without any requirement to post bond).

12. DEFINITIONS

As used in this Agreement, the following capitalized terms have the following meanings:

“**CCWD Facilities**” means all water storage and conveyance facilities and infrastructure of any kind owned, leased or licensed by CCWD, whether now existing or hereafter arising and wherever located.

“**CVP**” means the Central Valley Project, which is the federal water management facility in California operated by Reclamation.

“**CVP Contract Supply**” means water supplied to CCWD pursuant to its contract with Reclamation to receive water from the CVP.

“**Delta**” means the inland river delta and estuary in Northern California known as the Sacramento - San Joaquin River Delta.

“**Existing Transfer Pump Station**” means CCWD’s transfer pump station near Brentwood, California, and any modification or replacement thereof in whole or in part.

“**Freeport Intake**” means EBMUD’s water intake facility and pumping plant located on the Sacramento River, upstream from Freeport, California, and any modification or replacement thereof in whole or in part.

“**Intermediate Forebay**” means the forebay that DWR will construct within the North Delta that will receive water from each of the Northern Intakes before providing gravity flow through the Conveyance Facility.

“**Governmental Authority**” means the government of the United States of America or any other nation, or of any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government.

“**Los Vaqueros Pipeline**” means the pipeline extending between the Contra Costa Canal and Los Vaqueros Reservoir, and any modification or replacement thereof in whole or in part.

“**Los Vaqueros Reservoir**” means CCWD’s water storage reservoir in Contra Costa County accessible from North Vasco Road with a storage capacity as of the date of this Agreement of approximately 160,000 acre feet of water.

“**LV Water Right Permit**” means State Water Resources Control Board Water Right Permit 20749, and any modification or replacement thereof.

“**Middle River Pipeline**” means the existing buried pipeline that transports water from CCWD’s Middle River Intake to the Old River Pipeline, and any modification or replacement thereof in whole or in part.

“**Northern Exports**” means the total water diversion at the intakes for any Conveyance Facility, including diversions by DWR, Reclamation and any successors in interest thereto.

“**Northern Intake**” means the water intake facility or facilities, inclusive of any pumping plant, at the northern end of any Conveyance Facility.

“**Old River Pipeline**” means the existing buried pipeline that transports water from CCWD’s Old River Intake to CCWD’s Existing Transfer Pump Station.

“**Person**” means any natural person, corporation, limited liability company, trust, joint venture, association, company, partnership, Governmental Authority or other entity.

“**Related Parties**” means, with respect to any Person, the directors, officers, employees, agents, trustees, administrators, managers, advisors, representatives, contractors, invitees, permittees and licensees of such Person.

“**Subdivided Clifton Court Forebay**” means the separate section of Clifton Court Forebay that will receive water from the Conveyance Facility.

“**SWP**” means the State Water Project, which is the state water management facility in California operated by DWR.

“**Total Exports**” means the total water pumped into the Delta Mendota Canal, the California Aqueduct, and any other facility to convey water to the Bay Area, the Central Valley and Southern California from CVP and SWP facilities in the South Delta (including, without limitation, water diverted from the Northern Exports into the Clifton Court Forebay).

“**Unimpaired Sacramento River Runoff**” means the sum of Unimpaired Runoff in million acre-feet at Sacramento River above Bend Bridge, Feather River at Oroville (inflow to Lake Oroville), Yuba River near Smartville, and the American River below Folsom Lake. “**Unimpaired Runoff**” represents the natural water production in a river basin, unaltered by upstream diversions, storage, or export of water to or import of water from other basins.

IN WITNESS WHEREOF, the Parties have executed this AGREEMENT as of the day and year first written above.

Dated: 3/18/16

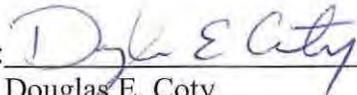
CONTRA COSTA WATER DISTRICT

By: 
Jerry Brown
General Manager

Approved As To Form:

Dated: March 17, 2016

BOLD, POLISNER, MADDOW, NELSON & JUDSON

By: 
Douglas E. Coty
General Counsel, Contra Costa Water District

Dated: 3/24/16

CALIFORNIA DEPARTMENT OF WATER RESOURCES

By: 
Mark Cowin
Director

Approved As To Form:

Dated: 3/24/16

By: 
Spencer Kenner
Chief Counsel, Department of Water Resources

EXHIBIT A
EXAMPLES OF APPLICATION OF METHODOLOGY IN SECTION 3.6 AND 3.7

		Annual Amount of Water to be Conveyed [TAF]							
		Northern Exports / Total Exports							
		0	0.1	0.2	0.3	0.4	0.5	0.6	0.7
Total Exports / Sacramento River Runoff	0	2	2	5	5	5	5	5	5
	0.1	2	8	9	10	11	13	16	18
	0.2	5	10	13	15	17	20	23	26
	0.3	5	15	19	23	27	32	37	42
	0.4	5	19	25	31	37	43	49	50
	0.5	6	23	31	42	47	50		

EXAMPLE OPERATIONS UNDER TERMS 3.6 and 3.7

Year of CWF Operation (Water Year)	Period of CWF Operation	Total Exports / Sacramento River Runoff	Northern Exports / Total Exports	Amount of Water Wheeled
1 (partial water year)	June - September	0.3	0.1	Initial 30 TAF per Term 3.7
2	October - September	0.3	0.3	15 TAF based on Year 1 operations
3	October - September	0.5	0.6	23 TAF based on Year 2 operations
4	October - September	0.4	0.3	Amount determined per Term 3.6.2, minimum 50 TAF based on Year 3 operations

EXAMPLE OPERATIONS UNDER TERM 3.9

Year of CWF Operation (Water Year)	Period of CWF Operation	Total Exports / Sacramento River Runoff	Northern Exports / Total Exports	Amount of Water Wheeled
15	October - September	0.4	0.5	Amount based on Year 14 ops
16	October - September	0.1	0.4	10 TAF (however, based on Year 15 operations, 43 TAF was required)
17	October - September	-	-	Payment of penalty plus 30 TAF per Term 3.9 due to deficit in Year 16 and
		0.2	0.5	11 TAF based on Year 16 operations

EXHIBIT B
1967 AGREEMENT

AGREEMENT

THIS AGREEMENT made this 21 day of April 1967, between the STATE OF CALIFORNIA, acting by and through its Department of Water Resources, hereinafter referred to as the "State", and CONTRA COSTA COUNTY WATER DISTRICT, a public body organized and existing pursuant to Division 12 of the Water Code of the State of California, hereinafter referred to as the "District",

WITNESSETH:

WHEREAS, since 1930 the District and its predecessor, California Water Service Company, have been diverting water from Mallard Slough on Suisun Bay in Contra Costa County pursuant to Water Right Permit to Appropriate Water number 3167 issued on Application number 5941 filed on November 19, 1928. Said diversions have been for direct beneficial use and to storage for later beneficial use within the service area of the Treated Water Division of the District when the water in Mallard Slough had a chloride ion content (mean tidal cycle surface zone) of 100 parts per million or less and was not otherwise polluted to make it unsuitable for treatment for municipal and domestic use (hereinafter referred to as usable river water), and

WHEREAS, the average number of days per water year (October 1 to September 30, hereinafter referred to as "year") that usable river water has been available to the District at said point of diversion is 142 and the median period of said availability is from January 15 to June 5, both days inclusive, and

WHEREAS, during each day usable river water has been and will in the

future be available to the District the quantity thereof has been and will be adequate to meet the water requirements of the District from that point of diversion during such day, and

WHEREAS, in the future the average number of days per year that usable river water will be available to the District will decrease and such decrease will be due in part to the operation of the State Water Resources Development System as defined in Section 12931 of the Water Code, and

WHEREAS, it is contemplated that the Contra Costa Canal, supplemented by the Kellogg Unit or other facilities to be constructed by the Bureau of Reclamation, will meet the District's future water requirements which are not met by usable river water. If such facilities are not constructed by the Bureau of Reclamation, water supply facilities will have to be constructed by another agency or agencies to meet the District's future requirements including a substitute water supply equal to the District's water deficiency entitlement as defined in this agreement;

NOW, THEREFORE, the parties agree as follows:

1. The term of this agreement shall begin on the first day of October, 1967, and shall continue in effect until terminated by either party by written notice to the other party given at least 12 months prior to the effective date of such termination. The effective date of termination shall be the last day of a year (September 30) and no termination shall be effective prior to September 30, 2007.

2. The State shall reimburse the District in the manner hereinafter provided for any decrease in availability to the District of usable river water

in Mallard Slough during the term of this agreement caused by operation of the State Water Resources Development System. Such decrease in availability of usable river water is hereinafter referred to as the District's "water deficiency entitlement".

3. The quantity of the District's water deficiency entitlement shall be determined for each year during the term of this agreement by the formula $E = \frac{(142 - D)}{3} \left(\frac{R + P}{142} \right)$ where E is the District's water deficiency entitlement for such year in acre-feet, D is the number of days during such year that usable river water is available to the District at Mallard Slough, R is the total quantity of water in acre-feet diverted by the District from Mallard Slough from 8:00 A. M. on January 15 to 8:00 A. M. on June 6 and P is the total quantity of water in acre-feet purchased by the District and introduced into its facilities in the vicinity of Chenery Reservoir from 8:00 A. M. on January 15 to 8:00 A. M. on June 6. If in any year D exceeds 142, the District shall have no water deficiency entitlement for such year and the amount of such excess shall offset any water deficiency entitlement of the District for an equal number of days in the next succeeding year or years when D is less than 142.

4. For the purpose of computing the District's water deficiency entitlement, the District will at its expense measure the chloride ion content of water in Mallard Slough at such intervals as shall be reasonably necessary and shall make the results of such measurements available to the State. The State may at its expense verify the accuracy of the District's measurements and any error thus disclosed shall be corrected by the District.

5. Each year during the term of this agreement that the District has a water deficiency entitlement it shall purchase a quantity of substitute water equal thereto from the Contra Costa Canal as supplemented by the Kellogg Unit or other facilities constructed by the Bureau of Reclamation to meet the District's requirement, but if sufficient water is not available to the District from such source it shall purchase said quantity of substitute water from a project or projects constructed by another agency or agencies to meet the District's future water requirements. For the purposes of this agreement, substitute water shall be deemed to have been purchased during the period beginning at 8:00 A. M. on January 15 and ending at 8:00 A. M. on June 6 of such year and the price paid by the District for substitute water shall be deemed to be the average price per acre-foot paid by the District for all untreated water purchased by it for introduction into its facilities in the vicinity of Chenery Reservoir during said period without deduction for any discount, allowance or rebate that may hereafter be made or allowed by the U. S. Bureau of Reclamation in the event the District hereafter undertakes, to any extent to operate and maintain any facilities of the U. S. Bureau of Reclamation not operated and maintained by the District as of the date of this agreement.

6. Each year during the term of this agreement that the District purchases substitute water for its water deficiency entitlement, the State will pay the District an amount of money computed in accordance with the formula $M = E(C_w + C_e - \$4.90)$ where M is the amount in dollars to be paid by the State, E is the District's water deficiency entitlement for such year determined in

the manner provided in Section 3 hereof, C_w is the amount per acre-foot paid by the District for substitute water delivered to the District as provided in Section 5 hereof, and C_e is the average amount (if any) per acre-foot paid by the District for electric energy to transport substitute water from the point of delivery thereof to the District to the District's facilities in the vicinity of Chenery Reservoir. The State shall pay said amount to the District not later than October 31 of the following year. Such payments are hereby determined to be reasonable costs of the annual maintenance and operation of the State Water Resources Development System and shall be disbursed from the California Water Resources Development Bond Fund pursuant to subsection (b) (1) of Section 12937 of the Water Code.

7. The District, in consideration of the payments by the State herein provided, releases the State from liability for any decrease in the availability to the District of usable river water at Mallard Slough caused by operation of the State Water Resources Development System during the term of this agreement.

8. The obligations of the State herein shall not be affected by any modification or discontinuance of the District's Mallard Slough pumping plant or Chenery Reservoir.

9. Nothing herein shall be deemed to be a release or waiver of any right of the District to purchase supplemental water supplies from the State with the priorities established by Water Code Section 11460, 12201 to 12204 inclusive, and 12931.

IN WITNESS WHEREOF the parties hereto have executed this agreement
by their respective officers thereunto duly authorized on the date first above
written.

Approved as to legal form
and sufficiency:

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

By P. A. Towner /s/
Chief Counsel

By William R. Gianelli /s/
Director

ATTEST:

CONTRA COSTA COUNTY WATER
DISTRICT

B. M. McCloskey /s/
Secretary

By Ralph D. Bollman /s/
President

October 20, 2020

VIA EMAIL

Zachary M. Simmons
United States Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street
Room 1350
Sacramento, CA 95814
Zachary.m.simmons@usace.army.mil

Re: Preliminary Comments
Delta Conveyance Project

SPK-2019-00899 Permit Application (section 404 of the Clean Water Act [33 U.S.C. § 1344]; section 10 of the Rivers and Harbors Act [33 U.S.C. § 403]; section 14 of the Rivers and Harbors Act [33 U.S.C. § 408])

Scoping Comments Notice of Intent to Prepare Environmental Impact Statement (“NOI”) issued August 20, 2020 (85 F.R. 51420-01)

Dear Mr. Simmons:

These comments are submitted on behalf of Save the California Delta Alliance (“Delta Alliance”). We are submitting herewith comments on the advisability of issuing permits as captioned above as well as scoping comments for the Environmental Impact Statement (“EIS”) for the major federal action associated with these permits.

Because the Delta Conveyance Project (“Project”) is largely undefined and the application submitted by the California Department of Water Resources (“DWR”) is incomplete, these comments are necessarily preliminary. In accordance with the instructions for comments provided by the Corps, that “All comments are due by October 20, 2020, however we will continue to address comments until a draft EIS is published,” we submit these comments today and will submit supplemental comments as more information becomes available.

<https://www.spk.usace.army.mil/Missions/Regulatory/Delta-Conveyance>, last visited October 20, 2020.

We appreciate the opportunity to submit these comments and thank you in advance for considering our views.

I. All of 40 C.F.R. § 230.11(a)–(g) Apply to the long-term operation of the Delta Conveyance Project as well as the direct effect of discharge. The Corps’ permit decisions and scope of analysis in the EIS must include the long-term impacts of operation of the Project.

There is some ambiguity in the notices and explanatory information issued by the Corps. For example, the YouTube video explaining the Corps’ responsibility states that the “future operations of the diversions are outside the Corps’ control and responsibility and therefore not a part of the Corps’ scope of analysis.”

<https://www.youtube.com/watch?v=3qmYYzWTJ3w&feature=youtu.be> at timestamp 6:50. Elsewhere, the documents state that the “activity’s impact on the public interest will include application of the Section 404(b)(1) guidelines promulgated by the Administrator, Environmental Protection Agency (40 CFR Part 230).” SPK-2019-0089, Public Notice at p. 4.

The Corps’ decision whether to issue permits must include analysis of long-term operations of the Project, including the long-term impacts on the Delta ecosystem, and secondary impacts, of diverting water through the proposed tunnel. In order to include this long-term operational analysis in its decision-making, the Corps must include analysis of the long-term operations of the diversion facilities in the EIS so that it will have information about the impacts of operations necessary to determination on the permits. The EIS must include a reasonable range of alternatives to the proposed tunnel and its anticipated operation as well.

The engineering calculation provided by DWR states that 190,350 cubic yards of fill will be discharged into Waters of the United States (the Sacramento River channel) to create the fast land upon which intakes 3 and 5 will sit. (Application, Table 4, page 21.) The section 401(b) guidelines state that “[a]ctivities to be conducted on fast land created by the discharge of dredged or fill material in waters of the United States may have secondary impacts within those waters which should be considered in evaluating the impact of creating those fast lands.” 40 C.F.R. § 230.11(h)(2). The activity to be conducted on the fast land created by the discharge is the long-term diversion of water from the Sacramento River into the tunnel. Therefore, the Corps must consider the long-term operation of the diversion facilities as a part of its direct section 401(b) evaluation. Of course, the impacts of the change in point of diversion and operation of the intakes on the Delta ecosystem and California’s water supply system must also be considered under the Corps’ public interest responsibilities pursuant to 33 C.F.R. § 320.4 and 33 C.F.R. § 323.6(a).

Of necessity, the EIS prepared by the Corps will be a significant undertaking. It must consider fundamental changes to the hydrodynamics, ecology, and water supply function of the largest and most ecologically important estuary system on the west coast of the Americas which is at the same time the heart of the most complex and extensive water distribution system on earth.

II. The Application should be rejected without prejudice to its resubmittal because it is incomplete.

The application provides no information on operating criteria for the new points of diversion and no information on adaptive management of the diversion facilities. No modeling of Project operations is provided. It is therefore impossible to evaluate the long-term effects of Project operations. Without this information, the Corps cannot perform its legal obligation to evaluate the impacts of the project on waters of the United States and

on the public interest.

As to construction impacts, information provided in the application is also inadequate for the Corps to perform its legal obligation to assess impacts to the waters of the United States and the public interest.

DWR has supplied some detail on the potential eastern tunnel route but no detail on the potential central tunnel route. The central route will have significant adverse impacts on navigation and recreation, but it is impossible to evaluate these impacts without more complete information as to the location of barge landings, criteria for barge operations, and the location and detail of construction features.

The application should be re-submitted after DWR has more fully developed the project and has at least produced a draft Environmental Impact Report (“EIR”), which will contain operations and construction detail that could be adequate for the Corps to fulfill its obligations. The missing information that will become available on publication of a draft EIR will constitute a “change in the application data that would affect the public’s review of the proposal.” 33 C.F.R. § 325.2(a)(2).

III. The Application fails to comply with the guidelines because it omits practicable alternatives with no impact to waters of the United States. The Application should be rejected, or the Corps-prepared EIS should include a natural systems alternative to a tunnel.

40 C.F.R. section 230.12(a)(3) provides that the application must be “[s]pecified as failing to comply with the requirements of these guidelines where: (i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” An alternative “is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistic in light of overall project purpose.” 40 C.F.R. § 230.10(a)(2).

DWR has stated in the application that the underlying purpose of the project is to build new diversion and conveyance facilities in the Delta. (Application, p. 1.) Hence, it comes as no surprise that only a Project that includes new points of diversion will satisfy DWR’s desires. However, applicants are not free to provide a description of the underlying purpose of the project that “fulfill[s] their own prophecies, whatever the parochial impulses that drive them.” *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (9th Cir. 1991). *See also National Parks & Conservation Ass’n v. Bureau of Land Mgmt.*, 606 F.3d 1058, 1072 (9th Cir. 2009) (summarizing 9th Circuit precedent to “forbid the [lead agency] to define its objectives in unreasonably narrow terms”) (striking down lead agency’s EIS because “[a]s a result of this unreasonably narrow purpose and need statement, the [lead agency] necessarily considered an unreasonably narrow range of alternatives”); *id.* at 1071 (stating that the court will “determine whether the [lead agency’s] purpose and need statement properly states the [lead agency’s] purpose and need ... in a manner broad enough to allow consideration of a reasonable range of alternatives”). Courts reject unreasonably narrow interpretations of purpose and need that exclude viable alternatives suggested by commenters. *Center for Biological Diversity v. National Highway Traffic Safety Admin.*, 538 F.3d 1172, 1219 (9th Cir. 2008) (holding that “[w]e also disagree with [the lead agency] that Petitioners’ suggested alternatives would not be reasonably related to the project’s purpose”).

A cursory examination of the Project’s California Environmental Quality Act (“CEQA”) Notice of Preparation (“NOP”) reveals that the actual underlying purpose of the Project

is: 1) to mitigate the effects of salt water intrusion into the Delta due to rising sea levels as a result of climate change; and 2) to mitigate the potential for salt water intrusion into the Delta due to catastrophic levee failure in an earthquake. *See* CEQA NOP, page 2 (Attachment 1 hereto).

The current intake location, near Tracy, currently sits in a freshwater portion of the Delta. The water withdrawn at this location is currently low enough in saline content to be used for export to agricultural and municipal users. However, the relative downstream location of this intake, close to San Francisco Bay, could convert to salt water if sea levels rise or a sufficient number of levees fail in an earthquake, causing salt water to rush into the Delta from the Bay. The intake could no longer serve as a point to withdraw water for export because the water would be too salty for use. DWR's solution, embodied in the Delta Conveyance Project, is to move the point of diversion far upstream so that even under rising sea levels or a catastrophic levee failure salt water would not reach the intake location and exports of fresh water could continue uninterrupted. *See, generally*, CEQA NOP.

When the actual underlying purpose of the Project is considered, it becomes obvious that solutions other than a new point of diversion and other than a tunnel under the Delta will better achieve the Project objectives with less environmental impact, and no negative impact to waters of the United States.

On April 17, 2020, Delta Alliance submitted to DWR detailed comments describing a Natural Systems Alternative to the proposed Delta Conveyance Project. Those comments are attached hereto as Attachment 2 and are incorporated into these comments for consideration by the Corps. In short, the Project objectives can be achieved by: 1) reducing exports from the Delta to the region south of the Tehachapi Mountains and using the saved water to increase seaward freshwater flow, thus pushing back salt water intrusion from the bay and mitigating the effects of saltwater intrusion from rising sea levels; 2) strengthening Delta levies to resist catastrophic failure in an earthquake; and 3) proactively flooding selected Delta islands to eliminate the potential for catastrophic flooding of vulnerable islands and create a freshwater reservoir barrier to salt water intrusion. There are multiple advantages to this approach, including: 1) the overriding public interest served by eliminating the pumping of Delta water over the Tehachapi Mountains, which is *the most* energy intensive source of water in California (if not the world), wastes profligate amounts of electricity, and contributes significantly to GHG emissions; 2) the benefit to California's electric grid of re-purposing clean hydropower now used to pump trillions of tons of water over a mountain range to buffering the electric grid against shortfalls currently endemic to California's conversion to renewables; 3) the environmental benefits of creating channel margin habitat through use of setback levies to mitigate levee failure risk; 4) the environmental benefits of creating freshwater habitat on flooded islands; and 5) relief from the multiple negative adverse environmental, social, and economic impacts of the Delta Conveyance Project. These issues are explored in detail in the attached April 17 comments and need not be set out in full again here.

DWR rejected Delta Alliance's Natural System Alternative (and similar, though less detailed suggestions by others) with cursory and entirely myopic and circular arguments, such as strengthening levees does not mitigate sea level rise and continued use of through-Delta conveyance does not address earthquake risk. Attachment 3 hereto is DWR's rejection of all non-tunnel alternatives because none fulfill the basic purpose of being a new point of diversion attached to a tunnel.

To flesh out the Natural Systems Alternative it will be advisable to perform mathematical

modeling of several scenarios. Delta modeling related to Delta outflow, sea level rise, and salinity intrusion has been done using Calsim 2, DSM 2, and UnTRIM Bay-Delta computer models. Picking up on work that has already been done in connection with the California State Water Resources Control Board's (SWRCB) Bay Delta Program, the former California WaterFix change petition application before the SWRCB, and the Bay Conservation and Development Plan EIR/EIS, sufficient information to evaluate the Natural Systems Alternative as definitively superior to the Delta Conveyance Project should be practicably obtainable in reasonable time and for reasonable cost.

In the scope of a \$20,000,000,000 Project upon which hangs the fate of the most ecologically important estuary on the west coast of the Americas, the need to evaluate this alternative is acute. Delta Alliance requests that the Corps include a thorough evaluation of the Natural Systems Alternative in the EIS pursuant to 33 C.F.R. Part 325, Appendix B, paragraph 9.b(5)(c): The EIS should discuss "functional alternatives, e.g., project substitutes and design modifications." The Natural Systems Alternative is reasonable within the meaning of Appendix B, paragraph 9.b(5)(a), especially as to the underlying need of "the public," and therefore should be considered.

IV. The Application should be rejected because it does not contain any alternative intake locations, let alone a reasonable range of intake locations, and the intakes have been sited so as to inflict maximum damage on the environmental justice community of Hood. Alternatively, the EIS should consider a range of intake locations not included in the application.

DWR has settled on two intakes, intakes #3 and #5, both located adjacent to the small low income minority community of Hood. No alternative intake locations are considered or have been seriously considered. Please see Attachment 4 for a graphic depiction of intakes #3 and #5 looming over and dwarfing the small town of Hood. Attachment 4 was prepared for hearings on the former California WaterFix, but the location of intakes #3 and #5 has not changed.

DWR believes that it has existing water rights at these locations and therefore its SWRCB process would be a Petition for a change in the point of diversion. If it locates the intakes anywhere else, its SWRCB process would be the initiation of a new water right, a somewhat higher bar to pass. This administrative convenience for DWR does not excuse the environmental justice atrocity being perpetrated on Hood.

Hood will be destroyed by the multi-year construction activity needed to build these two intakes. The town will be largely abandoned and residents who remain will suffer irreparable harm.

The injury to Hood and insult to principals of environmental justice is all the more acute because DWR recently concluded that intake #2 be eliminated from consideration because of the community impacts on the small town of Clarksburg. Attachment 5 is DWR's statement of unacceptable impacts on Clarksburg with no mention of Hood. The impacts on Clarksburg were significant and unacceptable in their own right but less than on Hood. Clarksburg is more prosperous and more white than Hood and one wonders aloud, if the lesser impacts on Clarksburg were an unacceptable imposition on that community why are greater impacts being imposed on the less prosperous community of Hood acceptable to DWR? Intakes #2 and #5 must not be placed at these locations. They must be moved.

We request that the Corps reject the Application on this basis alone. If the Application is

not rejected out of hand, we request that the Corps include a reasonable range of intake locations, away from Delta legacy communities and equitably sited, within the Corps-prepared EIS. No consideration should be given to DWR's administrative convenience when considering intake locations. If the administrative burden of siting the intakes in a more environmentally and socially responsible manner are too high to justify the benefits of the Project, then the Project is not worth pursuing and should be dropped.

V. Conclusion.

The Application should be rejected for the reasons stated above. If not rejected out of hand, then a reasonable range of alternatives not considered by DWR should be included in the Corps-prepared EIS.

Thank you for considering our comments. We will follow up with more detailed comments in coming weeks and months as more information becomes available.

Sincerely,

s/Michael A. Brodsky
Michael A. Brodsky

ATTACHMENT 1

NOTICE OF PREPARATION

NOTICE OF PREPARATION OF ENVIRONMENTAL IMPACT REPORT FOR THE DELTA CONVEYANCE PROJECT

January 15, 2020

INTRODUCTION

Pursuant to the California Environmental Quality Act (CEQA), the California Department of Water Resources (DWR) will initiate the preparation of an Environmental Impact Report (EIR) for the Delta Conveyance Project in the Sacramento-San Joaquin Delta, California. DWR is the lead agency under CEQA.

The Delta Conveyance Project will also involve federal agencies that must comply with the National Environmental Policy Act (NEPA), likely requiring the preparation of an environmental impact statement (EIS). Federal agencies with roles with respect to the project may include approvals or permits issued by the Bureau of Reclamation (Reclamation) and United States Army Corps of Engineers. To assist in the anticipated federal agencies' NEPA compliance, DWR will prepare an EIR that includes relevant NEPA information where appropriate. Once the role of the federal lead agency is established, that federal lead agency will publish a Notice of Intent to formally initiate the NEPA process.

BACKGROUND INFORMATION

In July 2017, DWR had previously approved a conveyance project in the Delta involving two tunnels referred to as "California WaterFix." In his State of the State address delivered February 12, 2019, Governor Newsom announced that he did not "support WaterFix as currently configured" but does "support a single tunnel." On April 29, 2019, Governor Newsom issued Executive Order N-10-19, directing several agencies to (among other things), "inventory and assess... [c]urrent planning to modernize conveyance through the Bay Delta with a new single tunnel project." The Governor's announcement and Executive Order led to DWR's withdrawal of all approvals and environmental compliance documentation associated with California WaterFix. The CEQA process identified in this notice for the proposed Delta Conveyance Project will, as appropriate, utilize relevant information from the past environmental planning process for California WaterFix but the proposed project will undergo a new stand-alone environmental analysis leading to issuance of a new EIR.

PROPOSED DELTA CONVEYANCE PROJECT DESCRIPTION

Purpose and Project Objectives

CEQA requires that an EIR contain a "statement of the objectives sought by the proposed project." Under CEQA, "[a] clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers

in preparing findings or a statement of overriding considerations. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits” (State CEQA Guidelines Section 15124[b]).

Here, as the CEQA lead agency, DWR’s underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State’s Water Resilience Portfolio.

The above stated purpose, in turn, gives rise to several project objectives. In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:

- To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events.
- To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the existing SWP and CVP pumping plants operate in the southern Delta.
- To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law, including the California and federal Endangered Species Acts and Delta Reform Act, as well as the terms and conditions of water delivery contracts and other existing applicable agreements.
- To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations.¹

Description of Proposed Project Facilities

The existing SWP Delta water conveyance facilities, which include Clifton Court Forebay and the Banks Pumping Plant in the south Delta, enable DWR to divert water and lift it into the California Aqueduct. The proposed project would construct and operate new conveyance facilities in the Delta that would add to the existing SWP infrastructure. New intake facilities as points of diversion would be located in the north Delta along the Sacramento River between Freeport and the confluence with Sutter Slough. The new conveyance facilities would include a tunnel to convey water from the new intakes to the existing Banks Pumping Plant and potentially the federal Jones Pumping Plant in the south Delta. The new facilities would provide an alternate location for diversion of water from the Delta and would be operated in coordination with the existing south Delta pumping facilities, resulting in a system also known as "dual conveyance"

¹ These objectives are subject to refinement during the process of preparing a Draft EIR.

because there would be two complementary methods to divert and convey water. New facilities proposed for the Delta Conveyance Project include, but are not limited to, the following:

- Intake facilities on the Sacramento River
- Tunnel reaches and tunnel shafts
- Forebays
- Pumping plant
- South Delta Conveyance Facilities

Figure 1 shows the areas under consideration for these facilities. Other ancillary facilities may be constructed to support construction of the conveyance facilities including, but not limited to, access roads, barge unloading facilities, concrete batch plants, fuel stations, mitigation areas, and power transmission and/or distribution lines.

Under the proposed project, the new north Delta facilities would be sized to convey up to 6,000 cfs of water from the Sacramento River to the SWP facilities in the south Delta (with alternatives of different flow rates, as described in the “Alternatives” section below). DWR would operate the proposed north Delta facilities and the existing south Delta facilities in compliance with all state and federal regulatory requirements and would not reduce DWR’s current ability to meet standards in the Delta to protect biological resources and water quality for beneficial uses. Operations of the conveyance facilities are proposed to increase DWR’s ability to capture water during high flow events. Although initial operating criteria of the proposed project would be formulated during the preparation of the upcoming Draft EIR in order to assess potential environmental impacts and mitigation, final project operations would be determined after completion of the CEQA process, obtaining appropriate water right approvals through the State Water Resources Control Board’s change in point of diversion process, and completing the consultation and review requirements of the federal Endangered Species Act and California Endangered Species Act. Construction and commissioning of the overall conveyance project, if approved, would take approximately 13 years, but the duration of construction at most locations would vary and would not extend for this full construction period.

Reclamation is considering the potential option to involve the CVP in the Delta Conveyance Project. Because of this possibility, the connection to the existing Jones Pumping Plant in the south Delta is included in the proposed facility descriptions below. The proposed project may include a portion of the overall capacity dedicated for CVP use, or it may accommodate CVP use of available capacity (when not used by SWP participants). If Reclamation determines that there could be a role for the CVP in the Delta Conveyance Project, this role would be identified in a separate NEPA Notice of Intent issued by Reclamation.

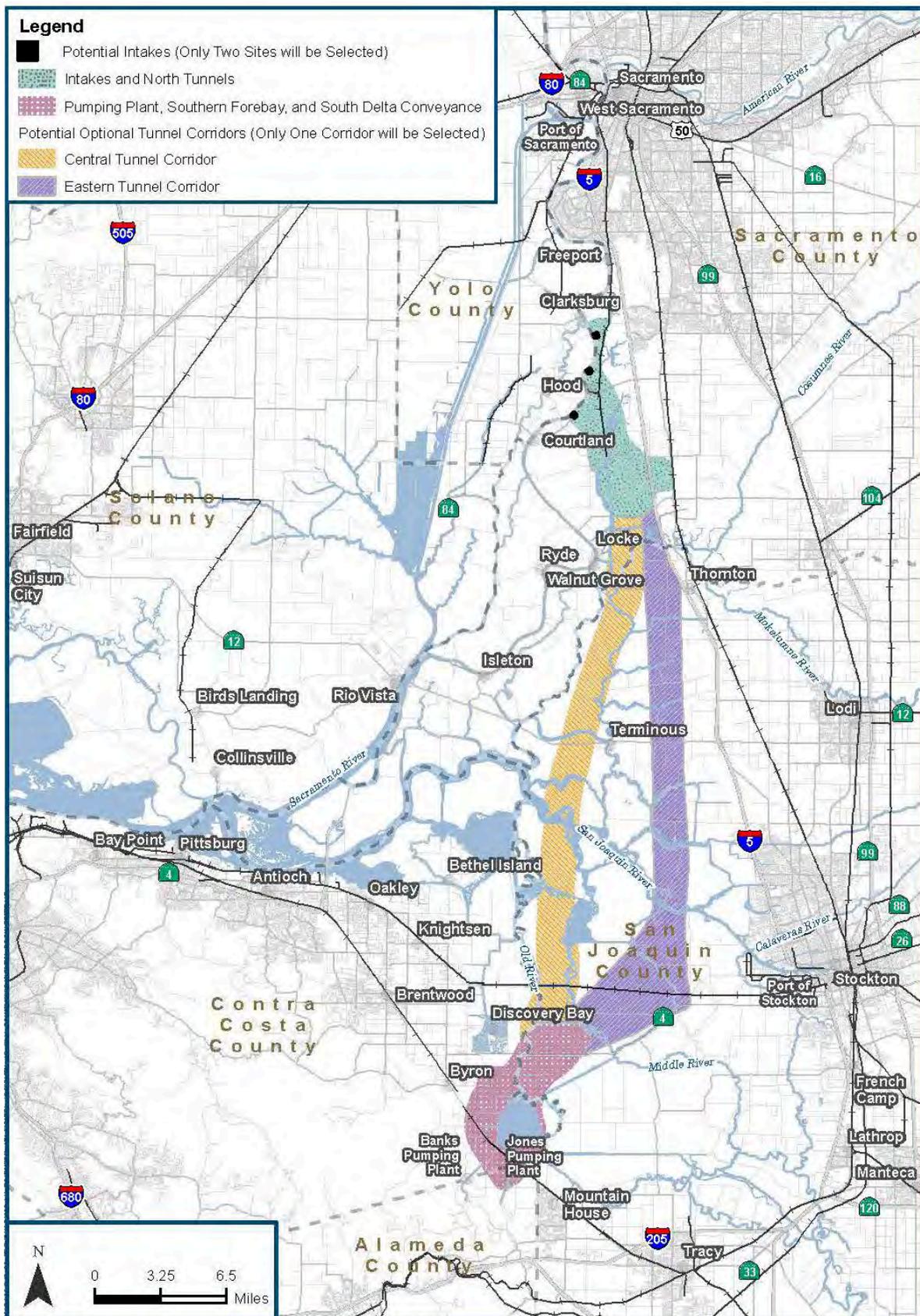


Figure 1. Proposed Project Facility Corridor Options

Intake Facilities

The proposed intake facilities would be located along the Sacramento River between Freeport and the confluence with Sutter Slough, as shown in Figure 1. The proposed project would include two intakes with a maximum diversion capacity of about 3,000 cfs each. The size of each intake location could range from 75 to 150 acres, depending upon fish screen selection, along the Sacramento River and include a state-of-the-art fish screen, sedimentation basins, tunnel shaft, and ancillary facilities. An additional 40 to 60 acres at each intake location would be temporarily disturbed for staging of construction facilities, materials storage, and a concrete batch plant, if needed.

Tunnel and Tunnel Shafts

The proposed project would construct up to two north connecting tunnel reaches to connect the intakes to an Intermediate Forebay (see “Forebays” section below), a single main tunnel from the Intermediate Forebay to a new Southern Forebay, and two connecting south tunnel reaches as part of the proposed project’s South Delta Conveyance Facilities (see “South Delta Conveyance Facilities” section below) to connect to the existing SWP and, potentially CVP, facilities in the south Delta. The single main tunnel would follow one of two potential optional corridors as shown in Figure 1.

The proposed single main tunnel and connecting tunnel reaches would be constructed underground with the bottom of the tunnel at approximately 190 feet below the ground surface. Construction for the tunnel would require a series of launch shafts and retrieval shafts. Each launch and retrieval shaft site would require a permanent area of about four acres. Launch sites would involve temporary use of up to about 400 acres for construction staging and material storage. Depending on the location, the shafts may also require flood protection facilities to extend up to about 45 feet above the existing ground surface to avoid water from entering the tunnel from the ground surface if the area was flooded. Earthen material would be removed from below the ground surface as tunnel construction progresses; this reusable tunnel material could be reused for embankments or other purposes in the Delta or stored near the launch shaft locations.

Forebays

The proposed project would include an Intermediate Forebay and a Southern Forebay. The Intermediate Forebay would provide potential operational benefits and would be located along the tunnel corridor between the intakes and the pumping plant. The Southern Forebay would be located at the southern end of the single main tunnel and would facilitate conveyance to the existing SWP pumping facility and, potentially the CVP pumping facilities. The forebays would be constructed above the ground, and not within an existing water body. The size of the Intermediate Forebay would be approximately 100 acres with an additional 150 acres disturbed during construction for material and equipment storage, and reusable tunnel material storage. The embankments would be approximately 30 feet above the existing ground surface. Additional appurtenant structures, including a permanent crane, would extend up to 40 feet above the embankments.

The Southern Forebay would be located near the existing Clifton Court Forebay and would be approximately 900 acres with an additional 200 acres disturbed during construction for material and equipment storage, potential loading and offloading facilities, and reusable tunnel material storage. The Southern Forebay embankments would be up to 30 feet above the existing ground surface.

Pumping Plant

The proposed project would include a pumping plant located at the new Southern Forebay and would receive the water through the single main tunnel for discharge in the Southern Forebay. The pumping plant would be approximately 25 acres along the side of the Southern Forebay and would include support structures, with a permanent crane for maintenance as the highest feature that would extend approximately 70 feet above the existing ground surface. The temporary and permanent disturbed area for the pumping plant is included in the Southern Forebay area, described above.

South Delta Conveyance Facilities

The proposed project would include South Delta Conveyance Facilities that would extend from the new Southern Forebay to the existing Banks Pumping Plant inlet channel. The connection to the existing Banks Pumping Plant would be via canals with two tunnels to cross under the Byron Highway. The canals and associated control structures would be located over approximately 125 to 150 acres. Approximately 40 to 60 additional acres would be disturbed temporarily during construction. These facilities could also be used to connect the Southern Forebay to the CVP's Jones Pumping Plant.

Contract Amendment for Delta Conveyance

The proposed project may involve modifications to one or more of the State Water Resources Development System (commonly referred to as the SWP) water supply contracts to incorporate the Delta Conveyance Project. Therefore, if modifications move forward, the Delta Conveyance Project EIR will assess, as part of the proposed project, potential environmental impacts associated with reasonably foreseeable potential contract modifications.

PROJECT AREA

The proposed EIR project area for evaluation of impacts consists of the following three geographic regions, as shown in Figure 2, below.

- Upstream of the Delta region
- Statutory Delta (California Water Code Section 12220)
- South-of-Delta SWP Service Areas and, potentially, South-of-Delta CVP Service Areas.

The study areas will be specifically defined for each resource area evaluated in the EIR. Figure 3 shows the SWP South-of-Delta water contractors.



Figure 2. Project Area



Figure 3. SWP South-of-Delta Service Areas

ALTERNATIVES

As described above, the proposed project has been informed by past efforts taken within the Delta and the watersheds of the Sacramento and San Joaquin Rivers, including those undertaken through the Bay Delta Conservation Plan (BDCP)/California WaterFix. As stated in CEQA Guidelines Section 15126.6(a), the “EIR shall describe a range of reasonable alternatives to the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives which are infeasible.”

The scoping process will inform preliminary locations, corridors, capacities and operations of new conveyance facilities to be evaluated in the EIR. In identifying the possible EIR alternatives to be analyzed in detail, DWR is currently considering alternatives with capacities that range from 3,000 to 7,500 cfs, with varying degrees of involvement of the CVP, including no involvement. DWR will make its final choice of potentially feasible alternatives to include in the Draft EIR after receipt of scoping comments.

POTENTIAL ENVIRONMENTAL EFFECTS

DWR as the lead agency will describe and analyze the significant environmental effects of the proposed project. DWR did not prepare an initial study so none is attached; the EIR will include the suite of resource categories contained in Appendix G of CEQA Guidelines. Probable effects may include:

- Water Supply: changes in water deliveries.
- Surface Water: changes in river flows in the Delta.
- Groundwater: potential effects to groundwater levels during operation.
- Water Quality: changes to water quality constituents and/or concentrations from operation of facilities.
- Geology and Seismicity: changes in risk of settlement during construction.
- Soils: changes in topsoil associated with construction of the water conveyance facilities.
- Fish and Aquatic Resources: effects to fish and aquatic resources from construction and operation of the water conveyance facilities.
- Terrestrial Biological Resources: effects to terrestrial species due to construction of the water conveyance facilities.
- Land Use: incompatibilities with land use designations.
- Agricultural and Forestry Resources: preservation or conversion of farmland.
- Recreation: displacement and reduction of recreation sites.
- Aesthetics and Visual Resources: effects to scenic views because of water conveyance facilities.
- Cultural and Tribal Cultural Resources: effects to archeological and historical sites and tribal cultural resources.
- Transportation: vehicle miles traveled; effects on road and marine traffic.

- Public Services and Utilities: effects to regional or local utilities.
- Energy: changes to energy use from construction and operation of facilities.
- Air Quality and Greenhouse Gas: changes in criteria pollutant emissions and localized particulate matter from construction and greenhouse gas emissions.
- Noise: changes in noise and vibration from construction and operation of the facilities.
- Hazards and Hazardous Materials: potential conflicts with hazardous sites.
- Public Health: changes to surface water could potentially increase concerns about mosquito-borne diseases
- Mineral Resources: changes in availability of natural gas wells due to construction of the water conveyance facilities.
- Paleontological Resources: effects to paleontological resources due to excavation for borrow and for construction of tunnels and canals.
- Climate Change: increase resiliency to respond to climate change
- Growth Inducement and Other Indirect Effects: changes to land uses as a result of changes in water availability resulting from changes in water supply deliveries

Where the potential to cause significant environmental impacts are identified, the EIR will identify avoidance, minimization, or mitigation measures that avoid or substantially lessen those impacts.

ADDITIONAL BACKGROUND INFORMATION

DWR previously studied a similar project through efforts on the BDCP and subsequently the California WaterFix. The proposed Delta Conveyance Project is a new project and is not supplemental to these past efforts or tiered from previous environmental compliance documents. This section provides background on these past efforts.

In October 2006, various state and federal agencies, water contractors, and other stakeholders initiated a process to develop what became known as the BDCP to advance the objectives of contributing to the restoration of ecological functions in the Delta and improving water supply reliability for the SWP and CVP Delta operations in the State of California.

In December 2013, after several years of preparation, DWR, Reclamation, the United States Fish and Wildlife Service, and the National Marine Fisheries Service, acting as joint lead agencies under CEQA and NEPA, published a draft of the BDCP and an associated Draft EIR/EIS. The Draft EIR/EIS analyzed a total of 15 action alternatives, including Alternative 4, which was identified as DWR's preferred alternative at that time.

In July of 2015, after taking public and agency input into account, the lead agencies formulated three new sub-alternatives (2D, 4A, 5A) and released a Partially Recirculated Draft EIR/Supplemental Draft EIS (RDEIR/SDEIS) for public comment. Alternative 4A, which is known as "California WaterFix" was identified as DWR and Reclamation's preferred alternative in the RDEIR/SDEIS.

On July 21, 2017, DWR certified the Final EIR and approved California WaterFix. Following

that approval, DWR continued to further refine the project, resulting in reductions to environmental impacts. These project refinements required additional CEQA/NEPA documentation.

On January 23, 2018, DWR submitted an addendum summarizing proposed project modifications to California WaterFix associated with refinements to the transmission line corridors proposed by the Sacramento Municipal Utility District. The Addendum described the design of the applicable modified California WaterFix power features, proposed modifications to those power features (including an explanation of the need for the modifications), the expected benefits of the modifications to the transmission lines, and potential environmental effects as a result of those power related modifications (as compared to the impacts analyzed in the certified Final EIR).

On July 18, 2018, DWR released the California WaterFix Draft Supplemental EIR, which evaluated proposed changes to the certain conveyance facilities of the approved project. (No Final Supplemental EIR was ever completed, due to the change in direction dictated by Governor Newsom's State of the State speech and Executive Order N-10-19.) On September 21, 2018, Reclamation issued the California WaterFix Draft Supplemental EIS, including an alternatives comparison.

SCOPING MEETINGS

The proposed project is of statewide, regional or area-wide significance; therefore, a CEQA scoping meeting is required pursuant to Public Resources Code Section 21083.9, subdivision (a)(2). Public Scoping meetings are scheduled to take place at the following times and locations:

- Monday, February 3, 2020, 1 p.m. – 3 p.m. California Environmental Protection Agency Building, 1001 I Street, Sacramento
- Wednesday, February 5, 2020, 6 p.m. – 8 p.m. Junipero Serra State Building, 320 West Fourth Street, Los Angeles
- Monday, February 10, 2020, 6 p.m. – 8 p.m. Jean Harvie Community Center, 14273 River Road, Walnut Grove
- Wednesday, February 12, 2020, 6 p.m. – 8 p.m. Santa Clara Valley Water District Board Room, 5750 Almaden Expressway, San Jose
- Thursday, February 13, 2020, 6 p.m. – 8 p.m. San Joaquin Council of Governments Board Room, 555 Weber Avenue, Stockton
- Wednesday, February 19, 2020, 6 p.m. – 8 p.m. Clarksburg Middle School Auditorium, 52870 Netherlands Road, Clarksburg
- Thursday, February 20, 2020, 6 p.m. – 8 p.m. Brentwood Community Center Conference Room, 35 Oak Street, Brentwood

Anyone interested in more information concerning the EIR process, or anyone who has information concerning the study or suggestions as to significant issues, should contact Marcus Yee at (916) 651-6736.

WRITTEN COMMENTS

This notice is being furnished to obtain suggestions and information from other agencies and the public on the scope of issues and alternatives to consider in developing the EIR. The primary purpose of the scoping process is to identify important issues raised by the public and responsible and trustee public agencies related to the issuance of regulatory permits and authorizations and natural resource protection. Written comments from interested parties are invited to ensure that the full range of environmental issues related to the development of the EIR are identified. All comments received, including names and addresses, will become part of the official administrative record and may be made available to the public.

Written comments on this part of the Scoping process will be accepted until 5 p.m. on March 20, 2020 and can be submitted in several ways:

- Via email: DeltaConveyanceScoping@water.ca.gov
- Via Mail: Delta Conveyance Scoping Comments, Attn: Renee Rodriguez, Department of Water Resources, P.O. Box 942836, Sacramento, CA 94236

As required by the CEQA Guidelines, within 30 days after receiving the Notice of Preparation, each responsible and trustee agency is required to provide the lead agency with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the responsible or trustee agency's area of statutory responsibility that will need to be explored in the EIR. In the response, responsible and trustee agencies should indicate their respective level of responsibility for the project.

PLEASE NOTE: DWR's practice is to make the entirety of comments received a part of the public record. Therefore names, home addresses, home phone numbers, and email addresses of commenters, if included in the response, will be made part of the record available for public review. Individual commenters may request that DWR withhold their name and/or home addresses, etc., but if you wish DWR to consider withholding this information you must state this prominently at the beginning of your comments. In the absence of this written request, this information will be made part of the record for public review. DWR will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of, or officials of, organizations or businesses, available for public inspection in their entirety.

ATTACHMENT 2

April 17, 2020

VIA EMAL DeltaConveyanceScoping@water.ca.gov

Wade Crowfoot
Secretary
California Natural Resources Agency

Karla Nemeth
Director
California Department of Natural Resources

Re: Comments Notice of Preparation Environmental Impact Report
For the Delta Conveyance Project

Dear Secretary Crowfoot and Director Nemeth:

These comments are submitted on behalf of Save the California Delta Alliance. Thank you for the opportunity to submit these comments and for considering our views.

In short, we believe that the Notice of Preparation (“NOP”) should be redrafted because it is not consistent with the Delta Reform Act, the Delta Plan, the Public Trust Doctrine, California Constitution Article X, section 2, the California Environmental Quality Act (“CEQA”), the legal uses to which the State Water Project (“SWP”) may be put, environmental justice principles codified in Government Code section 65040.12, requirements to consider and avoid climate change impacts of new infrastructure and to consider mitigation of climate impacts through alternative uses of natural infrastructure codified in Public Resources Code section 71154, and other applicable laws.

A revised NOP should provide for a Natural Systems Alternative that reduces exports in order to provide more water for through-Delta seaward flow and includes strengthening and restoring Delta levees through the use of setback levees and channel margin habitat. This approach will achieve the project objectives of mitigating salt water intrusion from climate-induced sea level rise and mitigating the risk of salt water intrusion from catastrophic levee failure. It will also achieve the project objectives of providing operational flexibility to improve aquatic conditions in the Delta and of protecting the ability of the SWP and CVP¹ to reliably deliver water. It is superior to a tunnel with regard to project objectives and without the significant adverse environmental impacts of a tunnel. The Natural Systems Alternative should therefore be the preferred alternative pursuant to CEQA.

The major premises of the project are to mitigate sea level rise due to climate change and to mitigate the risk of levee failure due to earthquake risk. The rationale is that by moving the point of diversion upstream, the incremental effects of salt water intrusion into the

¹ The federal government has not indicated that it will participate in the tunnel project and it appears that the Trump administration is focused on maximizing CVP supplies with existing infrastructure.

south and central Delta due to continuing sea level rise, and the potential for abrupt salt water intrusion due to levee failure, will be mitigated because the point of diversion will be far enough upstream to remain in fresh water--despite significant incursion of salt water into the Delta (whether over time due to climate change or suddenly due to catastrophic levee failure).

This approach abandons the south, west, and central Delta to salt water intrusion and seeks to protect export water supplies by moving the point of diversion to the far north out of reach of salt water intrusion. However, it ignores the fact that a fundamental purpose of the SWP is to *prevent* salt water intrusion into the Delta. “One of the major purposes of the projects was containment of maximum salinity intrusion into the Delta. By storing waters during periods of heavy flow and releasing water during times of low flow, the freshwater barrier could be maintained at a constant level.” (*United States v. State Water Resources Control Bd.* (1986) 182 Cal.App.3d 82, 107.) With sea level rise as an omnipresent increased source of salt water intrusion, diverting Sacramento River inflow upstream of the south and central Delta, and reducing through-Delta freshwater flows, is antithetical to the purpose of the SWP.

It is also antithetical to the dire need for more seaward flow in order to reverse the catastrophic decline of the Delta ecosystem now in progress. In the words of former United States Environmental Protection Agency Regional Administrator and current Secretary of the California Environmental Protection Agency, Jared Blumenfeld, “existing freshwater diversions and significantly diminished seaward flows have played a significant role in precluding the recovery of Bay Delta ecosystem processes and declining fish populations.” (August 26, 2014, Letter from USEPA Administrator Jared Blumenfeld to National Marine Fisheries Service Administrator Will Stelle, p.2.)

The only logical, and legally sound, approach to the problem is to *increase* the capacity for through-Delta freshwater flows in order to enhance the ability to push back anticipated increased salt water intrusion and at the same time address the ongoing ecosystem crisis. Reducing water withdrawals for export is the optimal response to provide more water for critically needed in-stream seaward flow. “[T]he condition of the Delta’s watery ecosystem, as measured especially by the population of wild salmon and other native fishes, has gone critical. The list of causes begins, but does not end, with all those water withdrawals, a kind of tax that leaves the system in a condition of chronic drought.” (Delta Plan, p. ES-2.)

Strengthening the levees and at the same time utilizing setback levees with channel margin habitat is the proper response to salt water intrusion from seismic risk. Although set in a heavily altered system, restored setback levees implement the requirements of Public Resources Code section 71154 for “using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing the long-term adaptive capacity of coastal and inland areas by perpetuating or restoring ecosystem services.” (Pub. Res. Code § 71154, subd. (c)(3).) Specifically, “levees that are combined with restored natural systems ... provide a wide array of benefits to people and wildlife.” (*Id.*) A wholly artificial tunnel, on the other hand, is not consistent with state policy on climate change adaptation as codified section 71154.

A single-tunnel project also itself contributes significantly to carbon emissions over the very long run and thereby hampers California’s ability to rapidly reduce carbon emissions. It does this because it locks in export of Delta water to the Metropolitan Water

District (“MWD” or “Met”), the major advocate and financial guarantor of the single-tunnel project, and to other south of Tehachapi contractors.²

The State Water Project (“SWP”) is one of the worst carbon offenders in the nation, if not the world. The SWP consumes approximately 8,000 gigawatt-hours of electricity each year. SWP dams and hydropower plants generate about half that much, leaving 4,000 gigawatt-hours of net energy consumption, much of which is generated by gas-fired power plants.³ (<https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan>, last visited April 12, 2020.)

DWR has taken some steps in recent years to address the most egregious climate offensive aspects of the SWP, including elimination of a filthy coal fired power plant in Nevada as a source of purchased SWP power and bringing online the Pearblossom Solar Facility. However, the fact remains that the SWP wastes enormous amounts of energy because delivering Delta water to Southern California is by far *the most* energy intensive source of water while much more energy efficient means of supplying southern California are readily available.

The SWP is the largest consumer of electricity in California and the Edmonston Pumping Plant (which pushes Delta water up and over the Tehachapi Mountains to Met’s service area) consumes 40% of SWP electricity usage.

(<https://www.watereducation.org/aquapedia/ad-edmonston-pumping-plant>, last visited April 15, 2020.) Edmonston is the largest single-point user of electricity in California. (David Carle, Introduction to Water in California (2d ed. 2016) p. 103.) Additional electricity consumption occurs at the pumping plants prior to Edmonston in the foothills, and at distribution pumping plants south of the Tehachapis.

Delta water delivered south of the Tehachapis consumes over 5,000 kWh/acre foot. By comparison, water re-use (including Reverse Osmosis filtration) supplies water at about 1,200 kWh/acre foot and many conservation and water efficiency measures are available that use only nominal amounts of energy. Even the more energy intensive alternatives come in at less than 2,000 kWh/acre per acre foot. (See, e.g., Professor Bob Wilkinson, August 23, 2007, presentation to the State Water Resources Control Board, *Water, Energy, and Climate*, p.9 [Attachment 1].)

It simply does not make sense in the face of a climate crisis to found California’s water future on pushing trillions of tons of water up and over a half-mile high mountain range. Current pumping burns massive amounts of fossil fuel. The clean energy we may acquire in the future must be applied to more rapidly replacing carbon based power in essential sectors of the economy. It would be hard to imagine a waste of energy more profligate than continued export of Delta water to Southern California.

It is time to implement a planned retreat from exporting Delta water south of the

² There are 13 south of Tehachapi SWP contractors, including Met. In recent years, Met has accounted for about 80% of Delta exports to Southern California and the other 12 contractor combined, about 20%. Several of the other south of Tehachapi contractors have received only de minimis amounts of SWP water in recent years. (Bulletin 132-17, Appendix B, Table B-5B.)

³ DWR proclaims itself a climate leader and a leader in carbon emission transparency. However, no evidence could be found to support those claims. For example, how much of the 4,000 gigawatts of non-hydropower consumption is attributable to carbon based generation and how much to renewables could not be found despite several hours searching DWR websites and bulletins. From the incomplete information found, DWR’s GHG emissions have been increasing since 2014. (<https://water.ca.gov/Programs/State-Water-Project/Clean-Energy>, last visited April 15, 2020.) If better information exists in an accessible format, Delta Alliance would appreciate DWR pointing the way in its response to this comment.

Tehachapi Mountains, thereby achieving the Delta Reform Act’s imperative to “reduce reliance on the Delta in meeting California’s future water supply needs” by completely replacing Met’s Delta water supply with “improved regional supplies, conservation, and water use efficiency,” (Wat. Code § 85021), and carefully reassessing the delivery of Delta water to other south of Tehachapi contractors.

I. Public Resources Code Section 71154 Requires That DWR Fully Consider A Non-tunnel Natural Systems Alternative.

Public Resources Code section 71154 is binding on all state agencies and requires that when state agencies are taking steps to adapt to climate change, in particular the development of new infrastructure, they develop an alternative that utilizes existing natural features rather than constructing large new artificial infrastructure:

When developing infrastructure to address [climate] adaptation, where feasible, a project alternative should be developed that utilizes existing natural features and ecosystem processes or the restoration of natural features and ecosystem processes to meet the project’s goals.

For purposes of this subdivision, “natural infrastructure” means using natural ecological systems or processes to reduce vulnerability to climate change related hazards, or other related climate change effects, while increasing the long-term adaptive capacity of coastal and inland areas by perpetuating or restoring ecosystem services ... [including] levees that are combined with restored natural systems, to provide clean water, conserve ecosystem values and functions, and provide a wide array of benefits to people and wildlife.

(Pub. Res. Code §§ 71154, subd. (c)(2) & (3).)

State agencies adapting to climate change are also required, to the maximum extent practicable, to “Protect[] and enhance habitat, species strongholds, and wildlife corridors that are critical to the preservation of species that are at risk from the consequences of climate change.” (Pub. Res. Code § 71154, subd. (g).)

The single-tunnel project is proffered to “address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events,” (NOP, p.2), and is therefore subject to section 71154. Read together with CEQA, section 71154 requires that DWR develop a non-tunnel Natural Systems Alternative for full study in any Environmental Impact Report (“EIR”) culminating from the NOP in order to comply with CEQA’s mandate to study a reasonable range of alternatives. We believe that the Natural Systems Alternative should be the preferred project.

II. The Natural Systems Alternative.

A. First, strengthen Delta Levees and use setback levees and channel margin habitat at critical and feasible locations.

Setback levees with channel margin habitat are feasible and cost-effective, at a cost of \$14 million or less per mile. (See, e.g., West Sacramento Setback Levee Project, <https://www.cityofwestsacramento.org/government/departments/community-development/flood-protection/levee-projects-overview>, last visited April 14, 2020.). Where set back levees are not practical, strengthening conventional levees would be much less costly per mile. For example, 4.7 miles of levee on Bouldin Island were

recently strengthened at a cost of \$3 million per mile. (http://www.mwdh2o.com/DocSvcsPubs/Delta_Islands/, last visited April 15, 2020.) An adequate portion the Delta's approximately 1100 miles of levees could be replaced or strengthened for far less than the \$15 billion plus or minus price tag of a single tunnel.

A tunnel mitigates levee failure risk only as to exported water supplies but ignores catastrophic damage to the Delta ecosystem and loss of fresh water supply to in-Delta users, including Delta communities and farms. Restored levees protect export supplies, in-Delta users, and not only protect the Delta ecosystem but greatly enhance it.

Restored levees, using setback levees in locations where feasible, are consistent with Delta Plan Recommendations:

Setting levees back from the riverbank can expand flood conveyance capacity and reduce flood risk while providing ecosystem restoration and recreational opportunities. Setback levees also allow opportunities for construction of an improved levee foundation and section using modern design and construction practices, thereby reducing risk of failure. Integrating fish-and-wildlife-friendly channel margin treatments into levee improvements can also help.

(Delta Plan, Chapter 7, as amended March 2020 , p.21.)

The Natural Systems Alternative might also consider flooding of selected Delta Islands. Intentionally breaching levees at some locations can mitigate the threat of future unplanned catastrophic levee failure in an earthquake and also create additional freshwater storage and habitat, serving the twin goals of ecosystem restoration and water system reliability. Although requiring careful study and planning before acceptance of any future project, freshwater storage on flooded Delta Islands has been found feasible and cost-effective in the past.

(<http://www.semitropic.com/pdfs/Delta%20Wetlands%20project%20EIR/209629-delta-wetlands-feir-20110817%20permissions.pdf>, last visited April 15, 2020.)

B. Second, implement a planned retreat from exporting of Delta water south of the Tehachapi Mountains.

Replacing Delta water exported to the Metropolitan Water District with new local and regional supplies is feasible and cost-effective.

Credible estimates of the cost of water delivered from the late WaterFix tunnel project ranged from about \$2400 to well over \$5,000 per acre foot. The Natural Resources Defense Council estimated the cost at \$2361 per acre foot. (Doug Obegi, MWD's WaterFix Cost Assessment is Inaccurate and Inadequate, August 11, 2017 [Attachment 2].) The Final WaterFix EIR estimated the yield of WaterFix at 172,000 acre feet per year. Dr. Rodney T. Smith, of Stratecon, Inc., produced a table analyzing WaterFix cost per acre foot at a range of yields. For 200,000 acre feet per year, the cost would be between \$4795 and \$8463 per acre foot, depending on the assumed risk premium. For 100,000 acre feet per year, the cost would be over \$9500 per acre foot. (Rodney T Smith, Impact of the Annual Yield of the Twin Tunnels Project on the Cost of Project Water, August 30, 2016 [Attachment 3].) There is no reason to believe that a new single tunnel project could deliver water more cheaply than the former WaterFix projections.

From 2012 to 2016, an average of about 1,095,000 acre feet per year of SWP water was delivered to Southern California. (Bulletin 132-17, table B5-B.) Even assuming that half

of Delta deliveries would be foreclosed without a tunnel (a scenario not supported by evidence, but apparently part of contract amendment negotiations) the cost per acre foot for a tunnel project would be over \$2,000 per acre foot utilizing Dr. Smith's former WaterFix projections.

Any credible cost estimate for single tunnel delivered water will make numerous other sources of supply more cost-effective than a tunnel.

Costs for replacing exported Delta water with local and regional supplies in Southern California would be less per acre-foot than supplies delivered through a single tunnel project. DWR estimated the mid-point cost for municipal recycled water as \$800 per acre foot. (DWR, California Water Plan 2013.) The WaterReuse Research Foundation has estimated the following costs for water supply alternatives per acre foot: direct potable re-use \$820–\$2000; indirect potable re-use \$820–\$2000; seawater desalination \$1500–\$2300; water use efficiency and conservation \$495–980. (WaterReuse Research Foundation, *The Opportunities and Economics of Direct Potable Reuse* (2014).)

The Metropolitan Water District of Southern California's 2015 Urban Water Management Plan identifies specific potential recycling projects with a yield of 680,000 acre feet per year but none of those projects are included in Met's projected supply figures. Met consistently overstates demand and understates local and regional supply potential in order to justify continued demand on Delta Water. (See, e.g., *Issue Brief, Mismatched*, Natural Resources Defense Council 2017.)

The untapped potential for stormwater capture in Southern California is at least 300,000 acre-feet per year. (See *The Untapped Potential of California's Water Supply: Efficiency, Reuse, and Stormwater Capture*, NRDC and Pacific Institute 2014; see also Testimony of Doug Obegi before the State Water Resources Control Board for unpublished county-by-county data, available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/nrdc.html.) The Southern California Water Coalition conducted a survey of stormwater capture projects in Southern California and found that the median cost per acre foot was \$1070. In the aggregate, for all the projects surveyed, there was a cost of \$132 million for a yield of 13,400 acre feet annually, or a cost of \$328 per acre foot over a 30 year period. (SCWC Stormwater Task Force, 2018 WhitePaper Update, available at http://www.socalwater.org/wp-content/uploads/scwc-2018-stormwater-whitepaper_75220.pdf, last visited April 16, 2020.)

Met has placed the cost of water savings through turf replacement at \$600 per acre foot. (http://mwdh2o.com/PDF_Newsroom/Turf_Removal_Program.pdf, last visited April 16, 2020.) Turf replacement, encouraging homeowners and businesses to replace thirsty green lawns with water-efficient landscaping, is perhaps one of the biggest untapped, cost-effective, sources of new water in Southern California. No data were found to indicate the total potential for turf replacement at this writing. Extrapolating from Met's figures, approximately one acre foot per year is saved for every 7400 square feet of turf replaced. With a service area of 5200 square miles, populated with millions upon millions of detached single family homes, and businesses, sprouting lush lawns, the potential must be at least in the hundreds of thousands of acre feet per year. If they do not exist, accurate figures for this potential should be developed. If DWR has information as to the potential for turf replacement, Delta Alliance would appreciate the provision of those figures in response to these comments.

Substantial new water is also available in Southern California through better indoor water conservation rebate and incentive programs, which are also currently limited in budget

and application. Estimates range from 1.4 to 2.4 million acre-feet of new water annually from untapped urban water conservation measures, including indoor measures and outdoor measures in the South Coast Hydrologic Region, most of which is comprised of Met's service area. (See *The Untapped Potential of California's Water Supply: Efficiency, Reuse, and Stormwater Capture*, NRDC and Pacific Institute 2014; see also Testimony of Doug Obegi before the State Water Resources Control Board for unpublished county-by-county data, available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/california_waterfix/exhibits/nrdc.html.)

Desalination technology is improving, and with advances in brine management, provides an additional, essentially unlimited, source of regional supply.

From 2012 through 2016, Met received an average of about 830,000 acre feet of SWP supplies per year. (Bulletin 132-17, table B-5B.) There can be little doubt that it is feasible to replace Met's SWP supplies with local and regional supplies that are cost effective, without the environmental damage to the Delta, and that are not wildly energy intensive as is pushing trillions of tons of water over a mountain range.

III. The Public Trust Doctrine Requires DWR To Consider Phasing Out Exports South Of The Tehachapi Mountains.

DWR has an affirmative duty to perform a public trust analysis of any tunnel project, which involves considerations beyond those required by CEQA. (See, e.g. California WaterFix Findings of Fact and Statement of Overriding Considerations, Part IV, Findings Regarding the Public Trust Doctrine.)

Even absent a new project, tunnel or otherwise, DWR has an ongoing duty of supervision to consider public trust principles in managing water resources. DWR's water rights, in particular as to place of use in Southern California, *are not vested*. DWR must consider changes in the allocation of water resources when new information makes a renewed public trust analysis appropriate:

The public trust doctrine and the appropriative water rights system are parts of an integrated system of water law. The public trust doctrine serves the function in that integrated system of preserving the continuing sovereign power of the state to protect public trust uses, a power which precludes anyone from acquiring a vested right to harm the public trust, and imposes a continuing duty on the state to take such uses into account in allocating water resources.

(*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 452.)

In particular, past allocation decisions may need to be revised in light of new information:

Once the state has approved an appropriation, the public trust imposes a duty of continuing supervision over the taking and use of the appropriated water. In exercising its sovereign power to allocate water resources in the public interest, the state is not confined by past allocation decisions which may be incorrect in light of current knowledge or inconsistent with current needs.

(*National Audubon*, 33 Cal.3d at 447.)

Contract provisions designating delivery to Southern California SWP contractors and DWR's water rights permits designating place of use in Southern California must give way to public trust considerations where a public trust analysis demonstrates that protection of public trust resources is feasible and reducing or eliminating diversions is in the public interest. The "state must bear in mind its duty as trustee to consider the effect of the taking on the public trust, and to preserve, so far as consistent with the public interest, the uses protected by the trust." (*National Audubon*, 33 Cal.3d at 446-447, citations omitted.)

"The state accordingly has the power to reconsider allocation decisions even though those decisions were made after due consideration of their effect on the public trust. The case for reconsidering a particular decision, however, is even stronger when that decision failed to weigh and consider public trust uses." (*National Audubon*, 33 Cal.3d at 447.)

Here, there is no doubt that ongoing diversions of Delta water to supply Southern California significantly harm public trust resources in the Delta, including driving several fish species to the brink of extinction. The Delta ecosystem is in crisis. There are multiple stressors but it is beyond dispute that lack of freshwater flow through the Delta, caused by excessive exports, is the master stressor that needs to be addressed before ecosystem recovery will be possible. (*See, e.g.*, August 26, 2014, Letter from USEPA Administrator Jared Blumenfeld to National Marine Fisheries Service Administrator Will Stelle, p.2; Delta Plan, p. ES-2; State Water Resources Control Board, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, p. 2 ["The best available science suggests that current flows are insufficient to protect public trust resources"]; p.5 ["Recent Delta flows are insufficient to support native Delta fishes Flow modification is one of the immediate actions available" to address ecosystem decline].)

But the need to protect public trust resources in the Delta must be balanced against the consumptive needs of Southern California. "As a matter of practical necessity the state may have to approve appropriations despite foreseeable harm to public trust uses." (*National Audubon*, 33 Cal.3d at 446.) However, the public interest balance has changed significantly in recent years due to three factors: 1) Increasing awareness as to the availability of feasible, cost effective, alternative supplies that do not harm public trust resources; 2) The awareness of climate change and the energy / GHG impacts of exporting water over the Tehachapi Mountains; and 3) The dramatic worsening of Delta ecosystem decline.

At one time in history, perhaps when the Edmonston Pumping Plant went into operation in 1972, a public interest balancing may have favored continued exports. The Delta ecosystem was not yet in catastrophic decline, technology for alternative sources of water was not yet developed, and the climate impacts of enormously energy intensive pumping were not understood. The societal good of supplying water might have outweighed impacts on the Delta ecosystem—so far as those impacts were understood. However, we know today that the public interest counterbalance of supplying water to Southern California is obliterated by the climate impacts of pumping that water over the Tehachapi Mountains, especially in light of far more energy efficient and cost-effective sources of water. There is no longer any public good to weigh against the need to reduce harm to the Delta ecosystem as the benefit to society of exported water is canceled out by the climate impacts of export pumping.

Any public trust analysis culminating from the NOP should fully consider phasing out exports to Met.

IV. Locating Intakes At Former WaterFix Locations, And A Through-Delta Tunnel Route Violate The Delta Reform Act, Are Inconsistent With The Delta Plan, Violate California Constitution Article X, Section 2, And Offend Principles Of Environmental Justice.

The NOP continues to limit intake location to one of three former WaterFix intake sites. We know from conclusive evidence developed in the former WaterFix proceedings that the massive concentrated construction impacts associated with intake siting in this location place enormous and unreasonable stress on the nearby Delta legacy communities, including Hood, Clarksburg, and Locke.

The massive size of the intake(s) at this location is an unreasonable method of diversion. California Constitution, Article X, section 2, expressly prohibits any “unreasonable method of diversion of water.” The NOP violates this provision of our state constitution.

Delta Plan Policy DP P2 (23 CCR §5011) requires that DWR “Respect Local Land Use When Siting Water or Flood Facilities or Restoration Habitats.” Extensive evidence developed during the State Water Resources Control Board and Delta Stewardship Council Proceedings for the former WaterFix shows that it is not feasible to site intakes in these locations consistent with Policy DP P2.

Hood is a largely low income and minority community that would bear the brunt of intake impacts, including increased air pollution from diesel exhaust associated with construction activities. Locating intakes as shown in the NOP is not consistent with environmental justice principles expressed in Government Code section 65040.12.

DWR continues to push for intake siting near these legacy communities not because of any physical advantage to locating intakes here but because it believes it retains an antiquated water right for a point of diversion. Siting an intake here would, on DWR’s belief, require only a petition for a change in the point of diversion and would not initiate a new water right. However, this is not a legitimate justification for placing intakes in an unreasonable manner. Intake location should be considered based on minimal impact to Delta communities and locations not included in the current NOP need to be open for consideration.

Finally, it has been conclusively proven through extensive evidence introduced in the former WaterFix proceedings that a tunnel route through the Delta is not feasible. Impacts on Delta recreation and navigation of a through-Delta route are unacceptable. It is a waste of time and money to continue to pursue a through-Delta tunnel route as shown on the NOP. Attachment 4 hereto is a slide show presented to the Delta Stewardship Council during the former WaterFix proceedings summarizing some of the evidence showing that the intakes cannot be located as shown on the NOP and that a through-Delta tunnel route is not an option.

V. Conclusion.

The NOP should be redrafted to provide for a Natural Systems Alternative that includes phasing out exports of Delta water to the Metropolitan Water District, strengthened levees, and increased through Delta seaward flow to manage salinity intrusion and recover the Delta ecosystem. Intake locations at the sites of former WaterFix intakes and any through-Delta tunnel route should be eliminated from consideration now.

Sincerely,

Michael A. Brodsky

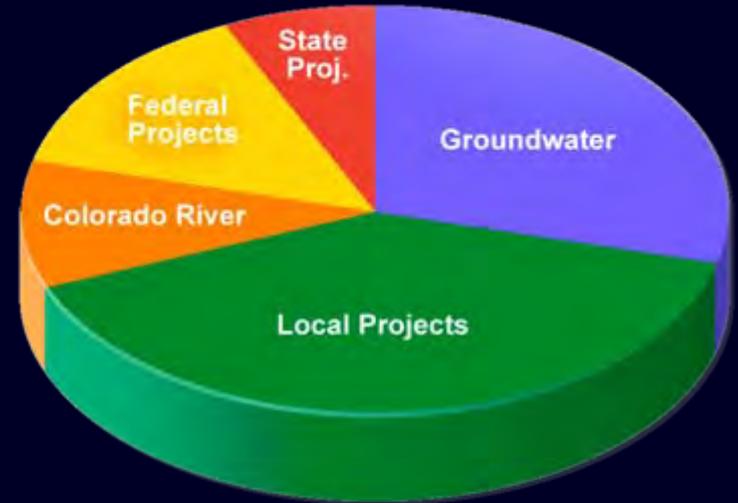
ATTACHMENT 1

Water, Energy, and Climate

State Water Resources Control Board
California Department of Water Resources

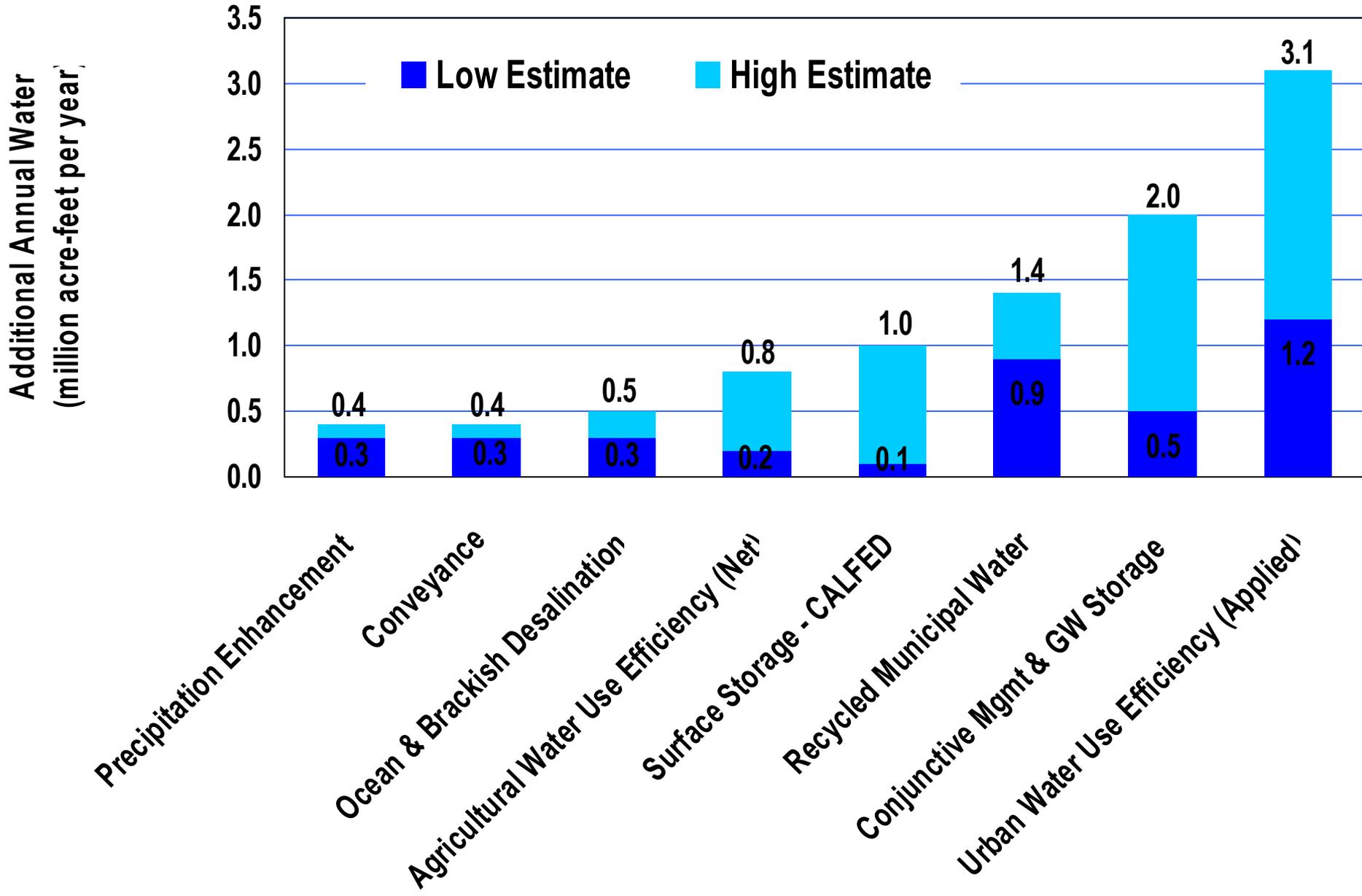
Sacramento
August 23, 2007

State Water Supply Systems

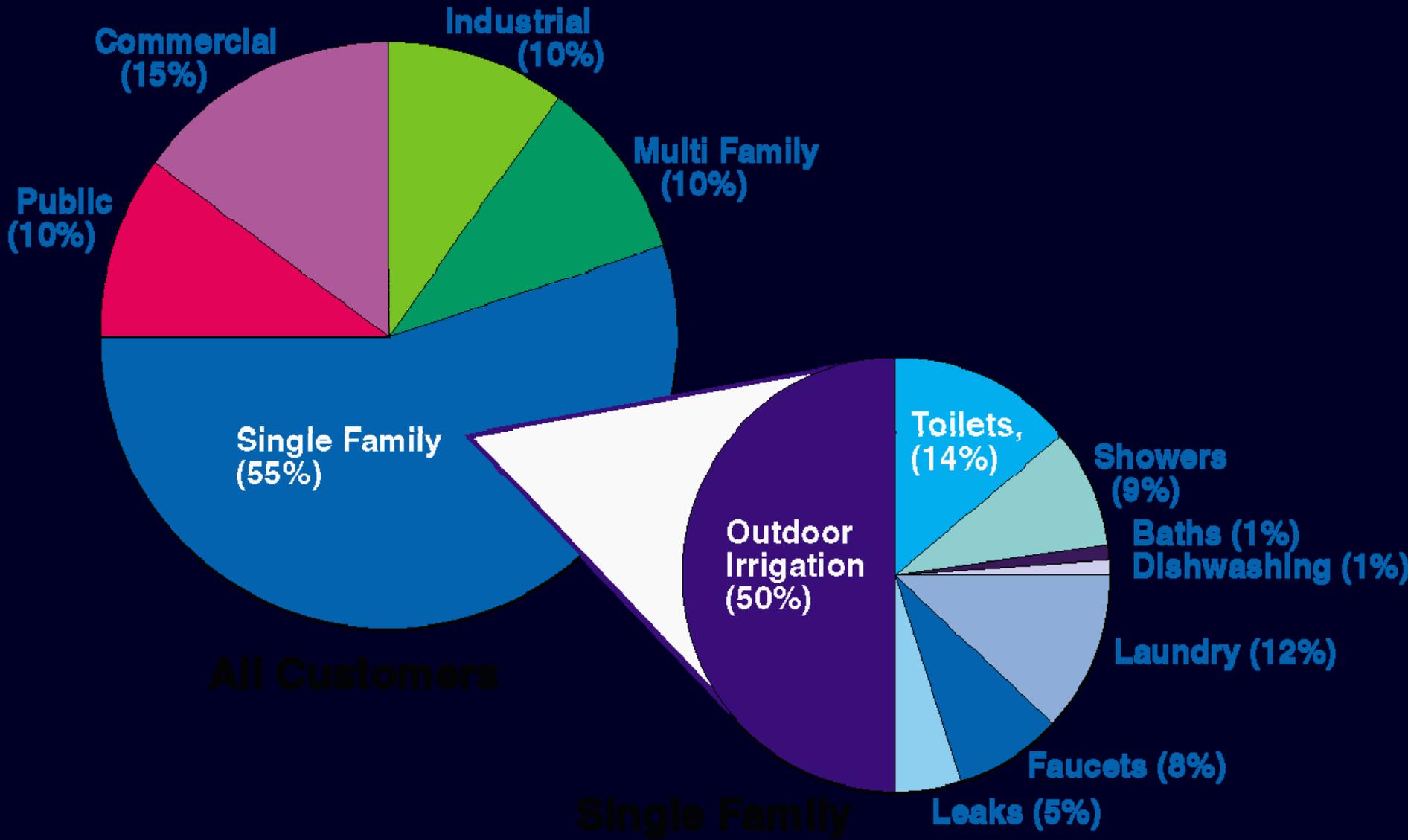


Lester Snow, California
Department of Water Resources

California Water Supply Options



Urban Water Uses



Waste = Opportunity



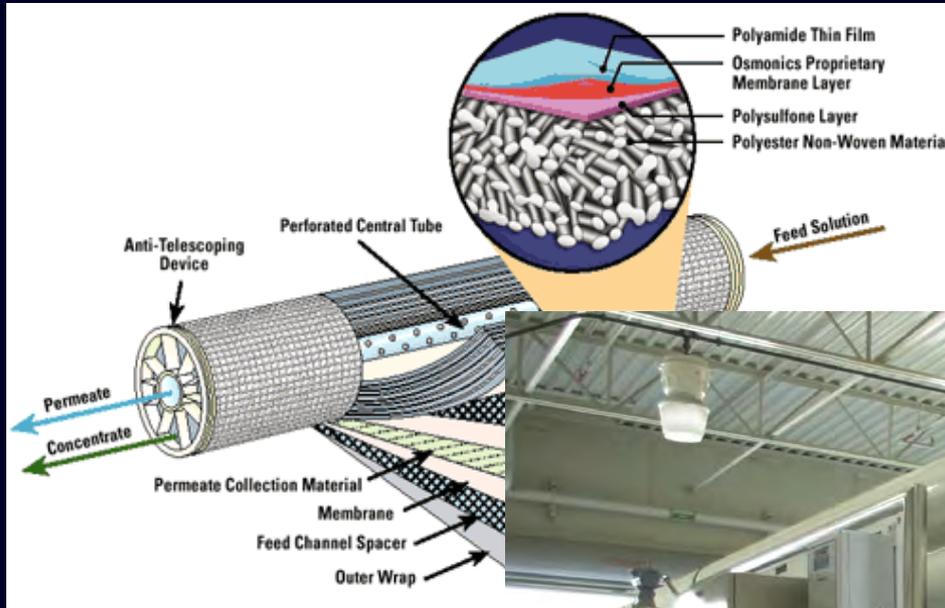
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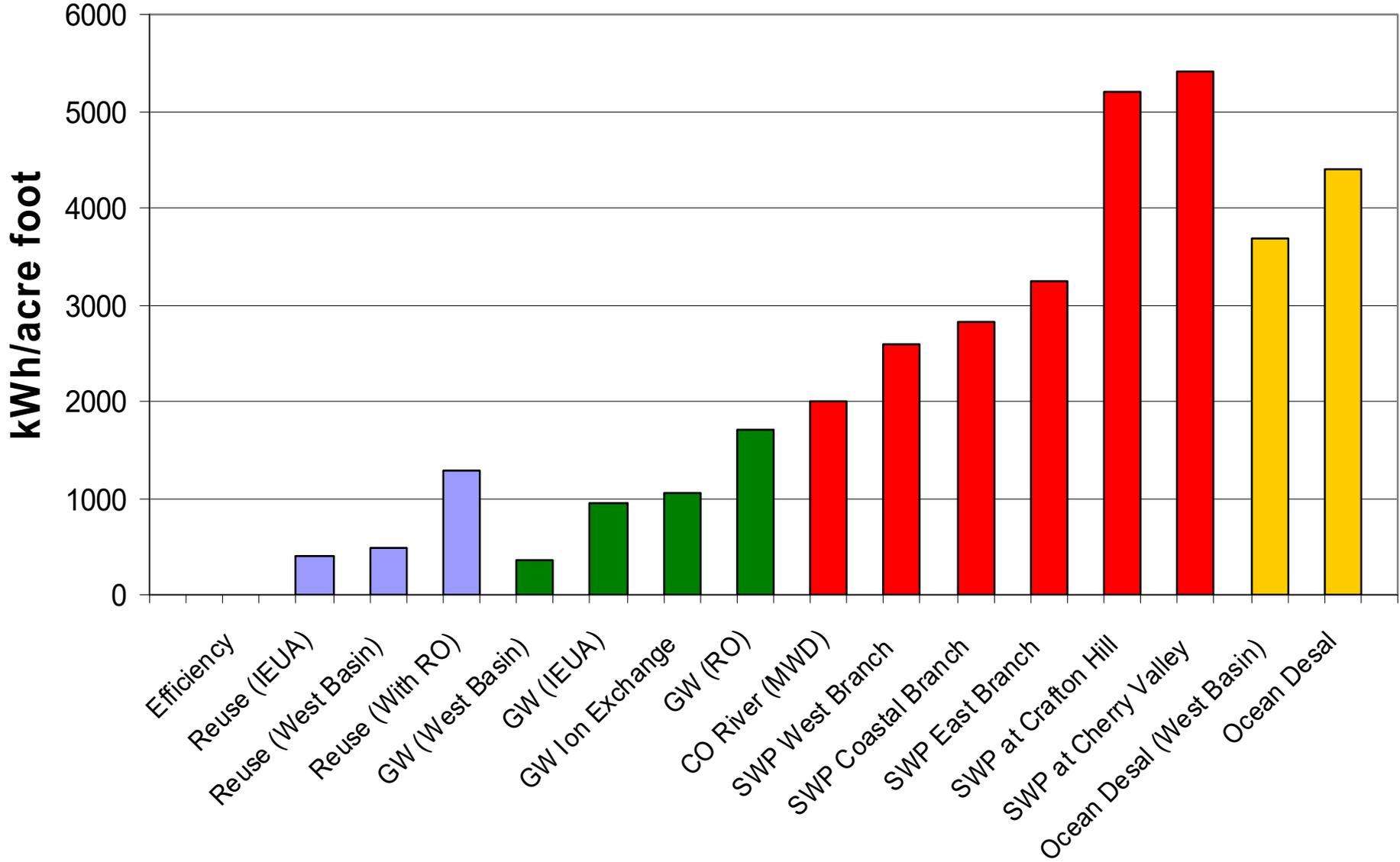
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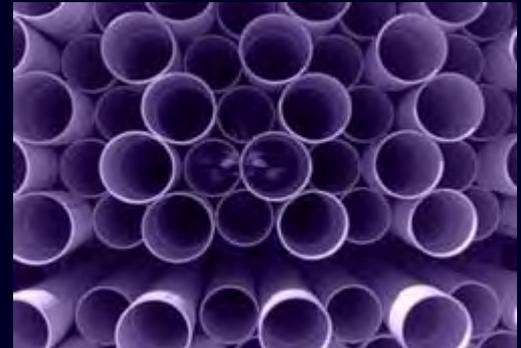
Advanced Water Treatment



Energy Intensity of Selected Water Supply Sources in Southern California



Recycled Water



Stormwater Flows



Infiltration Islands



Courtesy of Bruce Ferguson

Bioretention



Rain Gardens



Permeable Surfaces



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ATTACHMENT 2



EXPERT BLOG > DOUG OBEGI

MWD's WaterFix Cost Assessment is Inaccurate and Inadequate

August 11, 2017

Doug Obegi

The Metropolitan Water District of Southern California (MWD) released [its final white paper](#) on paying for the California WaterFix project yesterday. Based on my initial review, as discussed below the white paper relies on two inaccurate assumptions, which significantly bias the analysis and conclusions and provides the Board of Directors with misleading and inaccurate information. An accurate

assessment of costs and cost allocation is critical for the Board of Directors to exercise their fiduciary duty to ratepayers across Southern California, as they decide whether to commit billions of dollars over the coming decades in higher water rates and property taxes, to pay for WaterFix. MWD's white paper provides a wholly inadequate basis for the Board of Directors to exercise that fiduciary duty. MWD's Board of Directors should demand an external review of the memo (for instance, the Westlands Water District had Goldman Sachs provide a presentation to their Board of Directors), and more time to consider the pros and cons, before making a decision on whether to fund the tunnels.

Inaccurate assumption #1: SWP will pay 55% of the cost for WaterFix.

MWD's memo claims that there will be a 55%/45% split of SWP and CVP cost allocation for WaterFix. This is almost certainly inaccurate and significantly understates the cost allocation for the State Water Project and MWD. Because the Bureau of Reclamation is not intending to opt into WaterFix (see [USBR's memorandum regarding CVP contractor participation in WaterFix](#)), two groups of CVP contractors will continue to get nearly 20% of the total average water exports from the Delta, but will not pay

for WaterFix: the San Joaquin River Exchange Contractors (875 taf/year), and south of Delta wildlife refuges (271 taf/year). As a result, the SWP's share of WaterFix cost allocation is likely to be at least 65-75%, generously assuming all other CVP contractors opt in, based on the SWP's share of the remaining Delta water exports.

This is not a new problem. In a 2015 [cost-benefit analysis](#) commissioned by the State of California, David Sunding “assume[d] that the federal government or some other entity makes a roughly \$3.9 billion contribution to the capital and operating costs of WaterFix to cover the costs allocated to the exchange contractors and refuges. If these costs must be borne by the other Delta water users, then the net benefits of the project are even more negative for agricultural contractors.” Because the federal government will not be paying these costs, the SWP and MWD will have to pay a higher share of the total costs of WaterFix. In a prior [blog](#) I explained why Goldman Sachs' presentation to the Westlands Water District, which similarly failed to account for the costs associated with Delta exports to the Exchange Contractors and wildlife refuges, was also inaccurate.

This incorrect assumption has major implications for MWD member agencies. Instead of paying for 26% of total WaterFix costs, assuming that all other SWP and CVP contractors opt in, MWD is likely to pay a minimum of 32-35% of the total cost. This incorrect assumption is likely to increase the cost to MWD and other SWP contractors by nearly 30% compared with what MWD presented in its white paper.

In addition, MWD's memo largely ignores what happens if other contractors opt out (USBR's Participation Memo assures CVP contractors that they will not suffer any water supply impacts or financial impacts if they opt out of WaterFix). If other contractors opt out, then the share of those contractors who opt in would necessarily have to increase. Similarly, the prior financial analysis [for the California Treasurer's office](#) also noted that the contracts will have to include provisions to deal with contractors defaulting or opting out later (step up provisions), as well as provisions to deal with how agricultural contractors can afford to pay for the project in dry and drought years when they get little or no water from the Delta. And if the contractors decide to capitalize interest payments during the construction period (as some other analyses have assumed), this would

also increase the repayment costs. All of these factors are likely to result in additional fiscal impacts that MWD ignores.

NOTE: MWD and other SWP contractors apparently have been meeting with the Bureau of Reclamation and CVP contractors for months to discuss WaterFix cost allocation, but they have refused to make any of those documents publicly available. NRDC filed a request for these documents under the Public Records Act on April 10, 2017, but the California Department of Water Resources has repeatedly delayed providing any documents in response to our request.

Inaccurate Assumption #2: WaterFix will increase water supply by 1.3 million acre feet.

MWD's memo asserts that WaterFix would increase water supply by 1.3 million acre feet per year, with MWD getting 337,000 acre feet of additional water supply per year. In contrast, the final EIS/EIR for WaterFix estimates that the State Water Project would increase exports by 186,000 acre feet, and the Central Valley Project would reduce exports by 14,000 acre feet, for a total increase of 172,000 acre feet per year. Of course, one could ask why CVP contractors would agree to pay half the cost of a project

that reduces their water supply, but we'll ignore that problem for now.

MWD member agencies should be alarmed by MWD's continued use of this fake baseline to estimate water supply costs. Why are staff hiding behind fake numbers, and refusing to use the numbers in the EIS/EIR to calculate per acre foot costs? MWD's continued use of these false numbers to compare with other water supply options is false and misleading. Indeed, MWD's use of this fake baseline to estimate increased water supply might be considered fraudulent if it was asserted in an official statement for a bond or other financial document.

In contrast, if we use MWD's estimated \$207M annual cost for WaterFix (*ignoring incorrect assumption #1 above*), and assume that MWD gets 47.13% of the 186,000 acre feet per year increase in SWP exports from the final EIS/EIR (*fixing incorrect assumption #2*), **then the cost per acre foot is approximately \$2,361**. Even ignoring incorrect assumption #1, fixing incorrect assumption #2 shows that the cost per acre foot is nearly four times the cost estimate in MWD's memo. If we were to try to fix incorrect assumption #1 and incorrect

assumption #2, the costs would skyrocket.

Conclusion #1: *WaterFix is less cost effective than local water supply projects.*

Contrary to MWD’s incorrect assumptions and assertions, WaterFix is more expensive than other local water supply projects. As shown above, even without fixing incorrect assumption #1, fixing incorrect assumption #2 shows that the cost of WaterFix is more than \$2,300 per acre foot, significantly more expensive than the cost of local recycled water projects and is nearly the same as desalination. There are numerous local water supply projects that MWD Member Agencies have identified in their urban water management plans, which will enable Southern California to reduce reliance on the Delta, increase drought resilience, and help protect the economy and environment. Below are just a few examples of projects that are significantly cheaper than WaterFix:

Project	Cost	Water Supply Yield (average)	Source
	\$2.7		

<p>Carson Regional Water Recycling Project</p>	<p>billion capital cost</p> <p>\$129M annual O&M cost</p> <p>\$1,600 per acre foot</p>	<p>168,000 AF/year (150 MGD)</p>	<p>Source: MWD</p>
<p>Pure Water San Diego</p>	<p>\$1,700- \$1,900 per acre foot</p>	<p>90,000 AF/year (83 MGD)</p>	<p>Source: City of San Diego</p>
<p>Tillman Groundwater Replenishment Project</p>	<p>\$400M capital cost</p> <p>\$19M annual O&M Cost</p>	<p>30,000 AF/year</p>	<p>Source: Los Angeles Department of Water and Power</p>

<p>OCWD Groundwater Replenishment System, Phase III</p>	<p>\$252M</p>	<p>33,000 AF/year (30 MGD)</p>	<p>Source: Orange County Water District</p>
<p>Inland Empire Recycled Water Distribution System</p>	<p>\$81.8M capital cost \$3.6M annual O&M cost</p>	<p>20,000 AF/year</p>	<p><i>Source:</i> <i>MWD 2015</i> <i>UWMP;</i> <i>IEUA 2015</i> <i>UWMP</i></p>
<p>LA Basin Regional Stormwater Capture</p>	<p>\$1,300 per acre foot</p>	<p>43,300 AF/year</p>	<p>Source: Los Angeles County Public Works, LA County Flood Control District, U.S. Bureau of Reclamation</p>

LA County Flood Control Dams modification (stormwater capture)	\$183 per acre foot	150,000 AF/year	Source: Los Angeles County Public Works, LA County Flood Control District, U.S. Bureau of Reclamation

Conclusion #2: MWD’s White Paper provides an inadequate basis for the Board of Directors to make this major fiduciary decision.

MWD’s Board of Directors has a fiduciary duty to the millions of Southern Californians who would have to pay for this project. If WaterFix is approved, Southern Californians will pay for the project for decades; that’s true even if they don’t use any water from the Bay-Delta, since [MWD has assumed](#) it will collect more than \$100M per year in property taxes across the region to pay for WaterFix. The Board of Directors must have an accurate assessment of the costs and cost allocation to make this

decision. In addition to understanding what the actual cost of WaterFix is likely to be, the Board of Directors must also decide whether WaterFix is a better investment than other water supply projects, and whether paying for the tunnels precludes more cost-effective investments in local and regional water supply projects that the member agencies have planned in their Urban Water Management Plans. MWD's white paper fails on all counts.

Ultimately, MWD's White Paper on Cost Allocation is misleading, inaccurate, and an inadequate basis on which to decide whether to spend billions of dollars over the coming decades. If I were on the Board of Directors of MWD, I would demand an independent review and significantly more time to weigh the pros and cons of this momentous decision.

ABOUT THE AUTHORS



DOUG OBEGI

Director, California River
Restoration, Water Division,
Nature Program

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\$35	\$50	\$75	\$100	\$200
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OTHER

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ATTACHMENT 3



To: Jeffrey Michael

From: Rodney T. Smith

RE: Impact of the Annual Yield of the Twin Tunnels Project on the Cost of Project Water

Date: August 30, 2016

This memorandum responds to your inquiry for an update of my analysis on the above matter I originally published in September 2013. As with any long-term project, expectations about the future are critical for project assessment. There are no guarantees. We can identify the implications of a range of possible outcomes.

Structure of Project Commitment

Like any infrastructure project, the Twin Tunnels requires significant investments up front, with a significant delay between the timing of financial commitments and start of project operations. With the design and construction period currently anticipated to last fifteen years before the start of project operations, a meaningful economic valuation of project costs must address the timing issue.¹

The Annual Cost of Twin Tunnels Water

The table below shows how the annual cost (2014\$) varies with average annual yield of incremental water supplies from the project.² Use your own expectation about the future water supply situation with and without the tunnels. Go down the first column until you reach your estimate of the annual (incremental) yield of the tunnels. Go across the row for the annualized cost estimate that is consistent with your project risk assessment. If you believe that project risk (other than hydrology) is as sound as a U.S. Treasury Note or Bond, then stop at the estimated water cost for the risk premium of 0%. Keep going if you think that there are material project risks.

California water utilities earn risk premium 150 basis points (1.5%) above the yield on U.S. Treasury Notes. A risk premium of this magnitude seems reasonable given the well-known financial risks of “mega infrastructure projects” and the legendary environmental risks confronting the State Water Project. Therefore, the annual cost of project water would fall within the amounts given in the last two columns in the table.

¹ To address the timing issue, the annualized cost of water is estimated by dividing the present value of project costs (design, construction, land acquisition, mitigation, commissioning and operations and maintenance) by the present value of water anticipated water deliveries using an inflation-adjusted interest rate. The resulting annual cost represents the financial equivalent of the project value of project costs by paying the estimated annual cost at the time of project deliveries.

² See attachment for discussion of assumptions.

The annual cost of project water must be considered within the context of water quality (untreated), location (Tracy) and reliability (non-firm supply).

**Annualized Cost of Twin Tunnels Water (2014\$)
by Incremental Yield of Tunnels**

Annual Yield (acre feet)	Risk Premium		
	0%	1%	2%
100,000	\$9,590	\$12,817	\$16,926
200,000	\$4,795	\$6,408	\$8,463
300,000	\$3,197	\$4,272	\$5,642
400,000	\$2,397	\$3,204	\$4,231
500,000	\$1,918	\$2,563	\$3,385
600,000	\$1,598	\$2,136	\$2,821
700,000	\$1,370	\$1,831	\$2,418
800,000	\$1,199	\$1,602	\$2,116
900,000	\$1,066	\$1,424	\$1,881
1,000,000	\$959	\$1,282	\$1,693
1,100,000	\$872	\$1,165	\$1,539
1,200,000	\$799	\$1,068	\$1,410
1,300,000	\$738	\$986	\$1,302
1,400,000	\$685	\$915	\$1,209

Annual Yield (acre feet)	Risk Premium		
	0%	1%	2%
1,500,000	\$639	\$854	\$1,128
1,600,000	\$599	\$801	\$1,058
1,700,000	\$564	\$754	\$996
1,800,000	\$533	\$712	\$940
1,900,000	\$505	\$675	\$891
2,000,000	\$479	\$641	\$846

Assumptions of Analysis

<i>Item</i>	<i>Assumption</i>	<i>Comment</i>
Design and Construction Costs	\$14.9 billion (2014\$)	Program Budget ³
Mitigation Costs	\$796 million (2014\$)	California WaterFix Mitigation Cost Estimate ⁴
Operations & Maintenance Cost	\$25.1 million for 5 years and \$38.1 million thereafter (2014\$)	2012 BDCP estimate
Timing of Design and Construction Costs	Pro-rated over periods identified in DCE Program Schedule ⁵	
Timing of Mitigation Costs	Prorated over construction period	
Project Cost Increases	Real cost of design and construction increase at 1% annually	Based on historical record of Bureau of Reclamation indexes increasing by 1.1% faster than inflation since 2000
Mid-year adjustment for calculation of present value	Costs incurred throughout the year	
Debt Service Reserve	50% of annual debt service	Valuation considers earned

³ AGREEMENT REGARDING CONSTRUCTION OF CONVEYANCE PROJECT BETWEEN THE DEPARTMENT OF WATER RESOURCES AND THE CONVEYANCE PROJECT COORDINATION AGENCY , Budget | Exhibit E | V. 4

⁴ *Ibid*

⁵ *Ibid*

<i>Item</i>	<i>Assumption</i>	<i>Comment</i>
		interest and terminal value of debt reserve at the end of project financing
Real Interest Rate	2.275%	Based on DWR's estimate of interest rate and inflation

ATTACHMENT 4

SAVE THE CALIFORNIA DELTA ALLIANCE

WATERFIX VIOLATES POLICY DP P2

DP P2 – Respect Local Land Use When Siting Water or Flood Facilities or Restoring Habitats

“Water management facilities, ecosystem restoration, and flood management infrastructure *must* be sited to avoid or reduce conflicts with existing uses....”

WaterFix Intakes
Improperly Sited At
Delta Legacy
Communities
Clarksburg & Hood

WATERFIX FEIR ADMITS IMPACTS ON CLARKSBURG AND HOOD

- “[WaterFix construction will] result in changes to the rural qualities of these communities during the construction period....”
- “Effects associated with construction activities could also result in changes to community cohesion....”
- “..adverse social effects could also arise as a result of declining economic stability in communities closest to construction effects....”
- “[N]oise-related effects on residential property could lead to localized abandonment of buildings.”

DEAFENING PILE-DRIVING NOISE FROM INTAKE CONSTRUCTION

- Construction of WaterFix includes driving **23,900 piles** at twelve construction areas spread across the Delta.
- A total of 10,909,704 strikes from impact hammers will be required to drive the piles home.
- The majority of these piles will be driven at the three intake structures located near Clarksburg, Hood, Locke, and Walnut Grove.
- Intakes 2,3, and 5 will each experience **90,000 pile strikes per day** during pile driving activities. Over an eight hour shift, that is three strikes per second.

(SCDA-82, p.3.E-4 - 3E-5: 2-11;
28-33)

NOISE IMPACTS ANALYZED BY ACOUSTICAL ENGINEER CHARLES SALTER

Charles M. Salter, PE President



Mr. Salter has practiced acoustical engineering for over 40 years. With educational backgrounds in architecture, planning, engineering, and business, he has conducted a wide range of consulting in the areas of architectural acoustics, noise control engineering, and environmental noise impact. As an expert witness, Mr. Salter has been involved in over 100 legal cases in California, Arizona, Nevada, Utah, Oregon, Washington, and Hawaii. He has testified in over 20 court trials and arbitrations and has given more than 70 depositions. The cases have involved noise sources such as freeways, rapid transit, plumbing systems, music, mechanical equipment, aircraft flyovers, and the San Francisco cable car system.

education

Boston College MBA
Finance, 1972

Massachusetts Institute of
Technology, BS Art and Design,
major in Architecture,
minor in City Planning, 1969

Tufts University BSCE
major in Structural Engineering,
minor in Economics, 1965

publications

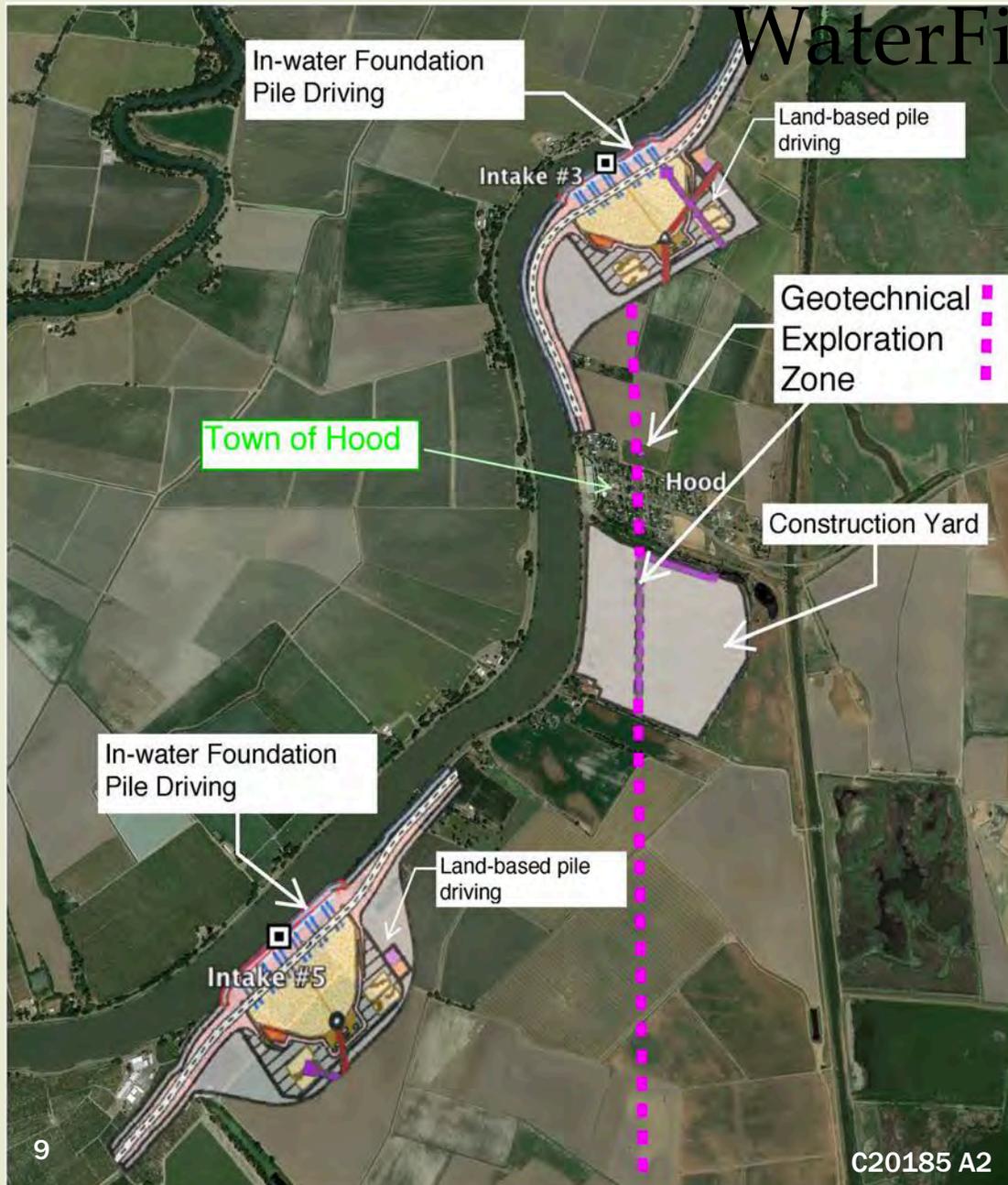
Coauthor, *ACOUSTICS:
Architecture, Engineering, the
Environment* (1998 William Stout
Publisher)

Sound Levels From Pile Driving Calculated by Acoustical Engineer Charles Salter:

“We estimate that the sound from the ten million plus impact hammer strikes will be 115 dBA at a distance of 50 Ft from the source. 115 dBA is very loud, roughly equivalent to the sound produced by a siren on an emergency vehicle.”

When given the opportunity
at SWRCB WaterFix
Hearings, DWR's experts
declined to dispute any of
Mr. Salter's findings.

Town of Hood Dwarfed by California



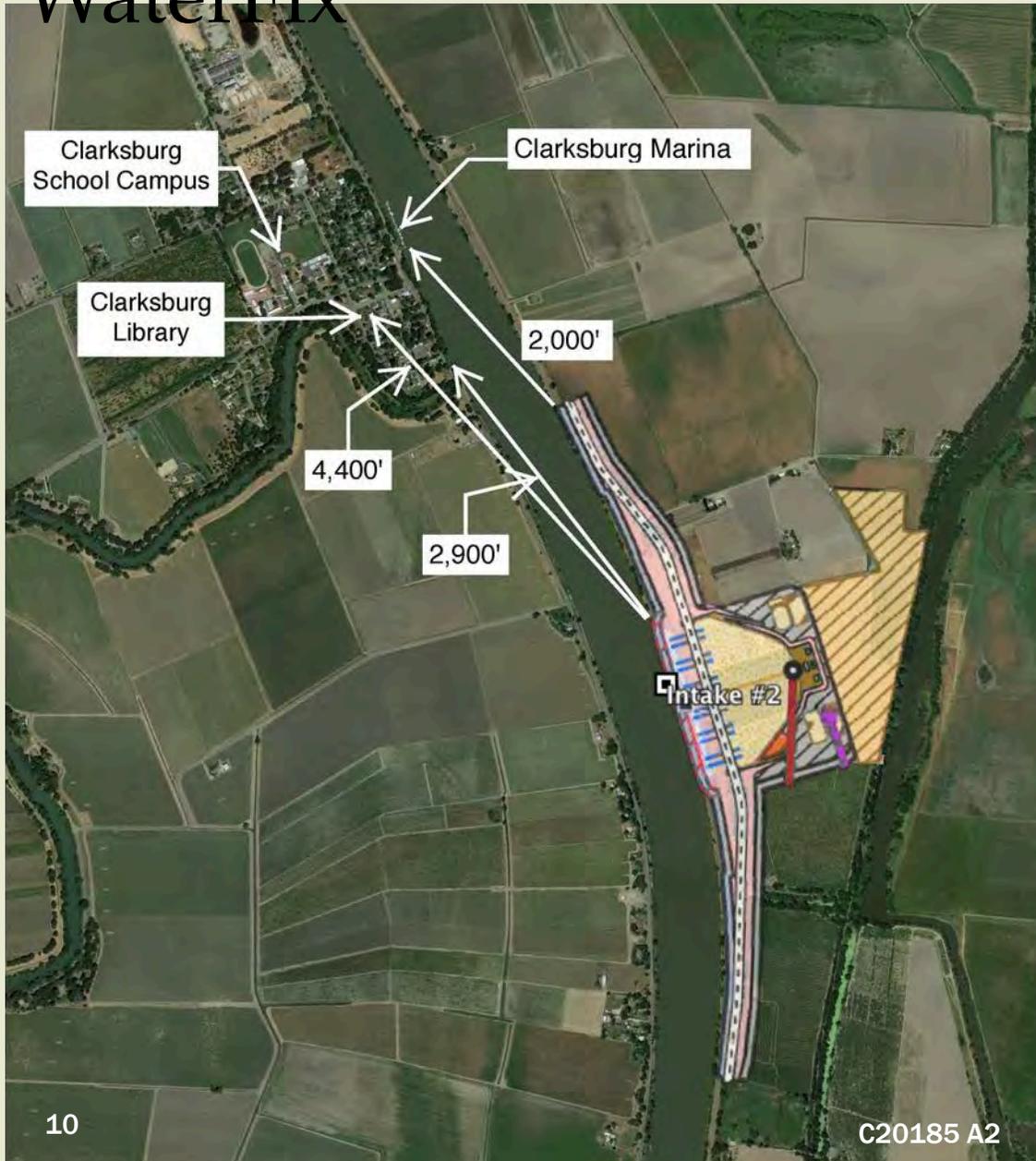
**SOUND LEVELS FROM
CONSTRUCTION NOISE
AND PILE DRIVING:**

Town of Hood = 80 dBA

(SCDA - 65, p.2: 12-16, x.4.000015)

*80 dBA equivalent
to a freight train 15
meters away.*

Town of Clarksburg Impacted by California WaterFix



SOUND LEVELS FROM CONSTRUCTION NOISE AND PILE DRIVING:

Clarksburg Marina = 75 dBA

Clarksburg Library = 76 dBA

Clarksburg School = 76 dBA

(SCDA – 65, p.2: 12-16, x.4.000015)

Salter concludes:

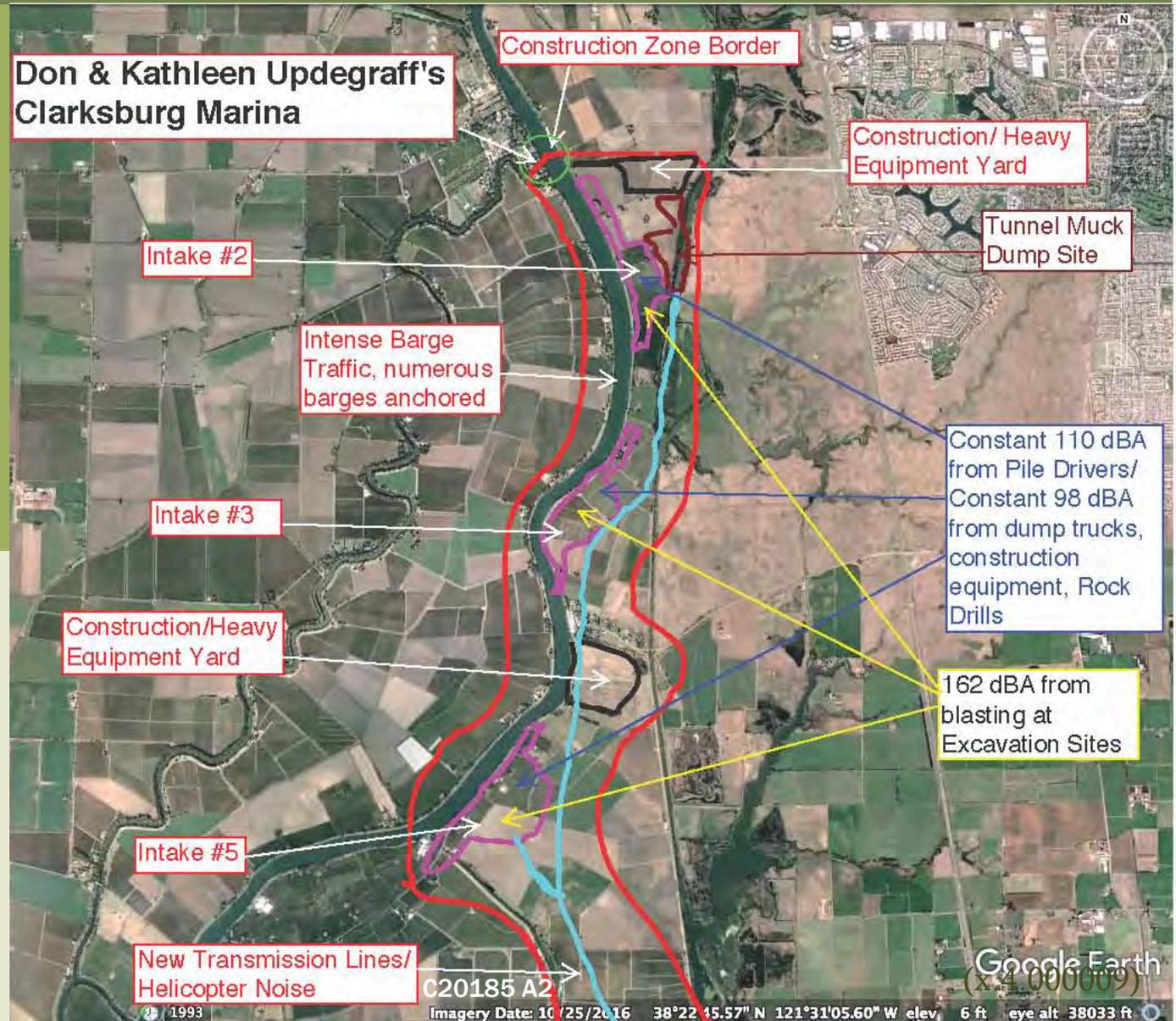
“[The construction noise] will interfere considerably with speech communication in the communities of Hood and Clarksburg, requiring people to raise their voices. Interference with such a basic activity as speech is likely to have a significant negative impact on the communities, making them unattractive places to live and visit.”

CLARKSBURG / HOOD CONSTRUCTION ZONE IMPACT CATASTROPHE

WaterFix
schedule shows
8 years
construction at
intakes.

(SCDA-83)

*Would you want
to live through
this for 8 years?*



WaterFix FEIR Conclusion
Regarding Multiple Noise Impacts
From Intake Construction:

“Significant and Unavoidable”

22 year Clarksburg resident - Barbara Daly's comments on WaterFix FEIR

“These are small towns and people here do not have a lot of money and there is not a lot of opportunity to make money here. Our communities are held together by sense of place and home. We stay here because it is quiet and peaceful and the outside world doesn't much intrude.

(July 10, 2017, comments on FEIR
comment table 3-3)

22 year Clarksburg resident - Barbara Daly's
comments on WaterFix FEIR continued..

“Hood will likely be abandoned entirely to become a ghost town. There will be large scale abandonment in Clarksburg. The historical integrity of Locke and Walnut Grove, situated within their historical vernacular landscape, will be lost forever.”

(July 10, 2017, comments on FEIR
comment table 3-3)

Clarksburg Marina Owners - Don and Kathleen Updegraff's Comments on WaterFix FEIR

“[Noise from WaterFix construction will] drive all our customers away and put us out of business. [I]t is likely none of the businesses will return even after construction is complete because the whole area will be an industrial zone due to the intakes.”

Let's Turn to Delta-wide
Impacts On Recreation,
Particularly Boating
and Marinas.

COEQUAL GOALS

- “Providing a more reliable water supply for California, and
- Protecting, restoring, and enhancing the Delta ecosystem.

These goals, the Legislature added, *must* be met in a manner that:

- *Protects and enhances* the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.”

WATERFIX OVERWHELMS RECREATION THROUGHOUT THE DELTA

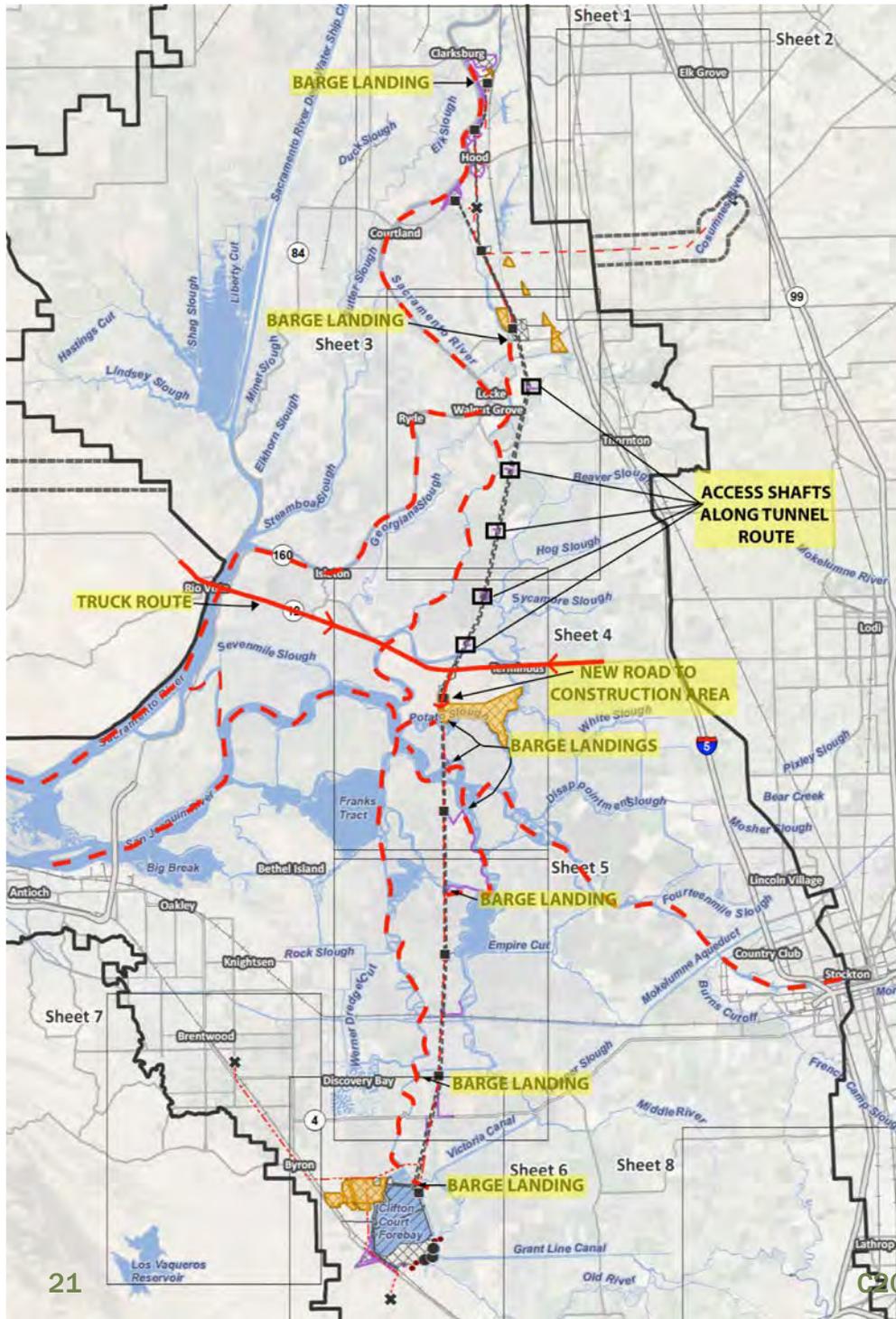
- Tunnel muck dumps on Delta Islands (30,000,000 cubic yards)
- 18,800 barge trips concentrated in summer recreational boating season
- Barge landings located in prime Delta recreational anchorages
- Pile driving
- Heavy truck traffic on 2 lane Delta Roads
- Traffic Backups due to draw-bridge openings for barges

CEQA CONCLUSION:

“Construction of Alternative 4A intakes and related water conveyance facilities would result in permanent and long-term (i.e., lasting over 2 years) impacts on well-established recreational opportunities and experiences in the study area because of access, noise, and visual setting disruptions that could result in loss of public use. These impacts would occur year-round.

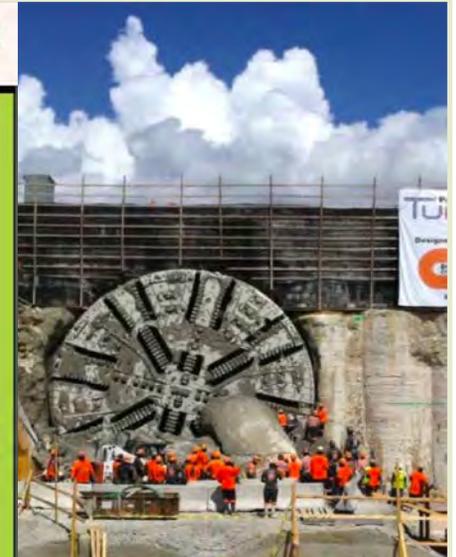
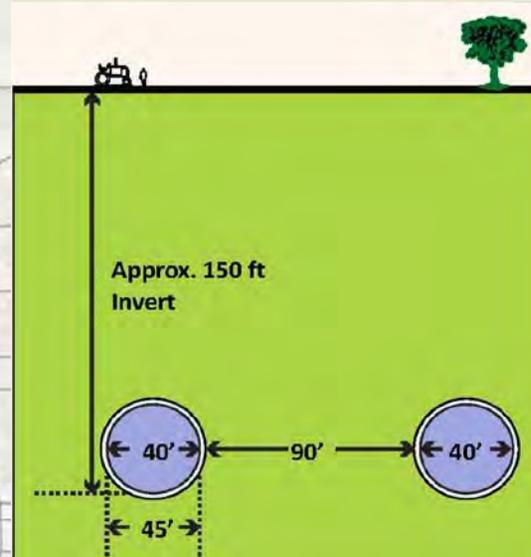
* * *

Therefore, these impacts are considered significant and unavoidable”



EXCAVATED TUNNEL MATERIALS SITES

BARGE ROUTE

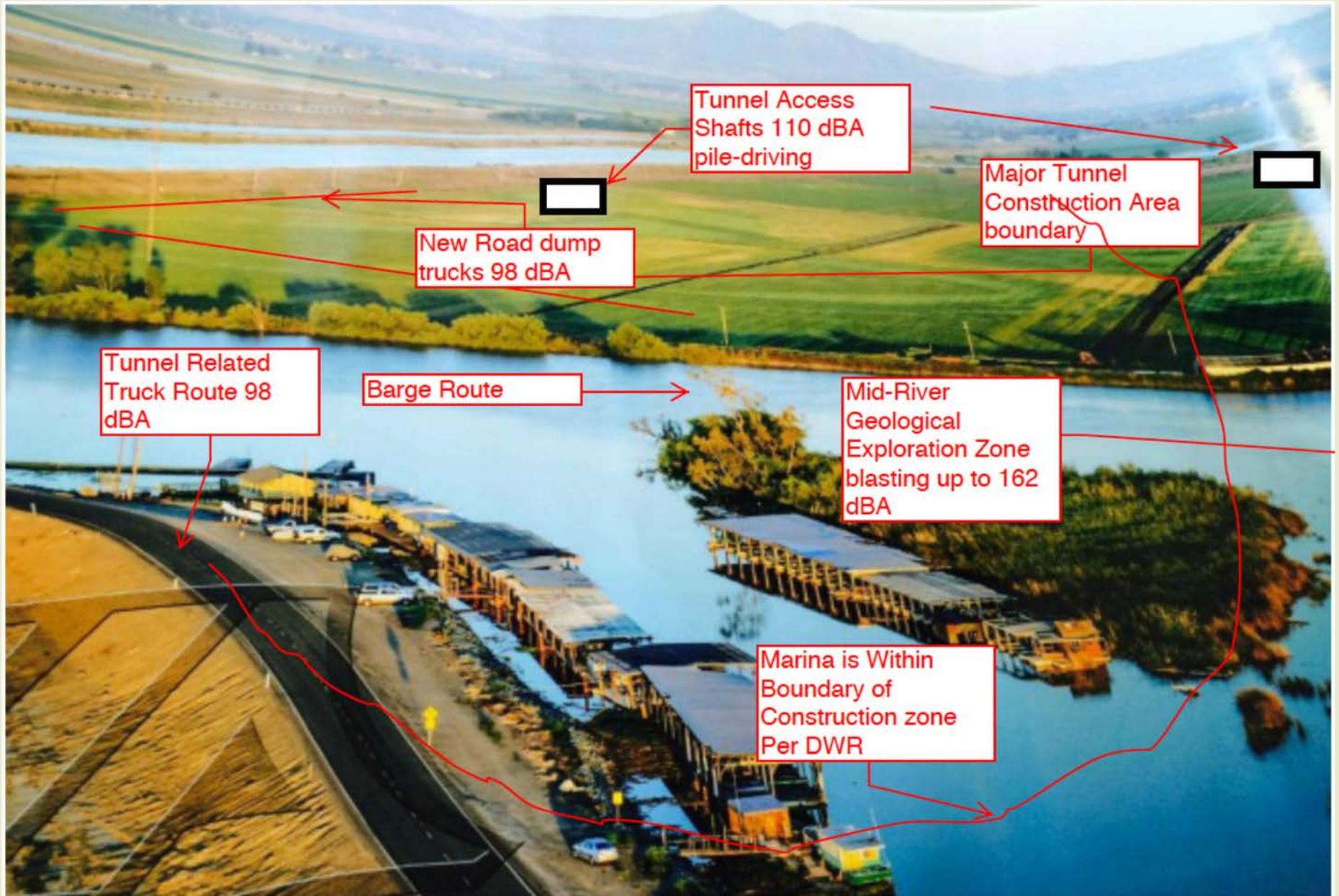


- Total excavated material will be about equal to 2-1/2 million dump truck loads
- There will be a total of 9,400 barge trips mostly during summer and fall months occurring over 5-6 years



SCDA-72

Construction Impacts Bullfrog Marina



BULLFROG MARINA WILL FACE

- **River blockages**
- **Continuous noise**
- **Heavy barge traffic**
- **Congestion**
- **Truck traffic**
- **Visual disturbance**

Bullfrog Marina Manager - Carl Wenske's comments at FEIR hearing

“Our marina will not be able to survive the lengthy construction and we will have to close our business.”

WaterFix FEIR admits marinas will be forced to close

“[R]ecreation-dependent businesses including **many marinas** and recreational supply retailers may not be able to economically weather the effects of multiyear construction activities and may be forced to to close as a result..”

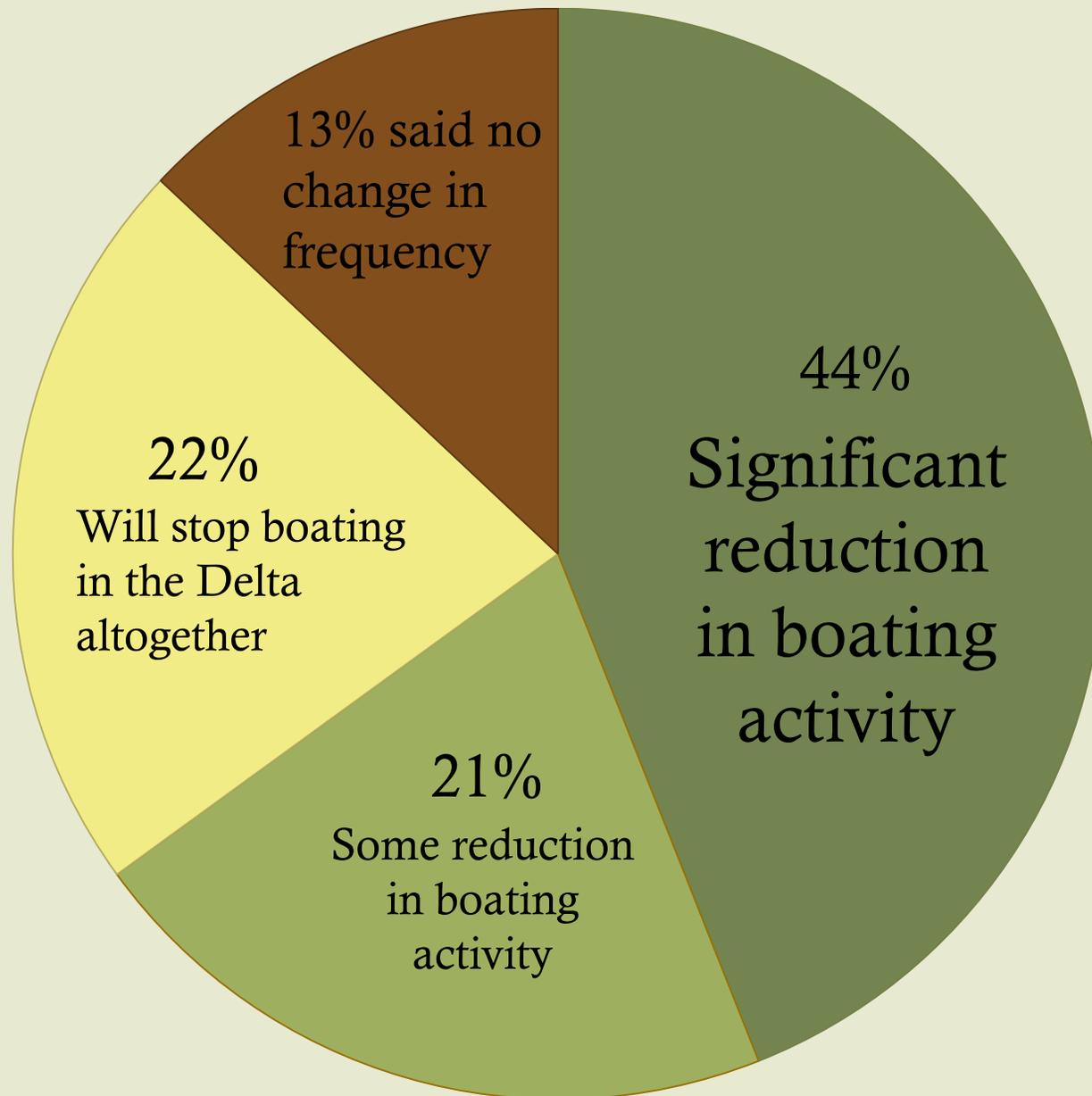
Many marinas will be forced out of business because boaters will abandon the Delta in droves.

Survey of Delta Boaters Conducted at 2017 Rio Vista Bass Derby

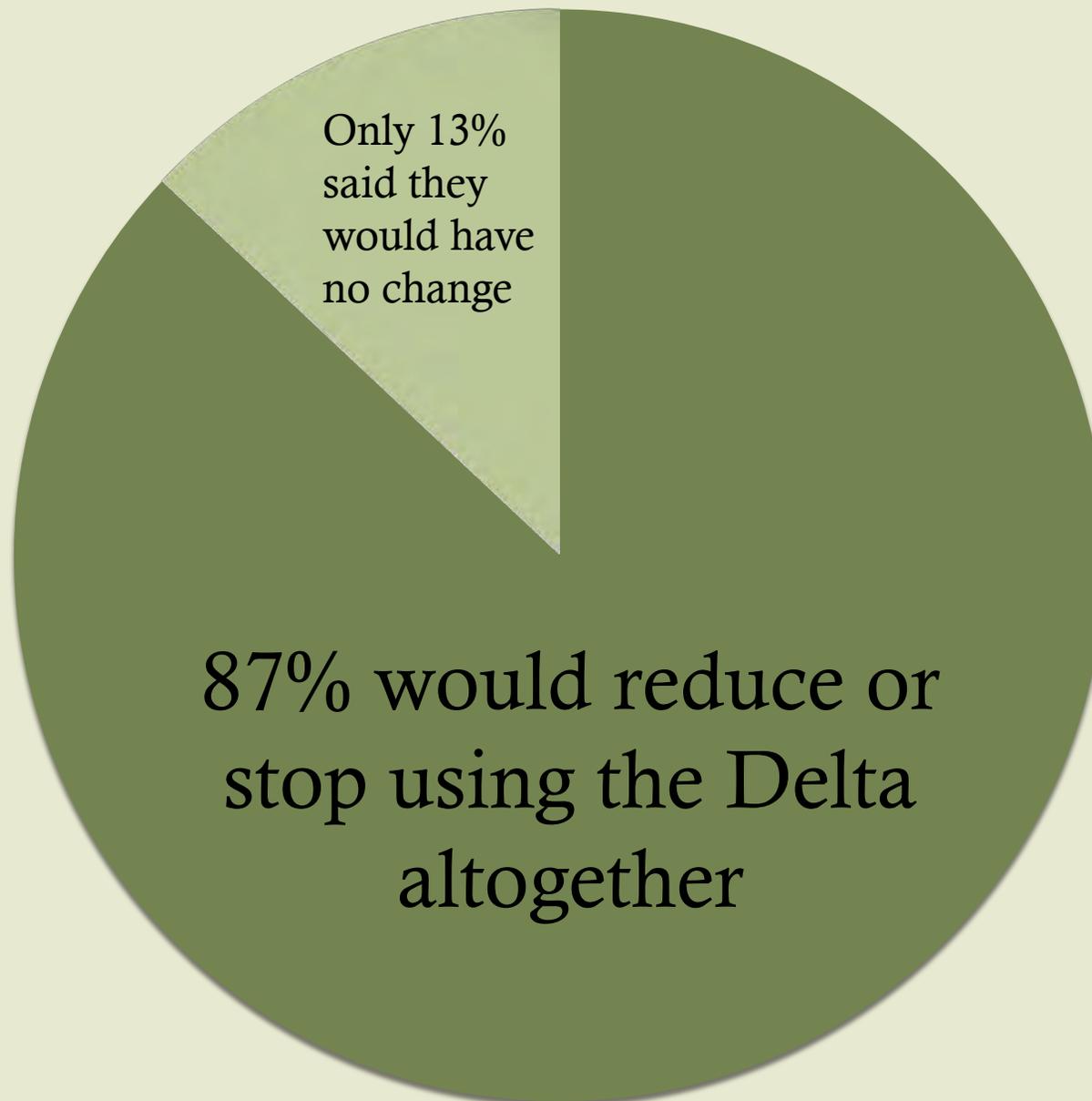
- Conducted by 15 survey-takers, over 2 days
- 220 surveys completed

- All who completed the survey were Delta recreational boaters
- Survey questions were neutrally worded
- Survey takers disclosed no position on tunnels
- Participants were read description of project from WaterFix FEIR

Rio Vista Bass Derby Survey



Rio Vista Bass Derby Survey

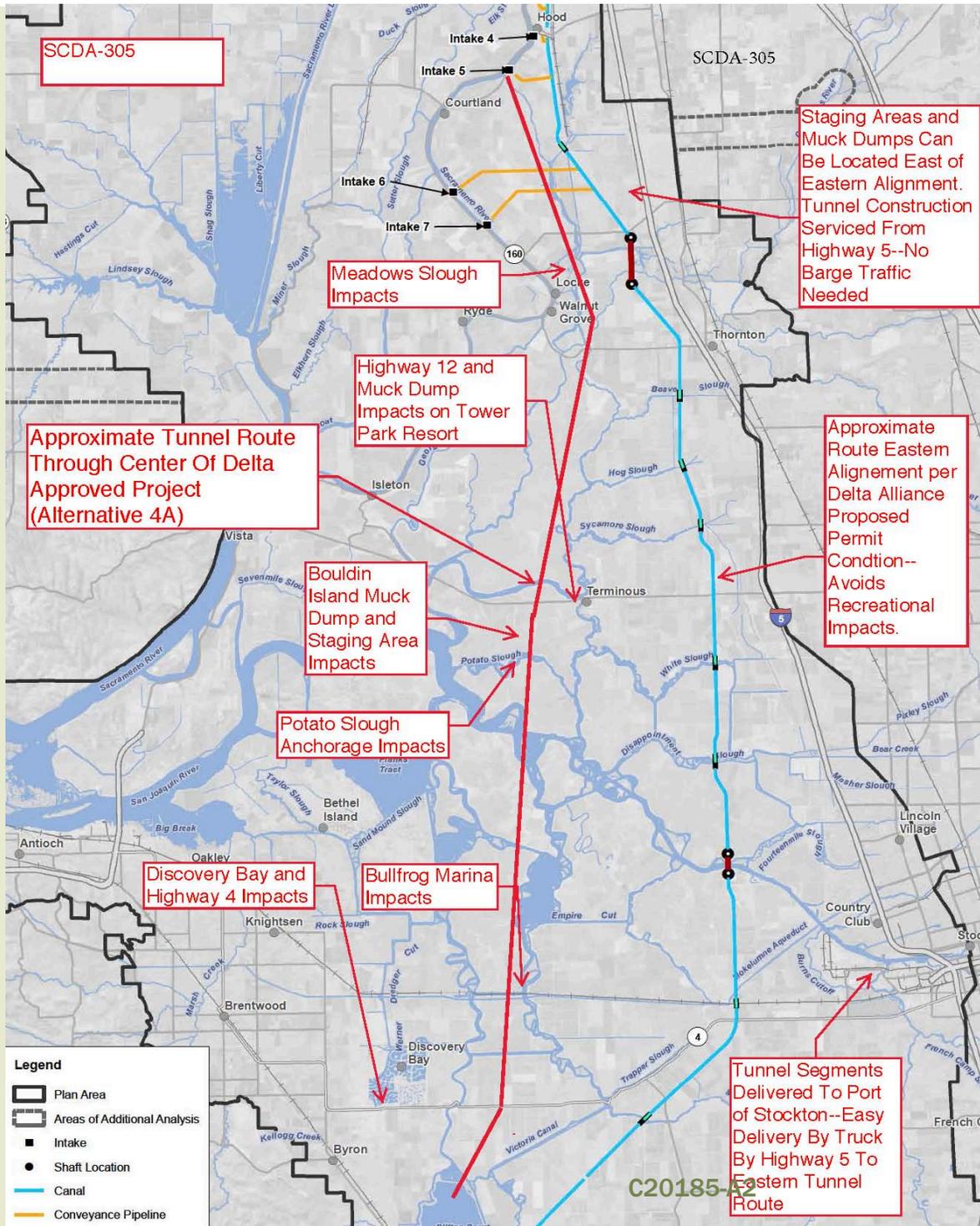


All of this is the result
of poor decisions siting
water facilities –
recall DP P2

WATERFIX VIOLATES POLICY DP P2

DP P2 – Respect Local Land Use When Siting Water or Flood Facilities or Restoring Habitats

“Water management facilities, ecosystem restoration, and flood management infrastructure must be sited to avoid or reduce conflicts with existing uses....”



**WATERFIX
FEIR
FIGURE 3-4
EASTERN
ALIGNMENT**

(SCDA – 305)

Turning to Delta Plan Policies

ER P1 and WR P1

Delta Plan Policy ER P1

“The State Water Quality Control Board Bay Delta Water Quality Control Plan flow objectives shall be used to determine consistency with the Delta Plan.”

A key measure in D-1641 flow objectives is the Export to Inflow Ratio (E/I Ratio)

- The D-1641 E/I Ratio limits the amount of water that can be withdrawn from the Delta for export.

The maximum amount that can be withdrawn for export at any time is a percentage of the water that is flowing into the Delta at that time.

- Most of Delta inflow comes from the Sacramento River.
- D-1641: Sacramento River Inflow is measured at Freeport.
- All exported water is included in the “Export” term of the D-1641 E/I Ratio.

WaterFix violates the D-1641 E/I Ratio.

- WaterFix does not “count” water diverted by the new intakes as an export for the D-1641 E/I Ratio.
- WaterFix moves the Sacramento River inflow compliance point from Freeport to downstream of the new intakes.

- The new WaterFix north Delta intakes can divert up to **9,000 cubic ft per second (cfs)**.
- For perspective, the entire flow of the Sacramento River during summer months is about **16,000-20,000 cfs**

FOR WATERFIX:

- All exports from the new intakes count as zero for export calculation
- D-1641 compliance point for calculating Sacramento River inflow moved

“For the PA [proposed action, i.e., California WaterFix], Reclamation and DWR propose that the NDD be excluded from the E/I ratio calculation. In other words, Sacramento River inflow is defined as flows downstream of the NDD and only south Delta exports are included for the export component of the criteria.”

All of the modeling submitted by DWR to this Council that purports to show that WaterFix “complies with D-1641” shows only that it purports to comply with D-1641 as DWF has **unilaterally re-defined** the E/I Ratio.

Mr. Brodsky: It's a yes or no question. You're changing the location of where the flow of the Sacramento River is measured to calculate the export-inflow ratio; yes or no?

Witness Pierre: That's correct

Mr. Brodsky: So for purposes of the CALSIMS modeling that was presented to the Board, you took the measurement of Sacramento River flow at a point different from Freeport; isn't that correct?

Witness Pierre: Yes, that's what's being proposed in this criteria, and that's how it was also modeled.

WaterFix does not
comply with Policy ER
P1 and there is *no*
evidence in the record to
show that it does comply.

WATERFIX VIOLATES DELTA PLAN POLICY WR P1

WR P1 “is the very
core of the Delta Plan”

(Delta Stewardship Council
argument in Delta Stewardship
Council Cases, JCCP 4785)

DELTA PLAN POLICY WR P1 PROHIBITS WATER EXPORT ACTIVITY IF:

- ① Water supplier has failed to include in their 2015 water management plan “expected outcome for measurable reduction in Delta reliance”.
- ② Failure of #1 has significantly caused the need for the export activity.
- ③ The export activity would have a significant adverse environmental impact in the Delta.

ATTACHMENT 3



3. No Tunnel and Through-Delta Alternatives

Ideas proposed include some combination of:

- Increase water recycling and conservation efforts
- Desalination facilities
- Continued through-Delta conveyance (use of existing facilities) with improvement to Delta levees (Mokelumne, San Joaquin, and Middle rivers; along Snodgrass, Deadhorse Island, Beaver, Hog, Sycamore, Little Potato, White, Little Connection, Latham, and Trapper sloughs; Columbia and Empire cuts; Victoria Canal)



Through-Delta Screening Discussion

Filter 1

Climate Resiliency

Seismic Resiliency

Water Supply Reliability

Operational Resiliency

Filter 2

Avoids/lessens impacts

Filter One – Meets Basic Project Objectives?

- Improving levees and through-Delta conveyance would not address the water quality component of the project objectives of climate change and sea level rise for the SWP
- Continued use of the existing system (even with upgrades) as a long-term plan does not address seismic resiliency and the associated water supply reliability concerns



No Tunnel Screening Discussion

Filter 1

Climate Resiliency	<input checked="" type="checkbox"/>
Seismic Resiliency	<input checked="" type="checkbox"/>
Water Supply Reliability	<input checked="" type="checkbox"/>
Operational Resiliency	<input checked="" type="checkbox"/>

Filter 2

Avoids/lessens impacts	<input type="checkbox"/> NA
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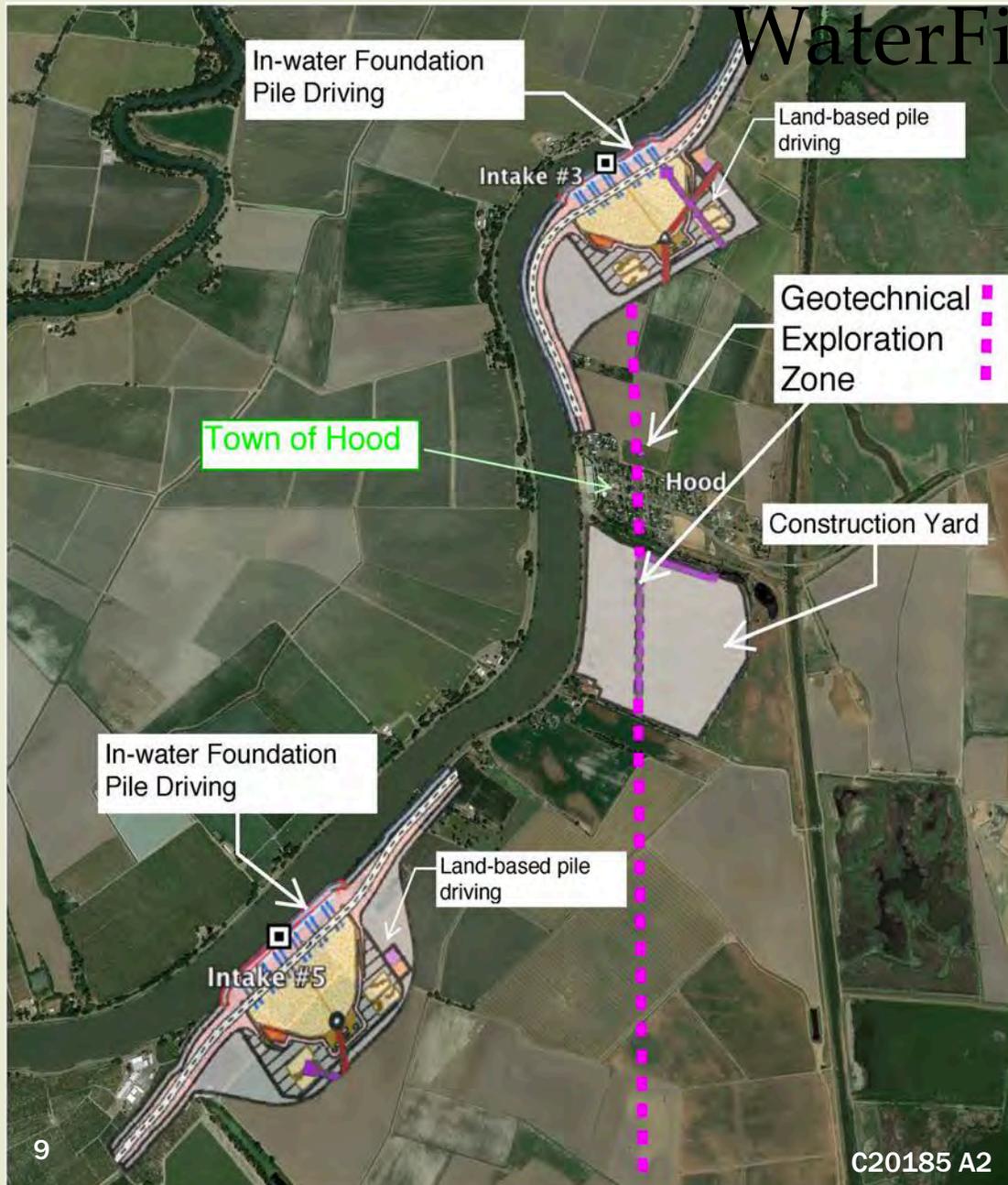
Filter One – Meets Basic Project Objectives?

- Alternatives that rely on water agencies to implement additional projects (such as water recycling, conservation, or desalination) provide alternate supplies instead of the SWP
- Alternate supplies do not meet the fundamental project purpose of enabling the SWP to continue to function through challenges such as climate change, sea level rise, and earthquake risk



ATTACHMENT 4

Town of Hood Dwarfed by California



**SOUND LEVELS FROM
CONSTRUCTION NOISE
AND PILE DRIVING:**

Town of Hood = 80 dBA

(SCDA - 65, p.2: 12-16, x.4.000015)

*80 dBA equivalent
to a freight train 15
meters away.*

ATTACHMENT 5

Screening and Intake 2

Intake 2 has been removed from further consideration for the Proposed Project but will still be considered for alternatives with capacity greater than 6,000 cfs.

- Preliminary screening indicates greatest potential for cultural and historic resources (based on known resources)
- Preliminary screening found increased potential for construction-related effects to sensitive receptors in Clarksburg
- Distance to Twin Cities requires an additional maintenance shaft, which would increase construction-related effects
- Shallower river depth results in longer fish screen and increased fish exposure



TERRY SCHMIDTBAUER

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MISTY KALTREIDER

Water & Natural Resources Manager
(707) 784-6765

DEPARTMENT OF RESOURCE MANAGEMENT



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Water & Natural Resources Division

October 20, 2020

Zachary Simmons
United States Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814

Via Email: Zachary.M.Simmons@usace.army.mil

Re: Comments on Notice of Intent to Prepare an EIS for the Delta Conveyance Project

Dear Mr. Simmons,

Thank you for the opportunity to comment on the Notice of Intent ("NOI") for the development of an Environmental Impact Statement ("EIS") for the Delta Conveyance Project ("Project").

On August 20, 2020, U.S. Army Corps of Engineers (USACE) published a notice of intent to prepare an Environmental Impact Statement. According to the NOI, the USACE will review the portions of the project in the USACE's jurisdiction including; construction activities resulting in the discharge of dredge or fill material within waters of the U.S., work or structures within navigable waters, and modifications to the federal levees and navigation projects.

The public notice seeks comments on the impacts of the proposed Project, which the USACE will use to determine its duties under the National Environmental Policy Act (NEPA). The County of Solano appreciates the opportunity to provide the following comments regarding the proposed project.

Description and Proposed Project Facilities

As indicated in the NOI Project description, multiple facilities will be needed to provide support for the construction and operations of the Project. However, details on the location(s) and descriptions of all Project components including ancillary facilities to support construction and operations of the conveyance facilities including, but not limited to; access roads, barge unloading facilities, concrete batch plants, fuel stations, mitigation areas, and power transmission and/or distribution lines are not provided. These such facilities may be conducted on federal levees and may have impacts to navigable waters. As such, due to lengthy and massive scale of the Project, it's unclear to the full extent of potential impacts the planned activities, facilities, and operations will affect Solano County and its residents. Such detail must be in the NOI, in order to make a meaningful response.

DAVID TRAVHILL
Building Official
Building & Safety

ALLAN CALDERI
Program Manager
Planning Services

JAG SAROTA
Manager
Environmental
Health

SARAH PAPPAKOSTAS
Administrative Services
Manager
Administrative Services

MATT THIGGLE
Engineering Manager
Public Works
Engineering

CHARLES BOWERS
Operations Manager
Public Works
Operations

CIRIS DRAKE
Parks Services
Manager
Parks

MISTY KALTREIDER
Water & Natural
Resources Program
Manager

Lack of Alternatives

All reasonable alternatives that fulfill the purpose of the proposed action's purpose and need should be evaluated in detail, including alternative outside the legal jurisdiction of the USACE (40 CFR Section 1502.14(c)). The NOI proposes to only consider alternatives of a pre-determined project that includes massive intakes on the Sacramento River and a large conveyance tunnel. The NOI did not mention assessing a "No Project" alternative, a broad range of conveyance routes, alternatives that do not involve establishing a new conveyance or alternatives for reducing reliance on the Delta. Besides modifications to specific aspects of the Project, other alternatives besides the Project must be developed and analyzed in the EIS.

Alternatives reducing exports must also be considered given the mandates of the Delta Reform Act. (Water Code SS 85000 et seq.) The Act establishes the policy of the State of California "to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency." (Water Code S 85021.)

Significant Environmental Effects

The Solano County General Plan, adopted in 2008, reflects an overall commitment to provide protections for the environment while supporting its diverse land uses and human needs with emphasis on protecting agricultural uses in the Delta region. Due to its extent and duration, the proposed Project would cause significant environmental effects that directly impact the County's ability to sustain the objectives established in the General Plan. Any EIS must review the Project for consistency with the County General Plan. It is unclear in the NOI that there is an intent to look at the County's General Plan, in particular Land Use Policies; Agricultural Policies; Resource Policies, including Biological Resources, Marsh and Delta Areas, Scenic Resources, Cultural Resources, Recreational Resources, Water Resources, and Quality; Public and Environmental Health and Safety policies including; Flood Control, Disaster Preparedness, and Climate Change; Economic Development policies, Transportation and Circulation policies; and Public Facilities and Services policies; including Water facilities and Service, Drainage, Fire Protection and Emergency Services, Law Enforcement, and Utilities.

Changes in Surface Water Flows and Impacts to the Aquatic Resources in the Delta and Suisun Marsh

Alterations to freshwater flows in the Delta, both during construction and as part of facility operations, would tremendously impact threatened and endangered species that rely on water flows of adequate quality and quantity from the north of the Delta. The EIS must fully analyze the potential impacts to aquatic resources and potential increases of invasive species that pose additional pressures on threatened and endangered species.

Furthermore, the Suisun Marsh (Marsh) which is comprised of diked seasonal wetlands, is the largest brackish water marsh in the Western United States. The Marsh is managed primarily as habitat for fish and wildlife. The Marsh salinity levels are mandated by the State Water Resources Control Board Water Rights Decisions and maintained by Delta outflow, tidal flows, and the operations of the Suisun

Marsh Salinity Control Gates. Alterations to the quality and quantity of fresh water flows due to the Project's operations could result in reduced freshwater inflow to the Suisun Marsh and increased salinity, compromising existing water quality standards, wetland and habitat management, and Marsh management infrastructure which must be analyzed in the Project EIS.

Water Ecosystems (GDE) During Construction

Ecosystems that are dependent on groundwater and interconnected to surface water rely on both groundwater levels being close enough to the land surface to interconnect with surface water. The Project proposes dewatering areas to construct the massive tunnel and access systems. Areas surrounding dewatering points will be affected by the work which can directly impact ecosystems dependent on groundwater. Furthermore, dewatering and installation of slurry walls may impact groundwater flow and water quality that is utilized by shallow water supply wells located near the Project's construction areas. The EIS should fully analyze aquifer conditions and how dewatering and slurry wall installation will affect long-term groundwater flow and water quality on shallow water supply wells and groundwater dependent ecosystems. In addition, due to seasonal and interannual variability of groundwater levels multi-year and seasonal groundwater conditions should be utilized in order to ensure that adverse impacts are avoided.

Impacts to Transportation and Emergency Response

Based on available information, the Project may include constructing approximately 40 miles of a large diameter main tunnel along one of two potential corridor routes, launch and retrieval vertical shafts, intake and outlet facilities, two forebays, a pumping plant, connection tunnel reaches, and numerous construction and staging areas and ancillary facilities along the proposed construction corridor. The proposed Project, including construction and staging areas, forebays, and pumping plant facilities, could disturb several thousands of acres to construct and operate the facilities. During the estimated 13-year construction time-frame, levee roads, railways, and waterway barges all may be used. It is estimated that hundreds of construction trucks, rail, and/or barge and worker trips will likely be needed every day throughout the multi-year construction project timeframe. Using barge and rail may reduce truck traffic impacts on roads and levees but may cause other impacts from traffic delays associated with rail road crossings, impacts to boating and water way access, and levee impacts due to heavy traffic, wave action and increased barge traffic, along with effects on air quality and excessive noise. In addition, the Project construction and operations may impact the few key highway routes within and adjacent to the Delta, which serve Solano and neighboring Counties, that provide not only economic and emergency access, but also service the Travis Airforce Base. The EIS should analyze the impacts of the Project construction and operations will have on major transportation routes, including loss and relocation of roads, and access and emergency response disruptions.

Construction and Tunnel Debris

Constructing the intakes, access shafts, tunnel bore, and accessory facilities will encompass large areas and generate massive amounts of debris, spent cuttings, and wastes. The NOI proposes to either reuse the material or store it near the launch shaft locations. It is possible that not all material and debris generated can be reused due to residual contaminants and/or soil characteristics. Debris, mud, and waste generated need to be assessed and analyzed before determining that it can be reused. Adequate sampling and analysis should be conducted on all material prior to considering reusable and

should include evaluations based on the intended use of the material compared to background concentrations in the host site. Waste that is not deemed suitable for reuse must be properly disposed at an accepting facility. Storage of the material should also follow an assessment and management plan describing how the material will be managed to avoid environmental and water quality impacts. The EIS should also assess the impacts to managing and disposing of materials that are not adequate for reuse due to contamination and/or soil type. Alternatives should include reducing the Project size and capacity in order to reduce the amount of material and wastes generated and associated impacts.

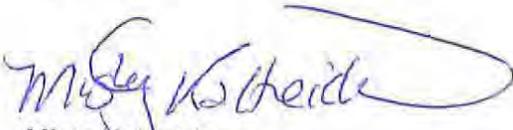
Other Issues

During Project construction, neighboring levees and residents could be impacted by the construction vibrations, excessive noise, and air pollution caused by the work, including site construction, foundation pile driving, levee road use, slurry injection, and other Project work. Neighboring levees should be retrofitted to withstand the impacts from the Project work and alternatives should be considered to minimize excessive noise, vibrations, air pollution, and other impacts to the neighboring residents and levees.

Conclusion

As the lead agency under NEPA, the USACE has a unique opportunity to guide the Project's development in a way that reduces or avoids harmful impacts of a tunnel conveyance system on the environment, as required by NEPA. As such, we hope that the USACE will implement the NEPA review process in a manner that reduces or avoids impacts while meeting most of the Project objectives. We look forward to coordinating with the USACE as during the environmental review process.

Sincerely,



Misty Kaltreider
Water and Natural Resources Program Manager

CC: Bill Emlen, Assistant County Administrator
Birgitta Corsello, County Administrator
Bernadette S. Curry, County Counsel

SOUTH DELTA WATER AGENCY COMMENTS TO US ARMY CORPS OF ENGINEERS DELTA CONVEYANCE PROJECT NOTICE OF PREPARATION

CURRENT DWR MODELING IS NOT THE BEST SCIENCE AVAILABLE.

Previous DWR modeling and analysis done for the WaterFix project revealed a number of inadequacies associated with that effort. The modeling for the Delta Conveyance should not repeat those problems. The inadequacies include, (a) averaging model results, (b) failure to analyze actual impacts associated with model outputs, (c) failure to predict how modeling outputs will affect actual water quality and (d) not using up-to-date channel geometry in the models. All of these issues can be avoided. Failure to correct these problems will necessarily mean the eventual EIR/S will not contain the best science available.

AVERAGING OF MODELING RESULTS IS INAPPROPRIATE

In the WaterFix environmental documents as well as the evidence presented by DWR and USBR during the Water Fix hearing before the State Water Resources Control Board, DWR modeled (among other things) a “with project” and a “without project” and then compared the two results. Instead of comparing the specific modeling outputs, DWR averaged monthly outputs for each of the years modeled and then compared similar averaging from the other scenario. DWR’s analysis modeled thirteen years, then averaged all the data for each month, and then compared the two scenarios’ monthly averaged results. Whether such averaging of model outputs is ever appropriate, it is especially inappropriate when trying to estimate a project’s impacts on water quality in the Delta.

Per the testimony given by SDWA’s expert witness Tom Burke, PE., at the WaterFix hearings, the averaging of thirteen years of model outputs smooths out the extremes in the outputs such that large and persistent changes in the outputs do not appear. Thus if the model estimates a large decrease in salinity in one month of one year, but also a small decrease or small increase in another year for the same month, the average of those numbers ends up hiding the large increase. [Attached hereto are all documents referenced in these comments.]

DWR’s averaged outputs showed small or little changes between the two scenarios. However, Mr. Burke, using DWR’s model outputs presented the complete data for each month of each year without using averaged data. The differences between his presentation and that of DWR’s was marked. Instead of there being little or no difference between the with and without project scenarios as presented by DWR, there suddenly appeared to be multi month-long time frames of significant changes in salinity under the with project scenario as compared to the without project. This clearly showed that while DWR concluded there were only small or insignificant changes in salinity due to the project, in actual fact, their model outputs showed significant changes in salinity. The averaging of the data hides the real model outputs and prevents the public from seeing the actual (estimated) impacts of the proposed project.

DWR argued that its model (specifically DSM2) should not be used to look at or analyze short periods of time and so the averaging is necessary. That assertion is false for a number of reasons, the first of which leads to the second modeling error.

DWR MODELING ANALYSIS DOES NOT ACTUALLY EXAMINE IMPACTS.

In the WaterFix hearing DWR used its averaged model outputs and compared them to the various water quality standards in the Delta. With regard to salinity changes estimated to occur in the areas where the southern Delta salinity standards apply, DWR concluded that the estimated changes in salinity, being so small, would not cause any violations of the standards. In addition, DWR and USBR claimed to operated their projects such that all Delta standards would be met. Leaving the latter until later herein, the former is irrelevant.

Per the uncontroverted testimony of Terry Prichard and Dr. Michelle Leinfelder-Miles given at the WaterFix hearings, comparing changes in the salinity of the water in the Delta channels is only the first part of an analysis to determine if any such changes cause adverse impacts (and the degree of impacts) to agricultural crops. Although the SWRCB has adopted specific water quality standards to protect southern Delta agricultural beneficial uses (measured by "electro-conductivity or "EC"), those standards are of course not the only or even the best way to measure specific impacts of a proposed project. The SWRCB process to develop standards purportedly looks at what is needed to protect the subject beneficial and not to prevent all harm to that use. In addition, the process takes into account other factors which might result in a less protective standard from being adopted. The water quality standards are not a scientific determination of a threshold below which no damage occurs and above which damage does occur. They are instead are a regulatory mandate to provide some level of protection to beneficial uses. CEQA requires an examination of effects and impacts, not just a comparison of impacts to standards.

Per Mr. Prichard, and Dr. Leinfelder-Miles, the accepted science dealing with how salinity might affect agricultural crops is an examination of average seasonal (or yearly) *soil salinity*; impacts are not determined by examining averaged changes in the applied water salinity (in this case the Delta channel salinity). The correct analysis was not done by DWR or USBR in their various analyses in the WaterFix documents or in their evidence and testimony presented at the hearings. The accepted science has developed crop specific soil salinity thresholds which if exceeded will impair or result in harm to the plant/crop. The laboratory experiments from which these thresholds are derived look at how a certain amount of applied water of a certain salinity will allow the salts in the soil to adequately leach or if the salts will accumulate to the point where they exceed the threshold (beyond which crop damage occurs). The salinity of the applied water can be used to *roughly estimate* if salts accumulate in the soil (to the point where damage to the crop occurs) but only if the actual soil (being farmed) is similar to the conditions in the laboratory. The laboratory typically uses sand for the test while southern Delta soils are a mix of many types, some being massive. The more massive soils do not allow water to pass though very easily and thus any laboratory results based on sandy soils may be irrelevant to the real conditions in the southern Delta.

Thus, when DWR's modeling indicates any particular increase in salinity under the with project scenario, they must then determine how this increase affects the soil salinity in the subject farmland soils or their analysis is incomplete. Because DWR failed to do this last and most significant step, its conclusions are meaningless. Here, DWR needs to determine how modeled changes in channel water salinity might affect farmland soil salinity. A complete scientific analysis would need to determine if a 100 EC increase in applied water salinity will affect the soil salinity of the lands that use that water. Dr. Leinfelder-Miles also presented evidence of a soil salinity study she conducted which showed how certain areas within the southern Delta were not adequately leaching and thus the soil salinity was increasing, even when the applied water salinity did not exceed the standard. If the project causes an increase in applied water salinity which increases soil salinity that impact needs to be identified and quantified. That impact is entirely independent of how a change in Delta water quality compares to a standard.

Mr. Prichard and Dr. Lenifelder-Miles also testified that in addition to the effects of increased soil salinity during the growing season, high salinity in the applied water at a particular time could itself inhibit and/or damage certain seedling crops, even if the seasonal soil salinity was below the threshold. Because of this, each month's modeling data (not averaged data) is important in estimating if crop damage is expected to occur. By using the averaged data, DWR ignored any method of estimating how short term changes in salinity may or may not cause harm.

When DWR concluded that (again for example) a 100 EC increase does not result in a violation of the standard therefore the 100 EC change will not result in any adverse impacts to farmers, that conclusion was demonstratively false. If the 100 EC increase is within the area for which inadequate leaching is occurring and salts are already accumulating in the soil, the 100 EC increase will necessarily be compounding the salt problem and likely causing damage. [Although increased salt in the soil is in and of itself a damage, the yield from any crop in any particular year depends on many factors.] Unless DWR examines how and change in EC actually affects the soil salinity in lands which use the channel water (worsened by their project), they are not using the best available science but are using only part of the science.

DWR'S MODELING DOES NOT IDENTIFY ACTUAL CHANGES IN WATER QUALITY

Previous DWR modeling efforts typically assert that the DSM2 model does not predict actual conditions, rather it is used to compare different scenarios in order to estimate the effects of a proposed project. Although this may be generally true in some cases, it is not true in all cases and it reveals another fault in the environmental analysis being done.

DWR's assertion in the WaterFix analysis was that the with project scenario (using averages of model impacts) did not result in any exceedences of the southern Delta salinity standards. However, if the modeling can only be used in a comparative analysis, and not to estimate actual water quality resulting from the project, then one cannot make any conclusions about the project's effects on the beneficial users of Delta water. DWR's logic is that it cannot predict actual conditions but can only show a change in conditions. No conclusions can be drawn as to the effects of a project unless the change in conditions is somehow applied to the real

world. If for example the model shows that the increase in salinity is only 50 EC, how can one determine if that amount of increase results in an exceedence of the standard or not? A 50 EC increase over an “existing” EC of 100 may not result in an exceedence of the 700 (or 1000) EC standard. However, if the 50 EC increase occurs when the “existing” water quality is 680 EC, then the 50 EC increase will indeed cause an exceedence. Recall, such exceedences are the criteria DWR used in the WaterFix hearing to make conclusions about harm or damage.

As above, the question is actually not how a change affects the meeting of a standard, rather the question is how a change affects a water user. If the 50 EC increase results in the season’s average soil salinity exceeding the threshold for that crop, then it is certainly an adverse impact caused by the proposed project. DWR’s logic falls apart unless the model outputs can actually be applied to real circumstances regardless of whether an impact is measured by exceedence of a standard or the effect on soil salinity.

In fact DWR does use the DSM2 model to predict actual water quality. As presented at the WaterFix hearings, DWR performs modeling during times of Joint Point of Diversion (“POD”) in order to comply with its permit conditions for that type of operations. Their modeling estimates whether or not the POD will adversely affect water quality or stage. Again, predicting a change without comparing how that change relates to existing water quality or stage would be useless. Because it is supposed to estimate if the POD will cause harm to water quality or stage, DWR also includes in its POD modeling results the actual water quality and stage. Thus, one can look at the modeling which (for example) shows a 100 EC change and then look at the actual EC to estimate how that change relates to actual conditions. This is what DWR must do for the subject CEQA analysis. Modeled outputs must be compared to the actual conditions for the years modeled. In that way the public can see if any increase in salinity is occurring at a time when water quality is already bad and see just how accurate the model is at predicting actual conditions.

It is interesting to note that per those POD modeling results, the DSM2 model sometimes accurately tracks actual water quality but regularly misrepresents actual water quality. Because the model is not always accurately predicting actual water quality, we confirm that only showing modeled differences between two scenarios yields no useful information.

If one cannot match a modeled change in EC to what the actual EC will be, one can never determine if the change is causing impacts. Thus any analysis by DWR which does not match estimated changes in water quality to actual conditions is not an adequate analysis and certainly not the best available science. This leads us to the next problem with DWR modeling.

DWR’S MODEL DOES CONTAIN ACCURATE, UP TO DATE INFORMATION

As described above, the DSM2 model does not always accurately predict actual water quality conditions in the southern Delta channels. SDWA testimony and evidence presented at the WaterFix hearings showed that DSM2 has as its inputs for channel geometry, data which is at least 5 years old and some that is over 20 years old. Since that data was accumulated, siltation has occurred in the southern Delta channels which has significantly altered channel geometry.

SDWA performed channel soundings to determine what the actual channel geometry was in various areas. That new data revealed the inaccuracy of the DWR/DSM2 data.

As an example, near the Undine Road bridge over Middle River, the DSM2 model “thought” the channel had 10 feet of depth at a certain tide when the up-to-date SDWA data showed one foot or less of depth. This difference makes the DSM2 model outputs unreliable.

The model uses data input (e.g. flow, ambient temperature, etc) and then performs calculations to estimate how a certain volume of water moving through a channel will change over time. The calculations then “predict” characteristics of the water such as temperature, water quality, stage, rate of flow, volume, etc. If the channel geometry is (for example) now one-tenth of what the model “thinks” that means less water is actually moving through the channel and thus the calculations are necessarily completely wrong. Less water might mean less salt from one direction (Delta tidal flows go back and forth in the channels) or less dilution from another direction. Less water means less tidal flow, less water getting to certain places, a greater susceptibility to temperature changes, and on and on. Without updated channel geometry, the DSM2 model cannot be considered the best available science. [SDWA has provided DWR its more current channel geometry data and has itself performed additional channel surveys. However, SDWA is informed that an “updated” DSM2 (including updated channel geometry) might be available by 2020, but that even then it would not contain any channel geometry data later than 2015 in it.]

THE PROPOSED PROJECT IGNORES THE LEGAL MANDATES REQUIRING THAT EXPORTS BE LIMITED TO WATER WHICH IS TRULY SURPLUS TO THE PRESENT AND FUTURE NEEDS OF THE DELTA AND OTHER AREAS OF ORIGIN INCLUDING FISH AND WILDLIFE NEEDS

Any analysis of increased or changed exports by DWR or USBR must first begin with a water availability analysis. Prior environmental reviews by the projects simply assume there is water to export and intentionally avoid any water availability analysis. This practice should not continue.

Per various statutes, case law and regulatory mandates, DWR and USBR can only export water that is surplus to other needs. The Weber Foundation Studies conducted in anticipation of the S.P., indicated that the average annual amount of water produced (precipitation) in the Sacramento-San Joaquin watersheds during the 1928-1934 drought was 17,631,000 acre feet. During that same period, “Local Requirements” of the beneficial uses in those watersheds was 25,690,000 acre feet. Thus, on average during such a drought, the watersheds were short 8,059,000 acre feet *each year*. Although this suggests there is zero water available for exports during droughts, it is of course possible that the inadequate supply comes in spurts which might allow for some exports of “surplus flow” from the Delta. However, that analysis is not the end of the issue.

The Weber Foundation Studies did not include what is now known about the adverse effects of the projects on fisheries or the amounts of water needed to preserve the dwindling fish

populations. Thus the “Local Requirements” aspect of the Weber Foundation Studies needs updating to likely include even more water; further decreasing the amounts if any that could be exported.

Water that the projects may have stored during such droughts may not provide any supply during such droughts. During the last drought, DWR and USBR needed eight Urgency Change petitions (all granted by the SWRCB!) in one year because they had insufficient water in storage to meet their permit and other regulator obligations. Thus any calculation of amounts available for export during droughts should include full compliance with permit terms and regulatory mandates. That stored water is in large part needed to meet those obligations and is thus unavailable for export. When even stored water is insufficient to meet all such obligations, then the projects are obligated to manage whatever supply they do control to meet such standards. For example, current DWR and USBR permits apply and bind not only upstream (of the Delta) reservoirs but also the downstream reservoir San Luis. Thus the “stored” water in San Luis cannot be used unless in-Delta permit conditions are met. This means that water already exported and located in San Luis would need to be released back into the San Joaquin River to protect Delta superior needs including fish and wildlife.

Importantly for in-Delta beneficial users, is the case law which conditions exports on meeting in-Delta needs. In the *Racinelli Decision* (US v. SWRCB 182 Cal. App. 3d. 82 (1986)) the court found that The Delta Protection Act (Water Code Sections 12200-12220) “prohibits project exports from the Delta of water necessary to provide water to which Delta users are ‘entitled’ and water which is needed for salinity control and an adequate supply for Delta users.” (at 139.)

This case clearly places three in-Delta needs above exports, precluding exports until all such needs are met. Those three needs are 1) water to which Delta users are entitled, 2) water for salinity control, *and* 3) an adequate supply for Delta users. As DWR well knows, in the last drought the SWRCB attempted to curtail numerous in-Delta water users who claim pre-1914 and riparian rights while still allowing exports. Per the *Racinelli* there can be no exports if a full and complete in-Delta supply is not provided. Thus, any analysis of the proposed project must be based on a water availability analysis that conforms to the law.

OTHER LEGAL REQUIREMENTS LIMIT THE AMOUNT OF WATER AVAILABLE FOR EXPORT.

The Delta Reform Act Water Code section 85031(a) provides:

“(a) This division does not diminish, impair, or otherwise affect in any manner whatsoever any area of origin, watershed of origin, county of origin, or any other water rights protections, including, but not limited to, rights to water appropriated prior to December 19, 1914, provided under the law. This division does not limit or otherwise affect the application of Article 1.7 (commencing with

Section 1215) of Chapter 1 of Part 2 of Division 2, Sections 10505, 10505.5, 11128, 11460, 11461, 11462, and 11463, and Sections 12200 to 12220, inclusive." (Emphasis added.)

Water Code Sections 11460 et seq. and 12200 et seq. are specific in defining the limitation on the export of water from the Delta by the S.P. and CVP. Water Code Sections 11460 et seq. were added by Statutes 1943, c. 370, p. 1896 around the time of commencement of the CVP. Water Code Section 12200 et seq. was added by Statutes 1959, c. 1766, p. 1766 around the time of commencement of the State Water Project.

The limitation of the projects to the export of only surplus water and the obligation of the projects to provide salinity control and assure an adequate water supply sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta is clear.

Water Code Sections 12200 through 12205 (as examined in the *Racinelli Decision*) are also specific as to the requirements to provide salinity control for the Delta and provide an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban and recreational development.

'12200. Legislative findings and declaration

The Legislature hereby finds that the water problems of the Sacramento-San Joaquin Delta are unique within the State; the Sacramento and San Joaquin Rivers join at the Sacramento-San Joaquin Delta to discharge their fresh water flows into Suisun, San Pablo and San Francisco bays and thence into the Pacific Ocean; the merging of fresh water with saline bay waters and drainage waters and the withdrawal of fresh water for beneficial uses creates an acute problem of salinity intrusion into the vast network of channels and sloughs of the Delta; the State Water Resources Development system has as one of its objectives the transfer of waters from water-surplus areas in the Sacramento Valley and the north coastal area to water-deficient areas to the south and west of the Sacramento-San Joaquin Delta via the Delta; water surplus to the needs of the areas in which it originates is gathered in the Delta and thereby provides a common source of fresh water supply for water-deficient areas. It is, therefore, hereby declared that a general law cannot be made applicable to said Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good. (*Added by Stats. 1959, c. 1766, p. 4247, '1.*)

'12201. Necessity of maintenance of water supply

The Legislature finds that the maintenance of an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta area as set forth in Section 12220, Chapter

2, of this part, and to provide a common source of fresh water for export to areas of water deficiency is necessary to the peace, health, safety and welfare of the people of the State, except that delivery of such water shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code. *(Added by Stats. 1959, c. 1766, p 4247, '1.)*

'12202. Salinity control and adequate water supply; substitute water supply; Delivery

Among the functions to be provided by the State Water Resources Development System, in coordination with the activities of the United States in providing salinity control for the Delta through operation of the Federal Central Valley Project, shall be the provision of salinity control and an adequate water supply for the users of water in the Sacramento-San Joaquin Delta. If it is determined to be in the public interest to provide a substitute water supply to the users in said Delta in lieu of that which would be provided as a result of salinity control no added financial burden shall be placed upon said Delta water users solely by virtue of such substitution. Delivery of said substitute water supply shall be subject to the provisions of Section 10505 and Sections 11460 to 11463, inclusive, of this code. *(Added by Stats. 1959, c. 1766, p 4247, '1.)*

'12203. Diversion of waters from channels of delta

It is hereby declared to be the policy of the State that no person, corporation or public or private agency or the State or the United States should divert water from the channels of the Sacramento-San Joaquin Delta to which the users within said Delta are entitled. *(Added by Stats. 1959, c. 1766, p 4249, '1.)*

'12204. Exportation of water from delta

In determining the availability of water for export from the Sacramento-San Joaquin Delta no water shall be exported which is necessary to meet the requirements of Sections 12202 and 12203 of this chapter. *(Added by Stats. 1959, c. 1766, p 4249, '1.)*

'12205. Storage of water; integration of operation and management of release of water

It is the policy of the State that the operation and management of releases from storage into the Sacramento-San Joaquin Delta of water for use outside the area in which such water originates shall be integrated to the maximum extent possible in order to permit the fulfillment of the objectives of this part. *(Added by Stats. 1959, c. 1766, p 4249)*

[It must be emphasized that Section 12205 immediately above would preclude certain operations of any isolated facility since the releases for export intended to pass through the isolated facility would not help fulfill the objectives of the Act.]

Water Code 11460 provides:

11460. Prior right to watershed water

In the construction and operation by the department of any project under the provisions of this part a watershed or area wherein water originates, or an area immediately adjacent thereto which can conveniently be supplied with water therefrom, shall not be deprived by the department directly or indirectly of the prior right to all of the water reasonably required to adequately supply the beneficial needs of the watershed, area, or any of the inhabitants or property owners therein. (*Added by Stats. 1943, c. 370, p. 1896. Amended by Stats. 1957, c. 1932, p. 3410, '296.*)@

The December 1960 DWR Bulletin 76 (Exhibit) which includes a contemporaneous interpretation by DWR of Water code Section 12200 through 12205 provides at page 12:

"In 1959 the State Legislature directed that water shall not be diverted from the Delta for use elsewhere unless adequate supplies for the Delta are first provided. (Emphasis added.)

Similarly the DWR confirmed its interpretation of law in the contract between the State of California Department of Water Resources and the North Delta Water Agency For the Assurance of a Dependable Water Supply of Suitable Quality dated January 28, 1981, which provides:

"(d) The construction and operation of the CVP and SWP at times have changed and will further change the regimen of rivers tributary to the Sacramento-San Joaquin Delta (Delta) and the regimen of the Delta channels from unregulated flow to regulated flow. This regulation at times improves the quality of water in the Delta and at times diminishes the quality from that which would exist in the absence of the CVP and S.P. The regulation at times also alters the elevation of water in some Delta channels."

"(f) The general welfare, as well as the rights and requirements of the water users in the Delta, require that there be maintained in the Delta an adequate supply of good quality water for agricultural, municipal and industrial uses."

"(g) The law of the State of California requires protection of the areas within which water originates and the watersheds in which water is developed. The Delta is such an area and within such a watershed. Part 4.5 of Division 6 of the California Water Code affords a first priority to provision of salinity control and maintenance of an adequate water supply in the Delta for reasonable and beneficial uses of water and relegates to lesser priority all exports of water from the Delta to other areas for any purpose." (Emphasis added.) (See Exhibit .)

In SWRCB D-1485 at page 9 the SWRCB provided:

"The Delta Protection Act accords first priority to satisfaction of vested rights and public interest needs for water in the Delta and relegates to lesser priority all exports of water from the Delta to other areas for any purpose."

The export projects must additionally fully mitigate their respective impacts and meet the affirmative obligations to the Delta and other areas of origin including those related to flow. Failure to so do results in a shift of the cost of the project to someone else. The State Water Resources Development Bond Act was intended to preclude such a shift in costs. See also Goodman v. Riverside (1993) 140 Cal.App.3d 900 at 906 for the requirement that the costs of the entire project be paid by the contractors. Water Code Section 11912 requires that the costs necessary for the preservation of fish and wildlife be charged to the contractors. The term "preservation" appears to be broader than mitigation and appears to create an affirmative obligation beyond mitigation.

Title 34 of Public Law 102-575 referred to as the Central Valley Project Improvement Act in Section 3406(b) (1) authorizes and directs the Secretary of Interior to enact and implement a program which makes all reasonable efforts to ensure by the year 2002 natural production of anadromous fish (including salmon, steelhead, striped bass, sturgeon and American shad) will be sustainable on a long term basis at levels not less than twice the average levels attained during the period of 1967-1991

The Delta Reform Act of 2009 includes provisions intended to provide additional protection for the Delta. Such provisions include Water Code §85054 which provides:

"§85054. Coequal goals

'Coequal goals' means the two goals of providing a more reliable water supply for California and protecting restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."

Water Code §85021 provides:

"§85021. Reduction of reliance on Delta for future water supply needs

The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."

The Delta and other areas of origin both upstream and downstream are part of California and also need a more reliable water supply. The proposed project is clearly directed only at the ability of the SWP and CVP to export water from the Delta. Restoration and protection of Delta water quality and flows including flushing flows are part of a more reliable water supply for California. Non-degradation of water quality and the statutory obligations to provide enhancement of water quality and an adequate supply are also absent from the proposal.

The cumulative impacts of the proposed project together with the predetermined single tunnel will clearly render water supply less reliable in all areas of the Delta downstream of the Sacramento River intakes and those areas along the current routes of Sacramento River flow to the export pumps. The common pool for the interior Delta will be eliminated along with the common interest in protecting the water quality. The single tunnel has no outlets and requirements to protect water quality in dry periods are always circumvented. For areas throughout the watershed, including those along the tributaries upstream of the Delta, curtailment of local water use, and water transfers to increase utilization of the highly expensive tunnel combined with the need for fish flows and high water consumption habitat to mitigate for the construction and operation of the tunnel will greatly add to unreliability.

The Proposed Project ignores the need to reduce reliance on exports of water from the Delta. The hydrology of the Delta watershed is inadequate to support even the past level of exports.

Development within the watersheds of origin and the need to recapture water from SWP and CVP exports will increase. There is evidence that more water will be needed to mitigate for the SWP and CVP damage to fish including meeting the CVPIA anadromous fish restoration requirements of 2 times the average natural production for the years 1967 through 1991. Climate

change is also expected to adversely affect water supply. The increasing threat of terrorism, the continuing threat of natural calamities, including earthquakes and the growing need for electricity all gravitate towards less reliance on exports from the Delta and instead concentration on developing local self-sufficiency. The deficit due to the failure to develop North Coast watersheds will not be overcome by efforts at self-sufficiency, however, increased efforts in urban communities can increase the amount of water available for agriculture and the environment.

The limited hydrology was clearly recognized in the planning for the S.P. which was to develop projects on the rivers in the North Coast watersheds sufficient to import to the Delta about 5,000,000 acre feet of water seasonally for transfer to areas of deficiency. (See Exhibit 14 December 1960 Bulletin 76 page 13). Such areas of deficiency were expected to be both north and south of the Delta pumps. The projects in the North Coast watersheds were never constructed and the projects are woefully short of water.

In addition to the lack of precipitation in the Delta watershed to meet local and export needs are the environmental needs. Water is needed for mitigation of project impacts and the affirmative obligations for salinity control and fish restoration.

The original planning for the SWP and CVP appears to have underestimated the needs to protect fish both as to flow requirements and carryover storage required for temperature control. In 2009 after only two (2) dry years, the S.P. and CVP violated the SWRCB February outflow requirements claiming that meeting the outflow requirements would reduce storage below the point necessary to meet cold water requirements for salmon later in the year. Although the project operators lied and the real reason for the violation was the ongoing pumping of the unregulated flow to help fill San Luis Reservoir, the incident clearly shows the inability of the projects to provide surplus water for export in the 4th, 5th and 6th years of drought.

In May of 2013 the SWP and CVP again claimed a need to preserve cold water in storage for fish. They requested and were allowed by the SWRCB to reduce outflow so as to exceed the western and interior Delta agricultural water quality objectives to save such cold water in storage. They did not suggest and did not reduce export pumping which would have had the same effect as reducing outflow.

In 2014 the 3rd year of drought, the SWRCB issued curtailment notices to post 1914 water right holders in the areas of origin and reduced exports due to the lack of water.

In the 4th year of drought the SWRCB curtailed post 1914 and some pre-1914 water rights and reduced exports due to lack of water.

Six year droughts can be expected and even longer droughts are possible. The historic occurrence of multi-year droughts was examined in a DWR study of tree rings. Exhibit 13 is Table 3 from such study.

The State Water Project Delivery Reliability Report 2013 shows a long-term (10 year period) average Table A delivery as 2,266,000 acre feet per year; a long-term average (1921-2003) as 2,400,000 acre feet per year; a single dry year (1977) as 453,000 acre feet and a 6-year drought (1987-1992) as 1,055,000 acre feet per year. These figures can be contrasted to the Maximum Possible SWP Table A Delivery of 4,172,000 acre feet per year. See Exhibit 15 excerpts from S.P. Delivery Reliability Report 2013.

"§ 1502.14 Alternatives including the proposed action.

This Section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (§ 1502.15) and the Environmental Consequences (§ 1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. In this section agencies shall:

- (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.
- © Include reasonable alternatives not within the ' jurisdiction of the lead agency.
- (d) Include the alternative of no action.
- (e) Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- (f) Include appropriate mitigation measures not already included in the proposed action or alternatives." (Emphasis added.)

An alternative which requires that the SWP and CVP be operated in accordance with current law is a reasonable alternative which must be rigorously and objectively evaluated. The Proposed Project clearly ignores the law establishing the priorities for meeting needs within the Delta and other areas of origin including the needs of fish and wildlife.

The ability of the SWP and CVP to deliver "full contract amounts" never existed and thus could not be restored or protected. The words "up to" conceivably should cover a range from

zero deliveries to a high of what can be supported with full compliance with State and federal law and hydrologic conditions. The projects have not been able to meet even the D 1641 requirements.

Although obviously not intended by DWR in controlling the preparation of the DEIR, a range of reasonable alternatives must be considered including substantially reduced and at times no exports from the Delta. The upper range is of course limited by law and hydrology. An impartial evaluation is needed to determine the true capability of the export projects to provide surplus water for export while meeting D-1641 over a drought comparable to the 1928/29 through 1933/34 drought, while at the same time meeting listed species requirements, senior water rights, salinity control and providing an adequate supply to serve the needs in the Delta and other areas of origin.

THE CEQA ANALYSIS SHOULD INCLUDE AN EXAMINATION OF SILTATION TRENDS IN THE DELTA.

As referenced above, recent channel surveys and other anecdotal evidence indicate that in the southern Delta channel capacities are decreasing. Large areas of the San Joaquin River, Middle River, Old River, Doughty Cut and Salmon Slough have lost significant channel capacity due to siltation. After each of the most recent high flows years, degradation of channel capacity has increased. This appears to be a trend such that rather than the high flow year's flows flushing siltation farther downstream or out to the Bay, siltation now increases every year. Estimating the degree of degradation will allow needed modeling to predict how internal Delta flows may be affected and thus how the proposed project might exacerbate any problems.

OTHER REASONABLE ALTERNATIVES MUST BE CONSIDERED.

The NOP suggest a very limited set of alternatives. Such limitations are contrary to CEQA and contrary to the public interest. Alternatives that should be considered include an armored pathway through the Delta which allow prompt restoration of legal exports after a catastrophic earthquake event; alternate routes for any tunnel which avoid use of the already insufficient Delta roads, highways and waterways; a decrease in exports with other sources to supplement export needs; the San Joaquin Valley Blueprint suggested under channel diversion points; and the Delta Corridors proposal. All such alternatives should include actions to fully mitigate the CVP and SWP's adverse impacts on the San Joaquin River and the southern and central Delta waters.

Central Delta Water Agency and South Delta Water Agency are also submitting additional comments and documentation for consideration in the preparation of the Delta Conveyance environmental document.

THE PROJECT CANNOT ASSUME CONTINUED VIOLATION OF CALIFORNIA REGULATORY MANDATES

Current operations of the SWP and CVP are in violation of SWRCB Water Rights Decision D-1641. That Decision requires DWR and USBR to meet the water quality objectives for agricultural beneficial uses in the southern Delta. The current objectives are 0.7 EC from April to August and 1.0 EC from September to March. Those objectives have been relaxed to 1.0 EC all year pursuant to a recent update to the San Francisco Bay-Sacramento-San Joaquin Delta Estuary Water Quality Control Plan, but have not yet been implemented. Examples of recent violations of the objectives are included herewith.

The projects are also the subject of two Cease and Desist Orders dated February 15, 2006 and January 5, 2010. Each of these Orders required DWR and USBR to take actions to prevent future water quality violations, but no such actions have occurred. The 2010 Order required DWR and USBR to prepare a plan to meet the water quality objectives, which plan must include the date by which the plan will insure against future violations. The plan was due (at the latest) by 180 days after January 1, 2013 (see pages 21-22, ORDER WR 2010-0002). It is now more than 6 years late with no expected completion date.

The SWRCB Order that relaxed the water quality objectives (not yet implemented) also required DWR and USBR to produce a Comprehensive Operations Plan ("COP") within six months of the Office of Administrative Law's approval of the amendment to the Bay-Delta Plan (pages 35-36, December 12, 2018 Amendment to Bay-Delta Plan). That approval occurred on February 25, 2019, and is therefore 13 months overdue.

It is important for the COE to note that for over 50 years the State Water Project and the federal Central Valley Project have caused harm to southern Delta diverters. The projects have decreased San Joaquin River inflows to the Delta, introduced foreign salts at high concentrations to the River flows, reversed flows in Delta channels creating and exacerbating areas of little or no net flow, and lowered water levels to the point where some diverters can't divert the amounts of water needed or cannot divert at all. Since the State of California has succumbed to the political pressures of export interests and failed to enforce its own rules against the projects, it is up to the COE to do so. Any new USBR or COE project must first mitigate the ongoing adverse impacts to innocent third parties before approving new federal actions. Especially since those new federal actions will increase the ongoing harm.

We saw from the "never completed" WaterFix hearings (as set forth above) that using an isolated facility for export diversions results in greater adverse impacts to salinity in the southern Delta. The proposed single tunnel project is a calculated effort to remove the projects from their responsibilities in the Delta to the detriment of Delta interests. Not pumping from the southern Delta may partially mitigate some project impacts but will result in the southern Delta becoming a stagnant and salty zone unfit for agriculture, fisheries and many other beneficial uses. The COE has previously abandoned its obligations by periodically approving increased export limits (while ignoring SDWA complaints, comments and evidence). It is time for the COE to do the right thing.



October 20, 2020

Delivered via email (Zachary.M.Simmons@usace.army.mil)

Mr. Zachary Simmons
U.S. Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, CA 95814-2922

RE: Comments on Notice of Intent To Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

Dear Mr. Simmons:

The State Water Contractors¹ (SWC) is pleased to provide input to the National Environmental Policy Act (NEPA) scoping process for the Delta Conveyance Project in the Sacramento-San Joaquin Delta, California, which is being advanced by the project applicant, the California Department of Water Resources (DWR). SWC is an association of 27 public water agencies who have invested billions of dollars in the construction of the State Water Project (SWP) and contract with the DWR to receive water from the SWP, and together provide clean, reliable drinking water to more than 27 million residents and 750,000 acres of farmland throughout the state.

The release of the Notice of Intent (NOI) by the U.S. Army Corps of Engineers (Corps) for a single-tunnel Delta Conveyance Project furthers the ongoing commitment by Governor Newsom's Administration and DWR to building a resilient water supply for California's communities, farms, and economy. Many of our members have long identified modernized Delta conveyance as a critical project and are, again, willing to make continued investments in modernizing the SWP to ensure the SWP continues to provide reliable water supplies into the future.

DWR's proposed single-tunnel project will provide opportunities to retain existing water supplies into the future. The single tunnel will help the SWP adapt to climate change conditions including increasing Delta salinity caused by sea level rise and increasingly 'flashy' hydrology.

DIRECTORS

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President

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Santa Clarita Valley Water
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Jacob Westra

Tulare Lake Basin Water
Storage District

General Manager

Jennifer Pierre

¹ The State Water Contractors submit this letter on its behalf and on behalf of all its member public water agencies that may participate in the Delta Conveyance Project.

Mr. Zachary Simmons

October 20, 2020

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Additionally, seismic risks to Delta levees can be mitigated through the construction of a tunnel that provides dual conveyance in coordination with the existing south Delta facilities, and an ability to continue water deliveries through the tunnel. The proposed new points of diversion would allow for some diversions to continue while measures are taken to flush saltier water from the Delta and restore the ability to divert from the south Delta.

A single-tunnel Delta Conveyance project is one of the critical and necessary solutions for ensuring that Californians have a reliable water supply for their homes and businesses amidst the growing threat and impacts of climate change. However, we request that in developing and selecting a proposed project, Corps also consider the cost-effectiveness of the project. For the SWP investment, we believe a 6,000 cfs facility has the greatest possibility of fulfilling this need, because the costs as compared to benefits goes up sharply as the capacity is reduced below 6,000 cfs.

The Delta Conveyance Project environmental review process being conducted by DWR under the California Environmental Quality Act (CEQA) and by the Corps under NEPA should occur in a coordinated manner, consistent with both statutes and their implementing regulations. While it would be ideal if the Corps and DWR prepared a joint Environmental Impact Report/Environmental Impact Statement, SWC recognizes that a joint document is not required under CEQA or NEPA. Instead, the Corps has stated its intent to complete the EIS in a parallel process. SWC urges the Corps to work closely with DWR to avoid duplicative or inconsistent analyses of the project's environmental impacts, especially in light of the extensive outreach and community input on the project that is informing the planning process. Incorporating analysis from the EIR and supporting documents by reference or otherwise relying those documents to the extent permitted under NEPA will facilitate efficient and consistent analysis.

SWC requests that the alternatives to the project evaluated in the EIS must meet the fundamental project objectives, including the goal of developing new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of SWP water deliveries, consistent with California's Water Resilience Portfolio. New conveyance is needed to address anticipated sea level rise and other reasonably foreseeable consequences of climate change and to address seismic risks to SWP supplies from the Delta. Projects that improve local water supply reliability, for example, while essential to California's overall water reliability picture, are not alternatives to the proposed Delta Conveyance Project under NEPA because they do not meet the project's fundamental objectives; objectives which SWC supports.

SWC and its members look forward to the development of the EIS for this important and critical project. Please include Jennifer Pierre (jpierre@swc.org) and Chandra Chilmakuri (cchilmakuri@swc.org) in the service list for this project. Thank you for considering these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer Pierre". The signature is fluid and cursive, with a large initial "J" and "P".

Jennifer Pierre
General Manager



State Water Resources Control Board

October 20, 2020

U.S. Army Corps of Engineers, Sacramento Regulatory Division
Attn: Mr. Zachary Simmons
1325 J Street, Room 1350
Sacramento, CA 95814–2922
Zachary.M.Simmons@usace.army.mil (via email only)

Dear Mr. Simmons:

COMMENTS ON NOTICE OF INTENT TO PREPARE AN ENVIRONMENTAL IMPACT STATEMENT FOR CONSTRUCTION OF THE PROPOSED DELTA CONVEYANCE PROJECT

The State Water Resources Control Board (State Water Board) appreciates the opportunity to provide comments on the U.S. Army Corps of Engineers' (USACE) August 20, 2020 Notice of Intent (NOI) to Prepare an Environmental Impact Statement (EIS) for construction of the Delta Conveyance Project proposed by the California Department of Water Resources (DWR). On April 15, 2020, the State Water Board and Central Valley Regional Water Quality Control Board (Water Boards) sent a comment letter on the DWR's Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Delta Conveyance Project. Those comments are enclosed and incorporated by reference and should be addressed in the USACE's EIS to the extent applicable. Following is a summary of the Water Board's responsibilities and water quality approvals that will be required for the project related to approvals the USACE will be considering for the project that the EIS should specifically discuss.

Background

The mission of the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) is to preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use for the benefit of present and future generations. The Water Boards have primary authority over the protection of the State's water quality. To protect water quality, the Water Boards develop water quality control plans that identify beneficial uses of water, water quality objectives to protect those beneficial uses, and a program of

E. JOAQUIN ESQUIVEL, CHAIR | EILEEN SOBECK, EXECUTIVE DIRECTOR

implementation to achieve the objectives, as well as monitoring and other requirements. These water quality control plans include the State Water Board's Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan) and the Central Valley and San Francisco Bay Regional Water Boards' water quality control plans for the Central Valley and San Francisco Bay, all of which are relevant to this project. The State Water Board also administers water rights in California, including those of the State Water Project (SWP) and Central Valley Project (CVP).

Applicable Water Quality Approvals

The proposed Project will require issuance of a Clean Water Act section 404 permit from the USACE. Issuance of a Clean Water Act section 404 permit is contingent upon a Clean Water Act section 401 certification prescribing effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirements of state law. In this instance, the State Water Board is the state agency responsible for certification. (Wat. Code, § 13160; see Cal. Code Regs. tit. 23, § 3855, subd. (b)(1)(B).) In taking a certification action, the State Water Board must either: 1) issue an appropriately conditioned certification; or 2) deny the certification request. (Cal. Code Regs., tit. 23, § 3859.)

Discharge of dredged or fill materials to waters of the state (which are defined to include isolated wetlands and other waters that may not meet the Clean Water Act definition of Waters of the United States) is regulated under the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.) and the State Wetland Definition and Procedures for Discharges of Dredged or Fill Materials to Waters of the State (https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/procedures_confirmed.pdf), which became effective on May 28, 2020. Before discharging dredged or fill materials to non-federal waters of the state, the discharger would be required to file a report of waste discharge with the Water Boards pursuant to sections 13376 and 13260 of the Water Code, and obtain waste discharge requirements or a waiver. Information regarding 401 Water Quality Certification and Waste Discharge Requirements can be found on the State Water Board's [website](https://www.waterboards.ca.gov/water_issues/programs/cwa401/#appl_guidance_matl) (https://www.waterboards.ca.gov/water_issues/programs/cwa401/#appl_guidance_matl). The NOI states that the EIS will analyze the impacts of Project construction on Waters of the United States, including wetlands, and that compensatory mitigation for unavoidable impacts to waters of the United States will be developed during the EIS process. In the interests of efficiency, and to avoid any inconsistencies between the EIS and the EIR that DWR is preparing, the USACE should consider extending its analysis to encompass all wetlands, not just those that meet the definition of Waters of the United States.

Closing

The State Water Boards appreciates the opportunity to provide comments on the NOI. If you have any questions regarding these comments, please contact Diane Riddle at diane.riddle@waterboards.ca.gov. Please be aware that due to the public health concerns regarding the COVID-19 virus and the resulting pandemic, many State Water

Board staff are telecommuting; therefore, the best avenue of communication at this time is via email.

Sincerely,

A handwritten signature in blue ink, appearing to read "Evan Adams".

Executive Director
State Water Resources Control Board

Enclosure: Comments on Notice of Preparation of Environmental Impact Report for the
Delta Conveyance Project (April 15, 2020)

cc: Patrick Pulupa, Executive Officer, Central Valley Regional Water Quality Control
Board (via email)
Jordan Hensley, Environmental Scientist, Central Valley Regional Water Quality
Control Board (via email)
State Clearinghouse unit, Governor's Office of Planning and Research,
Sacramento (via email)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 20, 2020

Zachary Simmons
U.S. Army Corps of Engineers
Sacramento Regulatory Division
1325 J Street, Room 1350
Sacramento, California 95814-2922

Subject: Scoping Comments for the Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, California

Dear Mr. Simmons:

The U.S. Environmental Protection Agency has reviewed the U.S. Army Corps of Engineers' Notice of Intent to prepare a Draft Environmental Impact Statement for the Delta Conveyance Project. Our review and comments are provided pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

Thank you for inviting the EPA to be a cooperating agency on this project. We look forward to continuing work with the Department of Water Resources and the Corps and support the integration of the extensive volumes of work and analysis that has been done on this project over the previous decade. Our last NEPA comments on the project were on the Supplemental Draft EIS dual conveyance tunnels, called the Waterfix, in October 2018. We understand that DWR has done extensive work on this project since then, notably downsizing to a one tunnel approach. As stated in the Notice of Intent, permission from the Corps is required under Section 10 and 14 of the Rivers and Harbors Act, and Section 404 of the Clean Water Act for this project. We are available to continue to work with DWR and the Corps to fully evaluate the outcomes of the CWA 404(b)(1) analysis into a Draft EIS and integrate one holistic ecological system that would preserve wetland functionality across habitat types and species in the Delta.

We offer the following scoping comments in preparation of this EIS. We understand that DWR is simultaneously preparing a Draft EIR that is intended to disclose the construction and operational impacts of the project. We encourage the integration and synchronization of the information in both documents to the extent practicable. In particular, the public should be offered meaningful opportunities to comment on the same set of Alternatives. We note that the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act have been revised and will apply to all projects with Notices of Intent initiated after September 14, 2020. The EPA recommends that the Draft EIS identify which version of the CEQ regulations (the applicable regulations as of publication of the NOI, or the revised regulations) will be applied to the NEPA analyses for this project.

EPA remains committed to working with our federal and state partners on actions to restore and protect the Bay Delta ecosystem and the communities that depend upon it. We appreciate the opportunity to review this scoping notice and provide early input on this project. We are available to discuss our comments. We look forward to continuing work together on this important project. If you have questions, please contact me at (415) 972-3098 or gordon.stephanies@epa.gov.

Sincerely,

Stephanie Gordon
Environmental Review Branch

Cc: Cathy Marcinkevage, National Marine Fisheries Service
Jana Affonso, U.S. Fish and Wildlife Service
Kristina Reese, Department of Water Resources
Joshua Grover, California Department of Fish and Wildlife

Enclosure: EPA's Detailed Comments

U.S. EPA DETAILED COMMENTS ON THE SCOPING NOTICE FOR THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE DELTA CONVEYANCE- SACRAMENTO, SAN JOAQUIN, CONTRA COSTA, AND ALAMEDA COUNTIES, CALIFORNIA- OCTOBER 20, 2020

Purpose and Need

In the Draft EIS, clearly identify the underlying purpose and need to which U.S. Army Corps of Engineers is responding in proposing the alternatives (40 CFR 1502.13). The *purpose* of the proposed action is typically the specific objectives of the activity, while the *need* for the proposed action may be to eliminate a broader underlying problem or take advantage of an opportunity. The purpose and need should be a clear, objective statement of the rationale for the proposed project.

We recommend a project purpose statement be developed that accommodates both the Clean Water Act and National Environmental Policy Act. Developing a purpose and need statement that is broad enough to encompass an appropriate range of both “reasonable” (per NEPA) and “practicable” (per CWA Section 404) alternatives to meet the basic (i.e., underlying) project purpose. The statement should be broad enough to include the proposed action and other available water supply and management options without eliminating less environmentally damaging alternatives that may be considered practicable under the CWA Section 404 implementing regulations. The coordinated purpose and need statement should be developed prior to establishing subsequent screening criteria and identifying alternatives. In our experience, efforts to meet the requirements of both NEPA and CWA Section 404 can provide for a more efficient planning and permitting process, while the use of an overly narrow project purpose has the potential to result in the need to conduct additional analysis to meet NEPA and CWA Section 404 requirements.

Overall Project Purpose is to Deliver Water

As stated in the Notice of Preparation, Department of Water Resource’s underlying, or fundamental, purpose in proposing the project is to develop new diversion and conveyance facilities in the Delta necessary to restore and protect the reliability of State Water Project (SWP) water deliveries and, potentially, Central Valley Project (CVP) water deliveries south of the Delta, consistent with the State’s Water Resilience Portfolio.¹

As we previously stated in our 2018 letter on the Waterfix, we understand there are complex operational scenarios that are difficult to predict at this time. It is appropriate to focus on design and construction Alternatives at this juncture in the project; however, the document needs to analyze the expected operational impacts, perhaps by bookending reasonable operational scenarios as they relate to expected tunnel capacity. It is not speculative to assume the project will be used to transport water from the Sacramento river to the pumping plants in the South Delta. The indirect/secondary and cumulative impacts of diverting water are reasonably foreseeable and inextricably linked to the construction of the tunnel; therefore, environmental impacts to water quality and aquatic resources from tunnel construction and operations should be analyzed in the Draft EIS.

Range of Alternatives

All reasonable alternatives that fulfill the proposed action’s purpose and need should be evaluated in detail. A robust range of alternatives will include options for avoiding significant environmental

¹ See DWR’s Notice of Preparation https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Delta_Conveyance_Project_NOP_20200115_508.pdf?la=en&hash=74B80DAAE5B9C4BC2EB0619B6A252011F72D1087

impacts. The document should clearly describe the rationale used to determine whether impacts of an alternative are significant or not. Thresholds of significance should be determined by considering the context and intensity of an action and its effects (40 CFR 1508.27).

The environmental impacts of the proposed action and alternatives should be presented in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14). The potential environmental impacts of each alternative should be quantified to the greatest extent possible (e.g. acres of habitat impacted; change in water quality). Throughout the resource chapters of the Draft EIS, we recommend including impacts from the road and utility relocations, staging and construction areas, and any temporary roads used for hauling material to the construction areas.

We recommend the lead agency structure the Draft EIS alternatives analysis so that it is consistent with requirements under both CWA and NEPA. We recommend that the Draft EIS summarize the regulatory criteria and processes utilized to screen potential alternatives and develop the range of reasonable and practicable alternatives, including any environmental, logistical, technological and cost criteria applied. Providing the reasoning used to eliminate alternatives is also helpful in understanding the decision process. As required by regulation, the screening rationale should be consistent with the practicability definition and criteria outlined in the preamble language of the CWA 404(b)(1) Guidelines (40 CFR § 230.10) for applicable projects. Additionally, the 404(b)(1) Alternatives Analysis must evaluate direct, secondary and cumulative impacts of project alternatives. While it is the applicant's responsibility to clearly demonstrate that their proposal is the Least Environmentally-Damaging Practicable Alternative, EPA recommends the Corps work with DWR to develop a purpose statement that is in-line with current guidance and does not overly constrain the range of alternatives nor preclude the LEDPA.² We also recommend the Corps apply methods that give commensurate consideration to direct, secondary, and cumulative effects in the alternatives analysis for LEDPA identification.

Conservation

For a complete NEPA analysis, the EPA recommends assessing available conservation measures and presenting the results of the assessment in the Draft EIS. We recommend that conservation be used as a tool to reduce demand at the project purpose stage. Another option would be to consider demand management (i.e., an identified level of conservation) in the alternatives analysis, either alone or in combination with other supply management components. Whether as a demand reducer or alternative component, we recommend that the Draft EIS quantify the potential role of conservation in reducing future demand/supply needs and identify how these conservation measures can be implemented. In instances where a project proponent determines that certain conservation measures are not practicable under CWA Section 404(b)(1) Guidelines, we recommend that the EIS document the rationale. Depending on the type and amount of anticipated population growth, EPA's Smart Growth Principles may be useful in considering available measures to reduce demand.²

Baseline Environmental Conditions

When evaluating project effects, we recommend using existing environmental conditions as the baseline for comparing impacts across all alternatives, including the no-action alternative. This provides an important frame of reference for quantifying and/or characterizing magnitudes of effects and understanding each alternative's impacts and potential benefits. This is particularly important when there are environmental protections in place that are based on current conditions, such as Long Term

² <https://www.epa.gov/smartgrowth/smart-growth-and-water>

Operations of the Central Valley Project and State Water Project. It can also be useful, although often less certain, to compare alternatives against a no action baseline that includes reasonably foreseeable future conditions. The EPA recommends that the NEPA analysis compare and present impacts to resources against the existing conditions baseline using a consistent method to measure project impacts for all alternatives. By utilizing existing environmental conditions as a baseline, future changes to environmental resources can be more accurately measured for all alternatives, including the No Action alternative. We recommend that the Corps consider the following when defining baseline conditions:

- Verifying that historical data (e.g., data 5 years or older) are representative of current conditions.
- Providing a detailed hydrologic analysis to adequately assess the project's potential biological and geomorphic impacts. At a minimum, include wet, average, and dry year analyses at a daily time-step. Also consider potential influences of temperature and precipitation trends on future hydrology.
- Including resources directly impacted by the project footprint within the geographic scope of analysis, as well as the resources indirectly (or secondarily) impacted by the project. These indirectly impacted areas may include downstream segments, source streams where water diversions will occur, and any other resource areas which may be affected by changes in water management or operations of the proposed tunnel.

Biological Resources

We recognize that extensive work has been completed by the U.S. Fish and Wildlife Service and National Marine Fisheries Service to analyze expected impacts from a water conveyance system through the delta on the endangered and threatened species in the Delta ecosystem. Programmatic Biological Opinions were issued for the Waterfix project in 2017 and withdrawn in 2019³. The biological opinions recognized the uncertainty inherent in the dynamic ecology of the Delta and included a strong adaptive management component, where research, monitoring, and real-time tracking of fish populations and other factors will guide future operation of the new intakes.

The EPA recommends engaging the U.S. Fish and Wildlife Service and the National Marine Fisheries Service throughout the cooperating agency process to assure that the proposed alternatives account for the following:

- River restoration, flow and channel modifications, wetlands, and habitat fragmentation regarding species' habitat requirements;
- Impacts to endangered, threatened, and special-status species found in the project area;
- Migratory Bird Treaty Act compliance; and
- Protection from invasive species.

Wetlands and Other Waters

Pursuant to paragraph 3(b) of our agencies' 1992 Memorandum of Agreement (MOA) implementing CWA §404(q), the EPA reaffirmed the status of the Bay-Delta as an Aquatic Resource of National Importance per our November 9, 2015, letter in response to the Corps' previous public notice on the Water Fix (SPK-2008-00861). The protection, improvement and restoration of wetlands and riparian areas are a high priority because they increase landscape and species diversity, support many species of western wildlife, and are critical to the protection of water quality and designated beneficial water uses.

³ NMFS Biological Opinion on the Waterfix;
https://archive.fisheries.noaa.gov/wcr/publications/Central_Valley/CAWaterFix/WaterFix%20Biological%20Opinion/cwf_fi nal_biop.pdf USFWS withdraw of Biological Opinion
https://www.fws.gov/sfbaydelta/HabitatConservation/CalWaterFix/documents/05062019_Memo_Withdrawing_WaterFix_B O.pdf

In order to illustrate effects to wetlands in the area, we recommend that the Draft EIS specifically include the following analyses or descriptions:

- Description of impacts under individual or nationwide permits authorizing the discharge of fill or dredge materials to waters of the U.S.;
- Maps, identifying wetlands and regional water features;
- Tables, quantifying the direct, indirect, and cumulative impacts to wetlands in the geographic scope, including impacts from changes in hydrology even if these wetlands are spatially removed from the construction footprint. Include the indirect impacts to wetlands from inundation or loss of hydrology from water diversion/transfers, as well as the cumulative impacts to wetlands from future development scenarios based on population and growth estimates.
- For wetlands potentially impacted by project alternatives, include wetland delineations and functional analysis.

The Corps issued a preliminary verified jurisdictional determination to DWR on June 18, 2020. Wetlands and other waters in the project footprint include roughly 335 acres of riparian wetlands, seasonal wetlands, seeps, and ponds. The applicant proposes the discharge of dredged and fill material and/or work in waters of the U.S., resulting in permanent impacts to approximately 247.44 acres of waters, temporarily impacts to 87.17 acres of waters, and subsurface crossings under 16.88 acres of navigable waters to construct the project.

- Conduct a formal and reproducible assessment of the aquatic resources in the project footprint, using a scientifically defensible method, such as the California Rapid Assessment Method (CRAM), and include the results in the Draft EIS.
- In the Draft EIS, disclose the ecosystem functions provided by the specific wetland and other waters areas that could be impacted by the tunnel and ancillary project facilities. Aquatic resources in the project footprint should be considered completely impacted.

A CWA section 404 permit requires compensatory mitigation for unavoidable impacts to aquatic resource functions. The 2008 Mitigation Rule, issued jointly by the Corps and EPA (40 CFR 230.91-98), establishes a preference for compensatory mitigation based on a watershed approach, and EPA recommends that compensatory mitigation be sited appropriately to ensure that potential direct and indirect impacts of the proposed project are offset. Third-party forms of mitigation, such as mitigation bank credits and in-lieu fees, are preferred over permittee-responsible mitigation.

- In the Draft EIS, evaluate the feasibility of providing adequate compensation for the considerable impacts to aquatic resource functions that the proposed tunnel represents, and identify specific compensatory mitigation opportunities.
- Include in the Draft EIS a commitment to implement mitigation in advance of, or concurrently with, project impacts. Clearly state that compensatory mitigation will be provided for temporary impacts lasting longer than one year.

Groundwater

We would anticipate this project has the potential to both positively and negatively impact groundwater resources. In assessing the potential impacts of each alternative on groundwater systems in the project area, we recommend that the Draft EIS examine the potential for changes in the volume, storage, flow and quality of ground water using available characterization of ground water resources and ground water use. Projected construction, operation or maintenance of a project may have significant impact on

streams and other sensitive waterbodies. If the EIS identifies any adverse impacts to groundwater resources, we recommend considering alternatives, mitigation measures or operational controls that would avoid, reduce or minimize impacts on groundwater.

Air Quality

The EPA recommends that the Corps coordinate closely with the San Joaquin Valley Air District to ensure that the project moves forward in a manner that reduces air quality impacts to the greatest extent possible. It is critical that the Draft EIS provide a robust air quality impact analysis, including ambient air conditions (baseline or existing conditions), National Ambient Air Quality Standards (NAAQS), criteria pollutant nonattainment areas, and potential air quality impacts of the proposed action, including indirect and cumulative impacts. Such an evaluation is necessary to ensure compliance with state and federal air quality regulations, and to disclose the potential impacts from temporary or cumulative degradation of air quality in an area already in nonattainment for ozone and PM_{2.5}.

Estimate emissions of criteria pollutants from the proposed project and discuss the timeframe for release of these emissions over the construction period of the project. Specify emission sources by pollutant from mobile sources, stationary sources, and ground disturbance. Use source-specific information to identify appropriate mitigation measures and areas in need of the greatest attention.

Construction Emissions

Include a list of all mitigation measures to be implemented as part of the construction emissions mitigation plan developed for the project. In addition to measures necessary to meet all applicable local, state, and federal requirements, the EPA recommends the following mitigation measures be included in the construction emissions mitigation plan:

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative where appropriate. This applies to both active and inactive sites during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate and operate water trucks for stabilization of surfaces under windy conditions.
- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Reduce unnecessary idling from heavy equipment.
- Prohibit engine tampering to increase horsepower, except when meeting manufacturer's recommendations.
- Lease or buy newer, cleaner equipment using the best available emissions control technologies.
 - Use lower-emitting engines and fuels, including electric, liquified gas, hydrogen fuel cells, and/or alternative diesel formulations, if feasible.
 - *On-Highway Vehicles* - On-highway vehicles should meet, or exceed, the U.S. EPA exhaust emissions standards for model year 2010 and newer heavy-duty on-highway compression-ignition engines (e.g., drayage trucks, long haul trucks, refuse haulers, shuttle buses, etc.).⁴
 - *Nonroad Vehicles & Equipment* - Nonroad vehicles and equipment should meet, or exceed, the U.S. EPA Tier 4 exhaust emissions standards for heavy-duty nonroad compression-

⁴ See <https://nepis.epa.gov/Exec/ZyPDF.cgi?Dockey=P10009ZZ.pdf>

ignition engines (e.g., nonroad trucks, construction equipment, cargo handlers, etc.).⁵

Administrative Controls:

- Coordinate with appropriate air quality agencies to identify a construction schedule that minimizes cumulative impacts from other planned projects in the region, if feasible.
- Locate diesel engines, motors, and equipment staging areas as far as possible from residential areas and other sensitive receptors (e.g., schools, daycare centers, hospitals, senior centers, etc.).
- Avoid routing truck traffic near sensitive land uses to the fullest extent feasible.
- Use cement blended with the maximum feasible amount of fly ash or other materials that reduce GHG emissions from cement production.
- Use lighter-colored pavement where feasible.
- Recycle construction debris to the maximum extent feasible.
- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking.⁶
- Reduce construction-related trips of workers and equipment, including trucks.
- Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
- Identify all commitments to reduce construction emissions and quantify air quality improvements that would result from adopting specific air quality measures.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.

General Conformity

EPA's General Conformity Rule, established under Section 176(c)(4) of the Clean Air Act, provides a specific process for ensuring that federal actions do not interfere with a state's plans to attain or maintain NAAQS. For any criteria pollutants in the air basin of the project area where the air quality status is in nonattainment or attainment – maintenance,⁷ complete a general conformity applicability analysis (i.e., a comparison of direct and indirect emissions for each alternative with *de minimis* thresholds of 40 CFR 93.153). We recommend including a draft general conformity determination in the Draft EIS to fulfill the public participation requirements of 40 CFR 93.156.

Energy Usage

In the Draft EIS, quantify the energy usage for construction and operations, as well as the associated emissions and analyze the indirect, direct, and cumulative environmental impacts.

Cumulative Impacts

Understanding the cumulative impacts associated with the proposed project can help identify opportunities for minimizing pressures to resources as a whole. In the Draft EIS, identify which resources are analyzed for cumulative impacts, which ones are not, and why. Define the geographic boundary for each resource and describe its current health and historic context. Identify other on-going, planned, and reasonably foreseeable projects in the study area that may contribute to cumulative impacts. Use existing studies on the environmental impacts of these other projects to quantify cumulative impacts where feasible. We suggest the methodology developed by Federal Highways

⁵ See <https://nepis.epa.gov/Exec/ZyPDF.cgi?Dockkey=P100OA05.pdf>

⁶ Suitability of control devices is based on: whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public.

⁷ Maintenance areas redesignated to attainment more than twenty years in the past are no longer required to comply with general conformity.

Administration and Caltrans, with assistance from EPA, for use in assessing cumulative impacts.⁸ While this guidance was prepared for highway projects in California, the principles and the 8-step process outlined therein can be applied to other types of projects. Propose mitigation for any adverse cumulative impacts identified.

Consultation with Tribes

Executive Order 13175 “Consultation and Coordination with Indian Tribal Governments” (November 6, 2000) was issued in order to establish regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Indian Tribes.

The EPA recommends that the Draft EIS describe the process and outcome of government-to-government consultation between the Corps and each of the tribal governments within the plan area, issues that were raised (if any), and how those issues were addressed in the selection of the preferred alternative. As a general resource, we recommend the document *Tribal Consultation: Best Practices in Historic Preservation*,⁹ published by the National Association of Tribal Historic Preservation Officers.

Environmental Justice and Public Participation

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*,¹⁰ directs federal agencies to identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations, allowing those populations a meaningful opportunity to participate in the decision-making process. We recommend using the EPA’s Environmental Justice Screening and Mapping Tool, EJSCREEN,¹¹ to help identify potential environmental justice populations that may be impacted by the project. If there would be environmental justice populations around or near the project area, address in the EIS the potential for disproportionate adverse impacts to these populations. For more information on effective public participation in the NEPA process, please also consult the following resources:

- *Promising Practices for EJ Methodologies in NEPA Reviews*;¹²
- *The Citizen's Guide to the National Environmental Policy Act*;¹³ and
- *Community Guide to Environmental Justice and NEPA Methods*.¹⁴

⁸ Available at https://dot.ca.gov/ser/cumulative_guidance/approach.htm

⁹ http://www.nathpo.org/PDF/Tribal_Consultation.pdf

¹⁰ <https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf>

¹¹ <https://www.epa.gov/ejscreen>

¹² https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf

¹³ https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html

¹⁴ <https://www.energy.gov/sites/prod/files/2019/05/f63/NEPA%20Community%20Guide%202019.pdf>



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Michael Jewell, Regulatory Division Chief
ATTN: Zachary Simmons, Project Manager
US Army Corps of Engineers, Sacramento District
1325 J Street, Room 1350
Sacramento, California 95814-2922

Re: Public Notice SPK-2019-00899 for the proposed Delta Conveyance, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, California

Dear Mr. Jewel:

Thank you for the opportunity to comment on the subject PN dated August 20, 2020 for the Delta Conveyance Project. As described in the PN the applicant is proposing to construct new facilities that would include a tunnel to convey water from the new intakes to the existing pumping plants in the south Delta. The applicant proposes the discharge of dredged and fill material and/or work in waters of the U.S., resulting in permanent impacts to approximately 247.44 acres of waters, temporarily impacts to 87.17 acres of waters, and subsurface crossings under 16.88 acres of navigable waters to construct the project. EPA has provided formal comments on prior iterations of this proposal (enclosed). Though modified from the 2015 public notice (SPK-2008-00861), this permit application includes impacts to aquatic resources which EPA's previous letters identified as substantial and unacceptable impacts to aquatic resources of national importance (ARNI).

The information presented in the subject PN is insufficient to conclude compliance with the Federal Guidelines (Guidelines) promulgated under section 404(b)(1) of the Clean Water Act (CWA) at 40 CFR Part 230. For example, the PN omits a project purpose statement which is critical for laying the foundation for the 404(b)(1) Alternatives Analysis and determination of the least environmentally damaging practicable alternative (LEDPA). A 404(b)(1) Alternatives Analysis is needed that must evaluate direct, secondary and cumulative impacts of project alternatives. While it is the applicant's responsibility to clearly demonstrate that their proposal is the LEDPA, EPA recommends the Corps work with the applicant to develop a purpose statement that is in-line with current guidance and does not overly constrain the range of alternatives nor preclude the LEDPA.¹ We also recommend the Corps apply methods that give commensurate consideration to direct, secondary and cumulative effects in the alternatives analysis for LEDPA identification. The 404(b)(1) analysis should also be supported by and consistent with the National Environment Policy Act (NEPA) compliance document that the Corps is preparing for the project, as this will ensure the final permit decision document is fully supported and complete.

¹ Chief Engineers Elevation Guidance Memos resulting from CWA 404(q) elevations, such as the Plantation Landing memo (April 21, 1989), Hartz Mountain memo (August 17, 1989) and Old Cutler Bay memo (September 13, 1990).

A final mitigation plan that complies with the Federal Mitigation Rule will be needed at the time of permitting. The applicant is investigating restoration actions that would provide multi-benefit for species and habitats while also serving as compensatory mitigation for the loss of aquatic resources. EPA supports such an approach, which could achieve the goal of not contributing to further degradation of this Aquatic Resource of National Importance. The final mitigation plan will need to include assurances that the sites can be purchased, and mitigation implemented in a timely manner, preferably prior to or concurrent with occurrence of the impacts.

EPA appreciates participation in the on-going interagency coordination regarding this project, including as a cooperating agency on the Environmental Impact Statement. EPA understands the complexity of the project and that numerous, comprehensive analyses are currently underway by the applicant. The Corps will be analyzing that information to provide a rational basis for the 404-permit decision, including NEPA compliance. As more information becomes available, including on the alternatives analysis and the mitigation plan, EPA requests to review and provide comments on draft documents pursuant to our authorities under the Clean Water Act (CWA) Section 404(b)(1) and Section 404(q).

Thank you for the opportunity to provide comments on the Public Notice. If there are any questions about EPA's comments, please call Jennifer Siu of my staff at (415) 972-3983, or siu.jennifer@epa.gov.

Sincerely,

**SAMUEL
ZIEGLER**  Digitally signed by
SAMUEL ZIEGLER
Date: 2020.10.20
16:46:27 -07'00'

Samuel G. Ziegler
Manager, Wetlands Section

Enclosures

cc: Kristina Reese, Department of Water Resources



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

NOV 9 2015

OFFICE OF THE
REGIONAL ADMINISTRATOR

Colonel William J. Leady, District Engineer
U.S. Army Corps of Engineers, Sacramento District
1325 J Street, 14th floor
Sacramento, California 95814-2922

Subject: Public Notice number SPK-2008-00861 for the proposed California WaterFix project,
Sacramento, San Joaquin, Alameda, Contra Costa, and Yolo counties, California

Dear Colonel Leady:

I am writing regarding the proposed discharges of dredged or fill material associated with the California WaterFix project, as described in the subject Public Notice, pursuant to paragraph 3(b) of our agencies' 1992 Memorandum of Agreement implementing Section 404(q) of the Clean Water Act.

The location of the proposed discharges, the San Francisco Bay/Sacramento-san Joaquin Delta (Bay Delta), is an aquatic resource of national importance. The Bay Delta supports hundreds of aquatic and terrestrial species, many threatened or endangered, and serves as the hub for federal and state water projects that provide drinking water to over 27 million Californians and irrigation water to 4 million acres of farmland. In 1987, Congress recognized its significance by directing EPA to give it priority consideration under the National Estuary Program to attain and maintain water quality for water supplies and the protection and propagation of indigenous fish, shellfish, and wildlife.

According to the Public Notice, the proposed discharges will result in the permanent loss or conversion of approximately 775 acres of waters of the United States, including tidal marsh and forested wetlands. Additionally, the proposed project operations will affect the direction, volume, and timing of freshwater flows through the Delta. As the Bay Delta ecosystem has suffered significant degradation, it is essential that the direct and secondary effects of the proposed discharges avoid further contribution to its degradation. Unless mitigated, the proposed discharges will have substantial and unacceptable impacts on the Bay Delta ecosystem, and EPA is committed to working with federal and state stakeholders to avoid these impacts and ensure water supply security for California.

Please do not hesitate to call me at (415) 947-4235 or have your Regulatory Division Chief contact Jason Brush, our Wetlands Section Supervisor, at (415) 972-3483.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jared Blumenfeld".

Jared Blumenfeld

cc: Will Stelle, Regional Administrator, National Marine Fisheries Service, West Coast Region
Ren Lohofener, Regional Director, U.S. Fish and Wildlife Service, Pacific Southwest Region
David Murillo, Regional Director, Bureau of Reclamation, Mid Pacific Region
Tom Howard, Executive Director, California State Water Resources Control Board
Mark Cowin, Director, California Department of Water Resources
Cassandra Enos-Nobriga, Program Manager, Department of Water Resources
Chuck Bonham, Director, California Department of Fish and Wildlife



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

OCT 30 2015

**OFFICE OF THE
REGIONAL ADMINISTRATOR**

David Murillo, Regional Director
Bureau of Reclamation, Mid-Pacific Region
2800 Cottage Way, MP-700
Sacramento, CA 95825

Subject: Supplemental Draft Environmental Impact Statement
Bay Delta Conservation Plan/California WaterFix CEQ# 20150196

Dear Mr. Murillo:

The U.S. Environmental Protection Agency has reviewed the Bay Delta Conservation Plan (BDCP)/California WaterFix Supplemental Draft EIS pursuant to the National Environmental Policy Act, Council on Environmental Quality regulations (40 CFR Parts 1500-1508), and our NEPA review responsibilities under Section 309 of the Clean Air Act. The San Francisco Bay/Sacramento-San Joaquin Delta is an important estuarine system, supporting over 750 species and supplying drinking water to 25 million people and irrigation water to 4 million acres of farmland.

Background

The WaterFix project evolved from the BDCP, which was proposed as a Habitat Conservation Plan (HCP) to support the issuance of a 50-year incidental take permit under Section 10 of the Endangered Species Act (ESA). A joint federal and state Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) for the BDCP was released on December 13, 2013, with the U.S. Fish and Wildlife Service (FWS), National Marine Fisheries Service (NMFS), and Bureau of Reclamation (Reclamation) as joint federal lead agencies for the DEIS, and the California Department of Water Resources (DWR) as the State lead agency for the DEIR. The BDCP included a major habitat restoration program, targeting over 150,000 acres, as well as a proposed new conveyance facility (tunnels) to transport water from the Sacramento River to existing pumps in the South Delta.

In August 2014, the federal and State lead agencies committed to supplement/recirculate the DEIS/DEIR in response to public comments received on that document, including those submitted by EPA on August 26, 2014. In a collaborative effort to resolve the issues that we had raised, EPA met frequently with DWR and the original federal lead agencies for several months after submitting our comments on the DEIS, and we appreciate the attention given to the analysis of the proposed project's impacts on specific water quality parameters.

In April 2015, Reclamation and DWR announced fundamental changes to the proposed project and changed its name from BDCP to the California WaterFix. The WaterFix project focuses on the construction and operation of proposed new water export intakes on the Sacramento River to divert water into a proposed 40 mile twin tunnel conveyance facility. Reclamation is now the sole lead federal agency. The proposed federal action has changed from implementing a Habitat Conservation Plan under

Section 10 of the ESA to modifying operations of the federal Central Valley Project (CVP) in order to accommodate new water conveyance infrastructure.

Project Benefits

The proposed project and alternatives would provide greater water supply reliability for the users of exported Delta water and would reduce certain adverse impacts of the CVP and State Water Project (SWP) on fish. The SDEIS shows that transporting water in tunnels would reduce the risks to CVP/SWP exports in several ways. The proposed tunnel project would provide greater protection against sudden degradation of exported freshwater caused by the catastrophic failure of the earthen levees in the Delta and the consequent intrusion of saltwater that could foul supplies of water for municipal, agricultural and industrial consumption. Given the potential for earthquakes and floods in the region and the numerous earthen levees encircling the Delta islands, water supply security is a significant concern. Transporting water via tunnels would substantially address longer term threats to export water quality caused by sea level rise, with its concomitant salt water intrusion. The proposed project would also enhance CVP/SWP project flexibility by adding a northern diversion point. The current system, which relies solely on the southerly intakes, provides limited operational flexibility and at times results in reverse flows in Old and Middle Rivers which are associated with decreased survival of endangered fishes. Added flexibility would enable better real-time management of the export operations in response to observed movement of special status fish populations. Furthermore, the SDEIS predicts that flexible use of the proposed new intake facilities, combined with the establishment of biological criteria for operation, the installation of state-of-the-art fish screens, and the reduction of reverse flows in Old and Middle Rivers, would reduce the entrapment of certain fish species into poor habitats and the entrainment of fish into the CVP/SWP system. By making these physical and operational changes in the Delta, the proposed project would address some of the many identified stressors to aquatic resources in the Delta. In addition, although not part of the WaterFix project, the State of California has launched a separate EcoRestore initiative to pursue the restoration and stewardship of 30,000 acres of floodplains, riparian forests, and wetlands within the Delta over the next four years. As this significant conservation effort was not part of the SDEIS, it was not reviewed or rated as part of our NEPA review.

Project Purpose and Need

As stated in the SDEIS, the purpose and need for the WaterFix project, as was the case for the BDCP, is to advance the co-equal goals set forth in the Delta Reform Act of 2009. Those are (1) to provide a more reliable water supply for California, and (2) to protect, restore, and enhance the Delta ecosystem. EPA recognizes the crucial public health, economic, and ecological importance of both goals. The proposed project and the alternatives evaluated in the SDEIS support the water reliability component, but largely defer actions necessary to protect water quality and aquatic life to the future.

As has been discussed throughout the development of this project, the most essential decision for achieving the desired balance between water reliability and restoration of the Bay Delta ecosystem is how freshwater flows through the Delta will be managed. This key decision is not described in the SDEIS and is, instead, deferred to future regulatory processes administered by the State of California in consultation with federal resource and regulatory agencies. The decision by the State of California and Reclamation to defer these decisions means that the impacts of the WaterFix project on the Delta ecosystem cannot be fully evaluated at this time, and that any attempt to describe the environmental impacts of the project is necessarily incomplete. Once those decisions, described below, are concluded, the evaluation of possible impacts and consideration of alternatives can be completed.

Aquatic Habitat and Water Quality

As noted above, the project has been significantly revised since the initial DEIS, yet the SDEIS relies on modeling results that are based on the BDCP alternatives. Information in the SDEIS indicates that the modeling completed for the BDCP alternatives is not necessarily representative of the environmental effects resulting from the WaterFix alternatives. NMFS and FWS concluded in 2008 and 2009, respectively, that continued operation of the CVP/SWP would jeopardize the existence of delta smelt, winter-run Chinook salmon, green sturgeon and several other fish species. Even with the predictive limitations of the modeling, the SDEIS predicts a loss of valuable aquatic habitat for many fish species in the Delta and upstream tributaries due to the combined effects of the WaterFix project, CVP/SWP exports, climate change, and increased water diversions upstream of the Delta in the Sacramento River Basin. These species have experienced sharp population declines in the last decade and showed record low abundance over the last five years. Information presented in the SDEIS shows that the WaterFix project could reduce habitat conditions for delta smelt, winter-run Chinook salmon, green and white sturgeon, striped bass, and American shad, and result in a decline of longfin smelt abundance. For example, according to the SDEIS, winter-run Chinook salmon and sturgeon may be negatively impacted when migrating past new intakes, because significant volumes of freshwater flows are diverted at the intakes resulting in less water that is also of lower quality downstream of the intakes. The SDEIS also predicts that selenium concentrations in sturgeon would increase by 12-19% as a result of the proposed project, and would exceed the FWS and NMFS benchmark for adverse impacts to sensitive species.

The modeling results presented in the SDEIS show predicted exceedances of a salinity standard at both Prisoner's Point and Emmaton. The water quality modeling predicts that the Western Delta and Suisun Marsh will become saltier over time, which is likely to cause increased exceedances of chloride criteria near municipal water supply intakes. Mitigation actions are identified in the SDEIS to prevent exceedances, and the compliance history shows that salinity standards have rarely been exceeded in non-drought years. Nevertheless, if the proposed project operations contribute to a general increase in salinity in the Delta, the flexibility that Reclamation and DWR have to operate the system to ensure that water quality criteria are met will be seriously diminished, and the two agencies will have little room for error in operating the system to protect beneficial uses and achieve the co-equal goals.

While the impacts stated above may be mitigated by appropriately timed increased flows and habitat restoration, the WaterFix project does not propose additional flows in the Delta, nor does it propose significant habitat restoration (See EcoRestore above). CVP/SWP operation scenarios that propose additional outflow, such as BDCP Alternatives 7 and 8 from the DEIS, could provide substantially more water for resident and migratory fish and provide benefits to aquatic life; however, these were not evaluated as alternatives in the SDEIS.

Pending Regulatory Actions

Several pending regulatory actions are important to understanding the full impacts of the project. First, the State Water Resources Control Board (State Water Board) will be acting on Reclamation's and DWR's recent request to add points of freshwater diversion from the South Delta to the Sacramento River in the North Delta (at the northern end of the new conveyance facility). This State regulatory action is likely to include terms and conditions, including flow requirements, that could modify proposed WaterFix operations sufficiently to produce environmental and water supply effects that have not been analyzed in the SDEIS. Additionally, the State Water Board is in the midst of comprehensively updating water quality standards through the Bay Delta Water Quality Control Plan (Bay Delta WQCP). The updated standards could result in freshwater flow management provisions and corresponding changes to water supply diversions throughout the watershed that have not been analyzed

in the SDEIS. The Delta is listed as impaired for several water quality parameters under Section 303(d) of the CWA. EPA is working closely with the State Water Board to ensure that the revised standards are sufficient to address impaired water quality conditions in the Delta and reverse the declines in the fish species. The updated standards could result in altered environmental and water supply impacts that have not been analyzed in the SDEIS.

Second, ESA Section 7 consultation with FWS and NMFS regarding the construction and operation of new conveyance facilities is underway. We understand that the FWS and NMFS are not relying solely on the SDEIS for the Section 7 consultation process and that additional information is being generated to identify criteria for operating the new WaterFix facilities, to be included in the Biological Opinions and Incidental Take Permits. This information and such operating criteria could result in environmental impacts that have not been analyzed in the SDEIS.

Third, construction of WaterFix's new water intake and conveyance infrastructure would require authorization under Clean Water Act Section 404, as well as a Rivers and Harbors Act Section 14 modification of levees permit, from the U.S. Army Corps of Engineers. Water quality and aquatic life analyses in the SDEIS show that the proposed project may cause or contribute to violations of state water quality standards and significant degradation of waters of the U.S.; therefore, additional avoidance and minimization of environmental impacts and/or compensatory mitigation may be necessary in order to comply with CWA Section 404. It is also likely that additional information and analysis not included in the SDEIS will be required to support those permit decisions and that information and analysis will better inform the overall evaluation.

All of the above listed regulatory processes will develop new data and likely new compliance requirements beyond those provided in the SDEIS. EPA understands that these as yet incomplete regulatory requirements will be addressed through the pending actions by the State Water Resources Control Board, FWS, NMFS, and Corps of Engineers. These key decisions, and the analysis that will support them, are not yet done. Our statutory responsibility is to review the NEPA document that is in front of us at this time, however, the reality is that these future regulatory processes will have an important bearing on the project. Because these subsequent regulatory processes are likely to generate real world operational scenarios that are significantly different from the operations proposed in the SDEIS, the information is not yet available to reach definitive conclusions concerning the environmental impacts of the proposed project.

The tunnels that are discussed in detail in this draft NEPA document are an important improvement for water reliability, but the choices that will affect the operation of the tunnels, and thus the overall impacts of the project, will not be made until future regulatory actions are completed. These future decisions will supply the missing pieces necessary to determine the environmental impact of the entire project. The unusual circumstances of this project mean that the information is not yet available for a complete evaluation of environmental impacts – and for that reason a rating of “3” (*Inadequate*) for the SDEIS is required – but EPA expects that the project will continue to move forward, with those necessary additional pieces to be supplied as the later regulatory processes proceed. Under the unique circumstances of this case, the additional data, analysis and public input associated with these future regulatory processes are expected to provide the needed supplemental information to allow a full review of the environmental impacts without requiring another draft supplemental EIS. EPA will have the opportunity to support Reclamation, other federal agencies, and the State of California as they collectively continue to define an environmentally sound and effective project that would operate in a manner that simultaneously supports water supply reliability and enhances the Delta's ecosystem. EPA

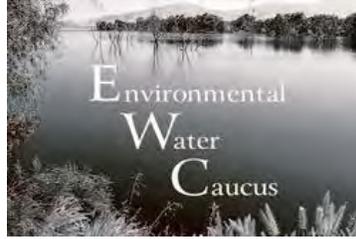
believes that the upcoming actions by USFWS, NMFS, the State Water Board, and the Corps of Engineers will be critical next steps in the design and review of the project, and EPA looks forward to continuing to work with these agencies as the project moves forward.

If you have any questions, please contact me at 415-947-8702. Alternatively, your office may contact Kathleen Johnson, Enforcement Division Director. Ms. Johnson can be reached at 415-972-3873.

Sincerely,



Jared Blumenfeld



October 20, 2020

Via Email

Zachary.M.Simmons@usace.army.mil

Mr. Zachary M. Simmons
U.S. Army Corps of Engineers
Regulatory Division
Sacramento, CA

Re: Comments on Scoping and Notice of Intent to prepare an EIS for construction of the proposed Delta Conveyance Project

Dear Mr. Simmons and U.S. Army Corps of Engineers:

By this letter, our public interest organizations comment on scoping and the Notice of Intent to prepare an Environmental Impact Statement (EIS) for construction of the proposed Delta Conveyance Project (Project.) The U.S. Army Corps of Engineers published the Notice of Intent (Notice) in the Federal Register on August 20, 2020. (85 Fed. Reg. 51420 (August 20, 2020).)

909 12th Street, Suite 202, Sacramento, CA 95814
(916) 557-1100 FAX (916) 557-9669 www.sierraclubcalifornia.org

INTRODUCTION

Our public interest organizations joining this letter are AquAlliance, California Water Impact Network, California Sportfishing Protection Alliance, Center for Biological Diversity, Environmental Water Caucus, Planning and Conservation League, Restore the Delta, and Sierra Club California.

The Project, a water tunnel, would divert enormous quantities of freshwater that presently flow through the Sacramento River, sloughs, and the San Francisco Bay-Delta estuary before being diverted for export from the south Delta. Due to the new points of diversion north of the Delta, freshwater flows that presently contribute to water quality, water quantity, endangered and threatened fish species, fish habitat, Delta agriculture and public health by flowing through the already impaired Delta would instead flow through an underground tunnel no longer providing benefits within the Delta. One example of the environmental destruction that would be caused by the tunnel Project is worsening the harmful algal blooms threatening the public health of Delta residents and users.

In its January 30, 2020 *Comments on Draft Environmental Impact Report for the Long-Term Operation of the State Water Project* (Copy attached), the State Water Resources Control Board (Water Board) explained some of the harms to the Delta. There is “broad agreement in the scientific community that increased freshwater flows through the Delta and aquatic habitat restoration are needed to protect Bay-Delta ecosystem processes and native fish species.” (Water Board comments p. 4.) The Water Board continued:

As stated in the [2017 Water Board staff] Scientific Basis Report: It is widely recognized that the Bay-Delta ecosystem is in a state of crisis. . .

The Scientific Basis Report concluded that increased Delta inflows and outflows, and cold-water habitat and constraints on pumping in the interior Delta are necessary in order to reasonably protect at-risk fish species. Accordingly, it is not clear how the proposed project will not further degrade conditions for fish and wildlife species that are already in poor conditions, some of which are on the verge of functional extinction or extirpation. Given this, it is also not clear how the proposed project is consistent with existing obligations, including the California Delta Reform Act, CESA, the California Porter-Cologne Water Pollution Control Act (Porter-Cologne Act), various provisions of the California Water Code governing water rights, and the public trust doctrine. (Water Board comments p. 4.)

The Corps of Engineers’ Notice describes the alternatives presently under consideration. (85 Fed. Reg. 51420 at 51421.) The scope of alternatives is too narrow to

meet the requirements of the National Environmental Policy Act (NEPA.) The alternatives as described simply consist of essentially the same water tunnel Project in different outfits. According to the Notice,

Current alternatives to be analyzed include variations of the proposed project. Options include two of three possible intake structures, multiple intake structure designs based on impact footprint and fish screen designs, intake and tunnel capacity between 3,000 to 7,500 cfs, and optimizing a tunnel alignment to minimize impacts within either a central Delta or eastern Delta corridor. (85 Fed. Reg. at 51421.)

The Draft EIS must have a much larger scope than is set forth in the Notice. Contrary to the Notice, the scope of the EIS cannot be limited to construction activities. A foundational deficiency is the apparent intention evidenced by the Notice to violate the NEPA requirement to set forth a range of reasonable alternatives to the Project and evaluate comparative merits of the alternatives. The Notice also evidences apparent intention to ignore the Delta Reform Act and California's public trust doctrine, in the course of evading consideration of obvious and required alternatives that would protect California's rivers and restore freshwater flows through the San Francisco Bay-Delta Estuary (Delta) by reducing exports. The Delta is in a state of crisis. The crisis and NEPA require no-tunnel alternatives.

The alternatives set forth in the EIS must include no-tunnel alternatives that include modern innovations reducing reliance on the Delta such as conservation, recycling, and increasing water use efficiency. Such no-tunnel alternatives would also eliminate adverse impacts of construction, and discharge of dredge and fill material.

EIS DISCUSSION REQUIRED OF CONFLICTS BETWEEN PROJECT AND CALIFORNIA LAW

The EIS will have to include discussion of, "Possible conflicts between the proposed action and the objectives of Federal, regional, State, Tribal, and local land-use plans, policies and controls for the area concerned." (NEPA Regulations, 40 C.F.R. § 1502.16(a)(5).) The declared policy of the State of California is, "to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in regional supplies, conservation, and water use efficiency. . ." (Delta Reform Act, Water Code § 85021.) The water tunnel Project would do the opposite. It would increase instead of reduce reliance on the Delta in meeting California's future water supply needs. The EIS will have to discuss this conflict between the proposed action—the tunnel Project-- and California's declared policy to reduce reliance on the Delta.

Another critically important policy established by California’s Delta Reform Act, is the policy to, “Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem.” (Water Code § 85020(c.) The tunnel Project does the opposite of restoring the Delta ecosystem. By reducing freshwater flows through the Delta, the Project would instead worsen the already degraded Delta ecosystem. This conflict also, must be discussed in the EIS.

The Corps of Engineers’ Notice declares its “jurisdiction is limited to construction activities resulting in the discharge of dredge or fill material within waters of the U.S., work or structures within navigable waters, and modifications to the federal levees and navigation projects.” (85 Fed. Reg. 51420 at 51421.) The Notice claims, “The scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP [State Water Project] and water deliveries.” (*Id.*)

Contrary to the Corps of Engineers attempt to limit the scope of the EIS, the NEPA Regulation set forth above requires EIS discussion of conflicts between the proposed action and California’s Delta Reform Act. There are no exceptions set forth in the NEPA Regulation.

ALTERNATIVES REDUCING INSTEAD OF INCREASING RELIANCE ON THE DELTA ARE REQUIRED BY CALIFORNIA LAW

As shown above, the Delta Reform Act has declared California State policy being “to reduce reliance on the Delta in meeting California’s future water supply needs through a statewide strategy of investing in regional supplies, conservation, and water use efficiency. . . (Water Code § 85021.) California State policy also is to, “Restore the Delta ecosystem, including its fisheries and wildlife, as the heart of a healthy estuary and wetland ecosystem.” (Water Code § 85020(c.)

The tunnel Project is antithetical to these provisions of the Delta Reform Act. Its purpose would be to divert enormous quantities of freshwater flows out of and away from the Sacramento River and Delta. The Project would do the opposite of *reducing* reliance on the Delta as required by the Delta Reform Act. The massive Project and expenditures to construct it would instead *increase* reliance on the Delta.

In July 2020, the California Natural Resources Agency, Cal EPA, and the California Department of Food and Agriculture issued the *Water Resilience Portfolio* (Portfolio) as required by Governor Newsom’s Executive Order N-10-19. The Portfolio admits,

Many river systems across California have been highly altered by water development and these changes have impacted natural ecosystems on which fish and wildlife depend. Climate change further threatens these ecosystems as air and water temperatures increase and dry periods become more punishing. (Portfolio p. 21.)

There is more. The Delta Conveyance Project is simply a new name for essentially the same old proposed Project -- increasing exports and reducing freshwater flows through the Delta by way of new conveyance in the form of a canal or tunnel. The Delta Reform Act established some specific requirements for the then-named version of this Project, the Bay Delta Conservation Plan (BDCP.) The State eventually dropped the positive features of the BDCP and began calling the project the California WaterFix. More recently, the State converted the twin tunnel WaterFix Project into the single tunnel the State now calls the Delta Conveyance Project. Whatever the project is called, the Delta Reform Act includes very specific requirements for comprehensive environmental review of specific subjects for the Project in Water Code § 85320(b)(3):

(A) A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of a natural community conservation plan as provided in subdivision (a) of Section 2820 of the Fish and Game Code, and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses.

(B) *A reasonable range of Delta conveyance alternatives, including through-Delta, dual conveyance, and isolated conveyance alternatives* and including further capacity and design options of a lined canal, an unlined canal, and pipelines.

(C) The potential effects of climate change, possible sea level rise up to 55 inches, and possible changes in total precipitation and runoff patterns on the conveyance alternatives and habitat restoration activities considered in the environmental impact report.

(D) The potential effects on migratory fish and aquatic resources.

[deletions]

(G) The potential effects of each Delta conveyance alternative on Delta water quality. (Emphasis added.)

The declared policy of the State of California is to require a reasonable range of Delta conveyance alternatives, “*including through-Delta. . . alternatives. . .*” That means that no-tunnel alternatives must be included in the State’s Environmental Impact Report (EIR), and also *must* be included in the Corps of Engineers’ EIS. There is no discretion in either the State or Federal executive branch of government to narrow Project objectives and alternatives contrary to what is required by the California State Legislature. We do have governments of laws not rulers in America.

Moreover, the comprehensive environmental review required by Water Code § 85320(b)(3)(A), (C), (D), and (E), must also be accomplished and disclosed in the State’s EIR and the Corps of Engineers’ EIS.

The alternative of increasing flows through the imperiled Delta by reducing exports is so obvious that the Ninth Circuit reversed in part a district court decision denying environmental plaintiffs' summary judgment because the challenged environmental document issued by the U.S. Bureau of Reclamation under NEPA “did not give full and meaningful consideration to the alternative of a reduction in maximum water quantities.” *Pacific Coast Federation of Fishermen’s Assn’s v. U.S. Dept. of the Interior*, 655 Fed.Appx. 595, 2016 WL 3974183 *3 (9th Cir., No. 14-15514, July 25, 2016)(Not selected for publication). “Reclamation’s decision not to give full and meaningful consideration to the alternative of a reduction in maximum interim contract water quantities was an abuse of discretion, and the agency did not adequately explain why it eliminated this alternative from detailed study.” *Id.* at *2. Reclamation’s “reasoning in large part reflects a policy decision to promote the economic security of agricultural users, rather than an explanation of why reducing maximum contract quantities was so infeasible as to preclude study of its environmental impacts.” *Id.* at *3.

The requirement under NEPA for Reclamation to consider the obvious alternative of reducing exports to increase flows through the Delta is so obvious that the Ninth Circuit’s decision was not selected for publication because no new legal analysis was required to reach the decision. The decision pertained to interim two-year contract renewals. If the alternative of reducing exports must be considered during renewal of two-year interim contracts it most assuredly must be considered during the course of the epic decision involved here.

In *California v. Block*, 690 F.2d 753, 765-769 (9th Cir. 1982), the project at issue involved allocating to wilderness, non-wilderness or future planning, remaining roadless areas in national forests throughout the United States. The court held that the EIS failed to pass muster under NEPA because of failure to consider the alternative of increasing timber production on federally owned lands currently open to development; and also because of failure to allocate to wilderness a share of the subject acreage "at an intermediate percentage between 34% and 100%." 690 F.2d at 766. Like the situation here where a trade-off is involved between water exports and Delta restoration, the Forest Service program involved "a trade-off between wilderness use and development. This trade-off however, cannot be intelligently made without examining whether it can be softened or eliminated by increasing resource extraction and use from already developed areas." 690 F.2d at 767. Here, likewise, trade-offs cannot be intelligently analyzed without examining whether the impacts of alternatives reducing exports can be softened or eliminated by increasing water conservation and recycling, and eventually retiring drainage-impaired agricultural lands in the areas of the exporters from production. *Accord, Oregon Natural Desert Assn. v. Bureau of Land Management*, 625 F.3d 1092, 1122-1124 (9th Cir. 2010) (EIS uncritical alternatives analysis privileging of one form of use over another violated NEPA).

NEPA expressly requires an EIS to include "alternatives to the proposed action." 42 U.S.C. § 4332(C)(iii.) Moreover, NEPA expressly requires Federal agencies to, "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(E.)

"Unresolved conflicts concerning alternative uses of available resources" are precisely what are involved here. The Project takes the side in the conflict of increasing and maximizing exports to water users. The other side in the conflict would instead focus on preserving Delta water supply and water quality by increasing, maintaining, or at least not reducing freshwater flows through the Delta. As set forth earlier, the Corps of Engineers presently intends to issue a Draft EIS limited to construction activities, and not extending to the potential downstream effects from the diversion of water through new intakes. (85 Fed. Reg. 51420 at 51421.) That would violate the statutory command established by Congress in NEPA, 42 U.S.C. § 4332(E.)

Here, the alternatives analysis by confining alternatives to tunnel alternatives, would unlawfully privilege water exports over protection of Delta water quality, water

quantity, public trust values, and Endangered Species Act (ESA) values. That would violate NEPA, 42 U.S.C. § 4332(E.)

The limitation of alternatives to tunnel alternatives is also like the situation in *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800 (9th Cir. 1999.) The Ninth Circuit held an EIS inadequate because, “the Forest Service failed to consider an adequate range of alternatives. The EIS considered only a no action alternative along with two virtually identical alternatives.” (177 F.2d at 813.) A federal agency cannot ignore applicable goals or policies “when it determines the reasonable range of alternatives for NEPA review of site-specific actions.” *Western Watersheds Project v. Abbey*, 719 F.3d 1035, 1053 (9th Cir. 2013)(holding Environmental Assessment (EA) violated NEPA by not considering a reasonable range of alternatives.)

The EIS must not be confined to tunnel alternatives. No-tunnel alternatives must be included.

WE PRESENT AN ALTERNATIVE

We present *A Sustainable Water Plan for California* (Environmental Water Caucus, May 2015) as a reasonable alternative to the Delta Conveyance Project. The alternative is at: <http://ewccalifornia.org/reports/ewcwaterplan9-1-2015.pdf>. A copy of *A Sustainable Water Plan for California* is also attached hereto. The actions called for by this no-tunnel alternative include: reducing exports to no more than 3,000,000 acre-feet in all years in keeping with State Water Board Delta flow criteria (for inflow as well as outflow); water efficiency and demand reduction programs including urban and agricultural water conservation, recycling, storm water recapture and reuse; reinforced levees above PL 84-99 standards; installation of improved fish screens at existing Delta pumps; elimination of irrigation water applied on up to 1.3 million acres of drainage-impaired farmlands south of the Bay-Delta; return the Kern Water Bank to State control; restore Article 18 urban preference; restore the original intent of Article 21 surplus water in SWP contracts; conduct feasibility study for Tulare Basin water storage; provide fish passage above and below Central Valley rim dams for species of concern; and retain cold water for fish in reservoirs. We also request that the range of reasonable alternatives include reducing exports both more and less than the 3,000,000 acre feet limit called for by this alternative.

The NEPA Regulations require,

The draft environmental impact statement *shall include a summary that identifies all alternatives*, information, and analyses submitted by State, Tribal, and local

governments and other public commenters during the scoping process for consideration by the lead and cooperating agencies in developing the environmental impact statement. (40 C.F.R. § 1502.17(a)(Emphasis added.)

There are no exceptions set forth in the NEPA Regulation. Our public interest organizations are “public commenters during the scoping process.” The Draft EIS *must* include a summary identifying our *A Sustainable Water Plan for California* as an alternative to the Delta Conveyance Project. Moreover, in contrast to the proposed Project; the *A Sustainable Water Plan for California* no-tunnel alternative is consistent with, instead of contrary to, California’s Delta Reform Act and public trust doctrine.

PUBLIC TRUST DOCTRINE ANALYSIS WILL BE OF CRITICAL IMPORTANCE IN DOING THE QUANTIFICATION WORK REQUIRED BY THE DELTA REFORM ACT AND PREPARING AN ADEQUATE EIS

The California Supreme Court has held that under California’s public trust doctrine, “[t]he state has an affirmative duty to take the public trust into account in the planning and allocation of water resources.” (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419, 446). The Delta Reform Act incorporates this principle. It mandates, “[t]he longstanding constitutional principle of reasonable use and the public trust doctrine shall be the foundation of state water management policy and are particularly important and applicable to the Delta.” (Water Code § 85023.)

The Corps of Engineers must consider the public trust doctrine during all stages of the proposed Project, especially when assessing the quantity of water that will be allocated to flow through the Project. The Corps of Engineers’ Notice fails to mention the public trust doctrine altogether, even though the doctrine is crucial in understanding the State’s water supply availability.

Adequate quantification is necessary to carry out an informed analysis of how much water is actually available for export and how much water can be exported while restoring the Delta. *Moreover, it is an undeniable fact that consumptive water rights claims are 5 ½ times more than available supply.* Additionally, quantification is necessary to determine how much claimed water needs can be reduced by such means as conservation and recycling.

California’s Water Resilience Portfolio reported, that “[i]mproved understanding is needed about the amount of water that must stay in rivers and streams to protect fish, wildlife, habitat, and water quality....Drastic loss of fish and wildlife habitat makes it

important to restore and connect habitat where feasible. (Portfolio p. 13.) The Portfolio goes on to admit,

The projected statewide water needs of California fish, wildlife, and natural ecosystems have not been quantified, given the diversity of the state's river systems and evolving understanding of both the biological needs of species and future climate-driven conditions. However, it is clear that each river system requires adequate season-by-season water flow to protect the natural functions fish and wildlife need. Such flows also support healthy water quality and temperatures and should be complemented by adequate habitat and removal of invasive species to enable fish and wildlife to thrive. (Portfolio p. 15.)

The EIS must include an analysis of the 26 rivers of the Delta watershed that conforms with the public trust doctrine and allows decision makers to make informed, rational decisions about whether the Project is a reasonable or even a feasible alternative. Having a real public trust analysis that includes all non-market public trust resources, including clean water, healthy flowing rivers, healthy abundant fish, and recreational opportunities, is also critical information for a holistic alternatives analysis. Such analysis will be necessary in order to comply with NEPA.

THE PROJECT WILL HAVE NUMEROUS, SERIOUS, ADVERSE ENVIRONMENTAL IMPACTS

The California Department of Water Resources (DWR) issued its Notice of Preparation (NOP) of Draft EIR for the Delta Conveyance Project on January 15, 2020. DWR's NOP included a list of probable environmental effects of the Project:

Probable effects may include:

- Water Supply: changes in water deliveries.
- Surface Water: changes in river flows in the Delta.
- Groundwater: potential effects to groundwater levels during operation.
- Water Quality: changes to water quality constituents and/or concentrations from operation of facilities.
- Geology and Seismicity: changes in risk of settlement during construction.
- Soils: changes in topsoil associated with construction of the water conveyance facilities.
- Fish and Aquatic Resources: effects to fish and aquatic resources from construction and operation of the water conveyance facilities.
- Terrestrial Biological Resources: effects to terrestrial species due to construction of the water conveyance facilities.
- Land Use: incompatibilities with land use designations.
- Agricultural and Forestry Resources: preservation or conversion of farmland.
- Recreation: displacement and reduction of recreation sites.

- Aesthetics and Visual Resources: effects to scenic views because of water conveyance facilities.
- Cultural and Tribal Cultural Resources: effects to archeological and historical sites and tribal cultural resources.
- Transportation: vehicle miles traveled; effects on road and marine traffic.
- Public Services and Utilities: effects to regional or local utilities.
- Energy: changes to energy use from construction and operation of facilities.
- Air Quality and Greenhouse Gas: changes in criteria pollutant emissions and localized particulate matter from construction and greenhouse gas emissions.
- Noise: changes in noise and vibration from construction and operation of the facilities.
- Hazards and Hazardous Materials: potential conflicts with hazardous sites.
- Public Health: changes to surface water could potentially increase concerns about mosquito-borne diseases
- Mineral Resources: changes in availability of natural gas wells due to construction of the water conveyance facilities.
- Paleontological Resources: effects to paleontological resources due to excavation for borrow and for construction of tunnels and canals.
- Climate Change: increase resiliency to respond to climate change
- Growth Inducement and Other Indirect Effects: changes to land uses as a result of changes in water availability resulting from changes in water supply deliveries (NOP at pp. 9-10.)

The EIS must include analysis of the above effects among the environmental consequences of the project.

A more detailed and comprehensive recital of what must be included in the environmental analysis of the Project is set forth in the April 15, 2020, State Water Resources Control Board (Water Board) comments on the NOP. (Copy attached; copy included in DWR's scoping summary, Appendix E at DCS561, July 15, 2020.) The Water Board notes,

the Project also has the potential to adversely affect aquatic resources by modifying the timing, volume, and duration of freshwater flows and tidal energy that influence the amount of aquatic habitat and water quality habitat conditions such as freshwater flow, salinity, dissolved oxygen, turbidity, and temperature. In particular, adding new water diversion facilities closer to the major migratory routes of vulnerable fish populations, such as Sacramento River Chinook salmon (all runs), has the potential to expose these species to greater risks and impacts as compared to current conditions. (Water Board letter p. 6.)

The Water Board letter listed 12 fish species, seven of them endangered or threatened, “that should be evaluated in the EIR at the life-stage and population level to determine the potential for the Project to cause significant environmental effects and appropriate avoidance and mitigation measures.” (Water Board letter pp. 6-7.)

The Water Board letter also explained,

The water quality analysis should evaluate the potential for the Project to cause or contribute to potential significant environmental impacts related to salinity, submerged and floating aquatic vegetation, harmful algal blooms, mercury, nutrients, dissolved oxygen, dissolved organic carbon, turbidity, temperature, and other water quality constituents. (Water Board letter p. 8.)

The Water Board letter noted,

Portions of the Delta within the project area are currently on the Clean Water Act Section 303(d) List of Impaired Waters for not meeting water quality standards due to chlordane, chlorpyrifos, DDT. . , diazinon, dieldrin, electrical conductivity, Group A pesticides, invasive species, mercury, PCBs. . , and toxicity. (Water Board letter p. 8.)

The fact is, Delta urban waterways are stagnant and thick with algal scum and toxins, resulting in harmful algal blooms (HABs). HABs can be easily found from Stockton to Discovery Bay with smaller ones becoming visible in sloughs between the cities. According to the EPA, HABs can:

- Produce extremely dangerous toxins that can sicken or kill people and animals
- Create dead zones in the water
- Raise treatment costs for drinking water
- Hurt industries that depend on clean water

(<https://www.epa.gov/nutrientpollution/harmful-algal-blooms>). Reducing freshwater flows by the Project will increase the buildup of these dangerous algal blooms.

The State is well aware of the increased frequency of these harmful algal blooms. The Portfolio explains, “[a] warmer climate provides optimal conditions for worsening harmful algal blooms, which can force the closure of beaches, rivers, and lakes due to health risks for people and pets.” (Portfolio p. 13)

The EIS must address all of the issues set forth in the Water Board letter including the requirements for an adequate project description, accurate baseline conditions, effects

of climate change, project alternatives and operating scenarios, impact assessment, evaluation of additional conveyance capacity, cumulative effects, detailed modeling results, and Project-caused dangers to public health and safety.

THE EIS MUST EVALUATE THE PROJECT IN LIGHT OF WORSENING CONDITIONS CAUSED BY CLIMATE CHANGE

The Water Resilience Portfolio notes some impacts climate change will have on the Delta. “The Delta overview in this section focuses on climate risks to the low-lying estuary, as they are particularly acute, with far-reaching implications.” (Portfolio p. 49.) “Rising winter temperatures will reduce mountain snowpack in the Sierra Nevada and Cascade ranges by 65% on average by the end of the century, increasing flashy winter run off and flood risks while reducing spring and summer stream flow.” (Portfolio p. 14.) Additionally, “San Francisco Bay and the Sacramento-San Joaquin Delta will face salinity intrusion as sea level rises” due to climate change. (Portfolio p. 15.) “Although the Delta is not one of the state’s ten major hydrologic regions, it plays a complex role in the water resilience of California and faces particularly acute climate risks.” (Portfolio p. 110.) The Portfolio explains that exports will be naturally curtailed over time,

Even the most gradual expressions of sea level rise will eventually transport more ocean salinity into the Bay-Delta. This will affect brackish and freshwater habitats. The trade-off to manage salinity could reduce the amount of water available to support an ecosystem already under stress and for export from the Delta. Exports could be naturally curtailed by about 10% under mid-century climate projections, and by about 25% by 2100. (Portfolio p. 111.)

Proceeding to approve and develop a multi-billion-dollar tunnel Project to further reduce freshwater flows through the Delta in the face of reduced flows and increased salinity intrusion due to climate change looks like intentional infliction of an environmental disaster on the Delta. It would create a future choice between completing the destruction of the Delta or on the other hand, having constructed a hugely expensive but empty water Tunnel. The Corps of Engineers needs to prepare an EIS that will honestly and accurately disclose the degree of the environmental harms that would be caused by the tunnel Project.

THE EIS MUST DISCLOSE AND ASSESS THE FUTURE REDUCTION IN CLAIMED NEEDS FOR THE PROJECT AS A RESULT OF NEW TECHNOLOGIES

The Portfolio notes that diversifying water supply resources “and reuse and recycling of water have helped many communities effectively weather drought.”

(Portfolio p. 12). “The most cost-effective, environmentally beneficial way to stretch water supplies is through better water use efficiency and eliminating water waste....Recycled water is a sustainable, nearly drought-proof supply when used efficiently, and the total volume of water California recycles today could triple in the next decade.” (Portfolio p. 19.) The Portfolio admits,

Under 2009 law [the Delta Reform Act], water districts that depend upon delivery of water drawn from the Delta must reduce their reliance on the Delta for those supplies. Many Southern California water districts are building regional self-sufficiency but do not expect to be able to feasibly replace *all* water supply diverted from the Delta over the next couple of decades. (Portfolio p. 113.)

The fact that exporters can feasibly replace much, if not all, water supply diverted from the Delta, over the next couple of decades, is a red flag that the Project would be an unnecessary disaster for the Delta and an unnecessary waste of billions of dollars. “DWR expects permitting to be complete in mid-2024.” (DWR Delta Conveyance Project August Update, published August 21, 2020.) The Corps of Engineers estimates that “Construction of the overall conveyance project, if approved, would take approximately 13 years, . . .” (Notice, Fed. Reg. 51420 at 51421.” In other words, the Project, if approved, would not even be available “over the next couple of decades.” By the time the Project would be available, climate change will have further exacerbated the Delta crisis and technological innovations will have further reduced the claimed need for the Project.

For example, the City of Los Angeles has established steps to reduce its imported water supply by 50% by the year 2025. According to Water Replenishment District President John Allen, “Water recycling is the wave of the future.” (Release, August 22, 2019). Increasing water recycling and efficiency is enshrined in state law: SB 606 and AB 1660, enacted in 2018, emphasize efficiency and stretching existing water supplies in our cities and on farms.

Understanding the degree of need, if any, for the Project is pertinent information that the Draft EIS must fully assess. In the absence of a full understanding, the Draft EIS would simply be a stacking of the deck in favor of the tunnel Project and prevent a fair, adequate comparative analysis of it with through Delta no-tunnel alternatives.

THE CORPS OF ENGINEERS’ DRAFT EIS SHOULD FOLLOW, NOT PRECEDE, DWR’S DRAFT EIR

The Corps of Engineers’ Notice states, “The draft EIS is scheduled to be available for public review and comment in mid-2021.” (85 Fed. Reg. 51420 at 51421-51422.)

DWR’s Delta Conveyance Project August Update states its “schedule has been modified to align the state and federal environmental review processes, as well as to accommodate additional time needed for modeling.” (DWR Update Published August 21, 2020.)

DWR’s Delta Conveyance Project Schedule shows that what it calls an “Admin Draft EIR/EIS” will be completed by mid-2021, with the “Public Draft EIR/EIS” not available for public review until about mid-2022. (DWR Schedule attached.)

It makes no sense for the Corps of Engineers, a permitting agency, to be issuing its Draft EIS *before* the agency actually carrying out the Project—DWR— issues its Draft EIR. It will be DWR that will be defining the details of its proposed tunnel Project which would be the basis and definition of what the Corps of Engineers would be asked to permit. The Corps of Engineers must modify its schedule so it will have the benefit of the information in DWR’s Draft EIR, before the Corps issues its Draft EIS for public review and comment.

CONCLUSION

The Draft EIS must include real alternatives, including the no-tunnel *A Sustainable Water Plan for California* alternative, to the proposed Project. The Draft EIS must honestly and accurately provide environmental full disclosure of the adverse impacts that would result from the proposed Project.

Contacts for this comment letter are Conner Everts, Facilitator, Environmental Water Caucus (310) 804-6615 or connere@gmail.com, or Robert Wright, Counsel, Sierra Club California (916) 557-1104 or bwrightatty@gmail.com . We would do our best to answer any questions you may have.

Sincerely,



E. Robert Wright, Counsel
Sierra Club California



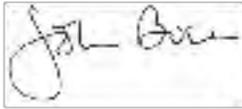
Kathryn Phillips, Director
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Barbara Barrigan-Parrilla, Executive Director, Restore the Delta



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Carolee Krieger, Executive Director
California Water Impact Network



Barbara Vlamis, Executive Director
AquAlliance



Bill Jennings, Executive Director
California Sportfishing Protection
Alliance



Jonas Minton, Senior Water Policy
Advisor
Planning and Conservation League

Attachments:

State Water Resources Control Board Comments on Draft Environmental Impact Report for the Long-Term Operation of the State Water Project (January 30, 2020.)

A Sustainable Water Plan for California (Environmental Water Caucus, May 2015.)

State Water Resources Control Board Comments (April 15, 2020) on DWR's Notice of Preparation of Draft EIR on Delta Conveyance Project

Department of Water Resources Delta Conveyance Project Schedule

Via E-mail (Zachary.M.Simmons@usace.army.mil.)

U.S. Army Corps of Engineers
Sacramento Regulatory Division
Attn: Mr. Zachary Simmons,
1325 J Street, Room 1350
Sacramento, CA 95814-2922.

Re: Scoping Comments of Shingle Springs Band of Miwok Indians on Notice of Intent to Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project, Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA

Dear Mr. Simmons:

On behalf of the Shingle Springs Band of Miwok Indians (Tribe), we submit the following scoping comments on the Corps' Notice of Intent to Prepare an Environmental Impact Statement for Construction of the Proposed Delta Conveyance Project (DCP), Sacramento, San Joaquin, Contra Costa, and Alameda Counties, CA, which was published on August 20, 2020. Our intent is to provide the Corps of Engineers with specific detail about the scope, significant environmental issues, reasonable alternatives, and mitigation measures related to the Tribe's area of statutory responsibility that will need to be explored in the EIS.

Our Tribe is currently focusing its limited resources on immediate health and safety issues facing its citizens, and we expect to continue that focus until the pandemic emergency has passed. With that in mind, we have repeatedly requested that DCP-related actions and deadlines be temporarily suspended. Although other stakeholders (most notably the Delta Protection Commission) have joined those requests, we have yet to receive any adequate response.

Interest of the Shingle Springs Band of Miwok Indians.

You must realize that the proposed project area is located in a portion of the Delta that is now and has been used by our people and several Native American groups throughout recent prehistory and the historic period. Our Tribe's ancestral homelands include territory that spans north up the Sacramento River from the Delta with village sites located on both the east and west banks, to the Feather and Bear rivers, and east into the sierras. According to the information included in the 2016 Final EIR of the California Waterfix Project, anthropologists, such as Kroeber, list several ethnographic Nisenan villages documented along the eastern and western banks of the Sacramento River and along the northern and southern banks of the American River, with additional village sites along the Consumnes and Feather Rivers. Along with Maidu and Konkow, the languages of the Nisenan people's northern neighbors, the Nisenan language forms the Maidu language family of the Penutian linguistic stock (Shipley 1978: 83). Wilson and Towne (1978) defined three main subgroups within the Nisenan tribe: Northern Hill Nisenan, Southern Hill Nisenan, and Valley Nisenan.

The Valley Nisenan resided adjacent to the northernmost extent of the Plan Area before Euroamerican contact. Valley Nisenan located their permanent settlements along the riverbanks on

elevated natural levees near an adequate food and water supply, in fairly open terrain, with southern exposure preferred (Johnson and Johnson 1974; Beals 1933). Villages ranged from “tribelet” of small extended families consisting of 15 to 25 individuals to larger communities with more than 100 people (Kroeber 1925). Village sizes ranged from 3 houses up to 40 or 50. Houses were domed structures covered with earth and tule or grass. Brush shelters were used in the summer and at temporary camps during food-gathering rounds (Kroeber 1925:407–408). Larger villages often had semi-subterranean dance houses, which were covered in earth and tule or brush and had a central smoke hole at the top. Other common village structures were the sweathouse, used for curing and purification, and the granary, used for storing acorns (Wilson and Towne 1978: 388–389).

The smallest Nisenan social and political unit was the family. Each extended family was represented by a family leader, who was called to council by a headman. The headman of the dominant village in a cluster of villages (tribelet) had the authority to call upon the aid of surrounding villages in social and political situations. The headman also served as village adviser, directed special festivities, arbitrated disputes, and acted as an official host (Wilson and Towne 1978: 393; Beals 1933: 360). Early Nisenan contact with Europeans appears to have been limited to the southern reaches of their territory, beginning in the early 1800s.

Unlike the Valley Nisenan, the groups in the foothills remained relatively unaffected by the European presence until the discovery of gold at Coloma in 1848. In the years following the gold discovery, Nisenan territory was overrun by settlers. Gold seekers and the settlements that sprang up to support them were nearly fatal to the native inhabitants. Survivors worked as wage laborers and domestic help and lived on the edges of foothill towns. Despite severe depredations, descendants of the Nisenan still live in the northern Central Valley and maintain their cultural identity (Wilson and Towne 1978: 396–397).

Our Tribe also comes from Miwok people. Anthropologists have ascribed the project area to the Plains Miwok (Levy 1978: Figure 1; Theodoratus et al. 1980: Map 2), and the Bay Miwok (Bennyhoff 1977:164; Levy 1978: Figure 1; Theodoratus et al. 1980: Map 2). Given that the Miwok village Ompin was located close to the present project area (Levy 1978), it is likely that Bay Miwok used the area most intensively up into the historic period, although Plains Miwok, Southern Patwin, and Northern Yokuts and Ohlone/Costanoan groups made periodic visits to the project area as well (Theodoratus et al. 1980). Our membership is drawn from those aboriginal groups.

Miwok territory encompassed most of the project area. The Bay Miwok distributed themselves into groups that consisted of a village or groups of villages that shared linguistic and/or kinship affinities. Theodoratus et al. (1980:78) estimated the average population of Bay Miwok tribelets at 300 persons. Settlements were located on permanent watercourses and intermittent streams (in drier areas), and on high ground in areas near the Delta. The Bay Miwok followed a seasonal round to acquire necessary food and other materials. The Miwok visited the project area to fish and gather and hunt pronghorn antelope, jackrabbit, and possibly tule elk (Theodoratus et al. 1980). Seed-bearing grasses and sedges may have been available during this period as well. Resources available in the Delta and the surrounding marshlands included deer, pronghorn antelope, tule elk, rodents, waterfowl, freshwater mussels, freshwater clams, fish, and various insects (Levy 1978).

The Miwok constructed several types of structures using organic materials and these plants and animals remain central to our cultural practices. Conical thatch structures covered with tule mats were commonly used as residences both along the Delta and in uplands. The Miwok constructed semi-subterranean, earth-covered lodges that served as winter homes. Other structures included acorn granaries, menstrual huts, sweathouses, and assembly houses of two types: a semi-subterranean earth lodge and a circular brush enclosure. The Miwok made the semi-subterranean earth lodge a ritual and social focal point. The brush enclosure provided space for ceremonies (Levy 1978). Miwok technology included bone, stone, antler, wood, and textile tools. Hunting was accomplished with bow and arrow as well as traps and snares. Basketry items included seed beaters; cradles; sifters; rackets for ball games; and baskets for storage, winnowing, parching, and carrying burdens. Other textiles included mats and cordage. Tule rafts were constructed for navigation on rivers and in the Delta (Levy 1978).

The Miwok first came into contact with Europeans in the second half of the eighteenth century, when Spanish explorers entered the area. The first baptisms took place in 1794 and the last in 1827. A majority of the Bay and Plains converts were taken to Mission San Francisco and Mission San Jose. It appears that some Bay and Plains Miwok groups disappeared through the combined effects of population removal to the missions and epidemics. Accounts exist of Miwok individuals who resisted missionization and fled to their villages. As a consequence, the Spanish formed military expeditions to recapture the fugitives. At first the Miwok remained hidden in Delta lands, but eventually they learned to emulate Spanish warfare tactics. Several Miwok groups initiated counterattacks in the form of raids on missions and ranchos (Heizer 1941). With the arrival of trappers, gold miners, and settlers in California, the Miwok suffered exposure to newly introduced diseases. Although this early contact with settlers had a destructive impact on the Miwok population, our people have survived and are still dependent upon resources of the project area.

The Scope of the EIS must be Broad and Include a No-Project Alternative.

The August 20, 2020 Notice of Intent appears to be focused on construction of facilities to maximize water deliveries for consumptive purposes south of the Delta while largely ignoring environmental impacts of Department of Water Resources (DWR) actions and the coordinated operations with the Central Valley Project (CVP). Your Notice states that “The [NEPA] scope does not extend to the potential downstream effects from the diversion of water through new intakes or to the overall SWP and water deliveries.” 85 Fed. Reg. 51421 (August 20, 2020). This portends a serious legal error. NEPA review cannot be compartmentalized in a way that disregards connected and cumulative impacts. *Standing Rock Sioux Tribe v. U.S. Army Corps of Eng’rs*, No. 1:16-cv-01534, Memorandum Opinion (D.D.C. March 25, 2020), ECF No. 496, illustrates the error. There the Corps initially ignored the fact that permitting a pipeline easement would lead to oil transport under waters of the United States, which in turn would create serious risks. As a result, the Corps’ NOI, published at 85 Fed. Reg. 55843 (Sept. 10, 2020), must now examine “potentially affected environmental, social, and economic issues relevant to the potential grant of an easement and [determine] if there are reasonable alternatives to be considered in the EIS.” This includes a “No action alternative, where the Corps would not grant an easement and would require restoration of the Corps-administered federal lands.” *Id.* Similarly, the EIS here must be broad and it must include a no-project alternative.

One of the essential purposes of the CVP, which will be integrated with these facilities, is to mitigate, restore, preserve, and propagate fish and wildlife. Central Valley Project Improvement Act Section 3406(a). Consequently, the description of the purpose of the proposal as well as subordinate objectives must also include protection of fisheries, particularly those in the Delta but also those in the Trinity and Klamath rivers, from which much of the water comes.

To ensure full disclosure of environmental impacts, inclusion of fisheries protection in the EIS statement of purpose is required as a benchmark against which EIS alternatives will be measured. Any alternatives considered for long-term operation with the SWP-CVP must consider ways to fully implement the mitigation, restoration, preservation, and propagation of fish and wildlife and tribes' economies as mandated by Congress and required by the United States' and the State's obligations.

We first turn to connected upstream effects of the DCP construction and operations that must be considered in the Corps' EIS. The Trinity River System is part of the Delta Conveyance Project Area, north of the Delta. Briefly, in addition to the direct effects in the Delta (discussed more below), the connected and cumulative effects raise significant issues of concern to us centered on (1) protection of the water reserved to the Trinity River by federal law and the 2000 Trinity River Fisheries Restoration Record of Decision (ROD); (2) protection of water quality, particularly temperature, of the Delta and reserved Trinity River water; and (3) protection of other water reserved to the Trinity River by the Trinity River Division Act of 1955, (Pub. L. No. 84-386) (1955 Act). These issues directly affect the timing and amount of water available to the conveyance project, and hence, its benefits. The Trinity River legal framework also illustrates the importance of considering federal trust responsibilities to protect Indian resources, a key obligation that the EIS must address.

Since time immemorial, the fishery resources of the Trinity and Klamath River (into which the Trinity flows) have been the mainstay of the life and culture of the Hoopa Valley Tribe, the Yurok Tribe and the Resighini, as well as other tribes in the Klamath River basin. The United States, as trustee for the tribes, has a fiduciary responsibility to protect and preserve the tribes' trust resources. *Klamath Water Users Ass'n v. Patterson*, 204 F.3d 1206, 1213 (9th Cir. 2000); Memorandum to Regional Director, Bureau of Reclamation from Regional Solicitor, Pacific Southwest Region (July 25, 1995) ("Reclamation must exercise its statutory and contractual authority to the fullest extent to protect the tribal fisheries and tribal water rights").

When Congress authorized the Trinity River Division (TRD) of the Central Valley Project (CVP) in 1955, Congress recognized that "an asset to the Trinity River Basin, as well as to the whole north coastal area, are the fishery resources of the Trinity River." S. Rep. No. 1154, 84 Cong., 1st Sess. (1955 Senate Report) at 5; H.R. Rep. No. 602, 84th Cong., 1st Sess. (1955 House Report) at 4. Congress accordingly limited the integration of the TRD into the CVP and required the Secretary of the Interior to exercise a priority for use of all TRD water necessary to protect fish and other in-basin needs. 1955 Trinity River Division Central Valley Project Act, Pub. L. No. 84-386, 69 Stat. 719 ("1955 Act"), § 2 (provisos); Memorandum from Solicitor to Assistant Secretary, Land and Water Resources, Dec. 7, 1979. See also Memorandum from Solicitor to Secretary (M-37030) re Trinity River Division Authorization's 50,000 Acre-Foot

Proviso and the 1959 Contract between the Bureau of Reclamation and Humboldt County, December 23, 2014.¹

Nonetheless, development and operation of the TRD without faithful adherence to the foregoing legal and fiduciary obligations took a devastating toll on the tribes, the Trinity and Klamath Rivers, and the species that rely on those rivers. Between 1963 and 1981, Chinook salmon runs in the Trinity River declined by 80%. Eighty to ninety percent of total salmonid habitat in the Trinity Basin was lost during that time. In 1981, relying on an environmental study, the authority provided by the 1955 Act, § 2, and the trust obligation to protect tribal resources, the Secretary ordered an increase of annual flows released from the TRD to the Trinity River downstream of Lewiston Dam to 340,000 acre-feet annually and further directed initiation of a Trinity River Flow Evaluation Study (“TRFES”) to study and develop a flow regime and other measures to improve habitat conditions in the Trinity River. The Secretary concluded “there are responsibilities arising from congressional enactments, which are augmented by the federal trust responsibility to the Hupa and Yurok tribes, that compel restoration of the river’s salmon and steelhead resources to pre-project levels.” 1981 Secretarial Order.

In 1984, Congress affirmed and authorized the Secretary’s restoration directive in the Trinity River Basin Fish and Wildlife Management Act (“1984 Act”), Pub. L. No. 98-541, 98 Stat. 2721. Congress extended the scope of the restoration mandate to the Klamath River in the Klamath River Basin Conservation Restoration Area Act (“1986 Act”), Pub. L. No. 99-552, 100 Stat. 3080. The express goal and directive of these acts was to restore anadromous fish populations to optimum levels in both the Klamath and Trinity River Basins. Congress reauthorized and amended the 1984 Act in the Trinity River Basin Fish and Wildlife Management Act of 1996 (“1996 Act”), Pub. L. No. 104-143, 110 Stat. 1339 (1996). The 1996 Act amended and expanded the scope of the 1984 Act’s mandate to include rehabilitation of fish habitat “in the Klamath River downstream of the confluence with the Trinity River.” 1996 Act, § 3(b). In 1992, Congress passed the Central Valley Project Improvement Act (“CVPIA”), Pub. L. No. 102-575, § § 3401-12, 106 Stat. 4600, 4706-31 (1992). Section 3406(a) of the CVPIA modified the purposes of the CVP to include the mitigation, protection, and restoration of fish and wildlife. Section 3406(b)(23) of the CVPIA expressly confirmed the Bureau of Reclamation’s trust responsibility to the tribes and their fishery. The CVPIA required the Secretary to take specific actions “in order to meet Federal trust responsibilities to protect the fishery resources of the Hoopa Valley Tribe, and to meet the fishery restoration goals of the [1984 Act].” CVPIA, § 3406(b)(23). Congress directed the Secretary to complete the TRFES and, if the Secretary and the Tribe concurred in the TRFES’ recommendations once completed, directed the Secretary to implement any increase in flow and CVP operations accordingly. *Id.*, § 3406(b)(23)(B). The U.S. Fish and Wildlife Service, the Hoopa Valley Tribe and other agencies completed the TRFES in 1999. The TRFES recommended a flow regime and management actions to rehabilitate habitat in the mainstem channel of the Trinity River between Lewiston Dam and the

¹ The first proviso of Section 2 of the 1955 Act provides that “. . . the Secretary is authorized and directed to adopt appropriate measures to insure the preservation and propagation of fish and wildlife” The second proviso of Section 2 of the 1955 Act provides that “. . . not less than 50,000 acre-feet shall be released annually from the Trinity Reservoir and made available to Humboldt County and downstream water users.” These two provisos “represent separate and independent limitations on the TRD’s integration with, and thus diversion of water to, the CVP.” Memorandum M-37030, December 23, 2014.

Klamath confluence at Weitchpec. The TRFES did not address restoration issues downstream of the Trinity-Klamath confluence. Following completion of the TRFES and an EIS under NEPA, the Secretary, with the Hoopa Valley Tribe's concurrence as required by section 3406(b)(23) of the CVPIA, executed the Trinity River Mainstem Fishery Restoration Record of Decision ("ROD") in December 2000. The 2000 Trinity ROD adopted the TRFES' recommendations to restore physical fishery habitat in the mainstem Trinity River pursuant to Congress' direction in the 1984 Act and the CVPIA. The tribes have been and remain active leaders in implementation of habitat rehabilitation projects pursuant to the ROD.

In September 2002, thousands of fall-run Chinook salmon died in the lower-Klamath River during their migration upstream when a combination of unusually low flows, warm water temperatures, and a large number of returning fish led to a severe disease outbreak. In certain recent years (2003-2004, 2012-2015, 2020), the Secretary has scheduled extra releases of water from Trinity Reservoir during the late summer when fishery managers and scientists determined that fish returns and low flow conditions were expected to duplicate conditions present in 2002. The Ninth Circuit affirmed the Secretary's authority to implement these "flow augmentation releases" pursuant to Section 2 of the 1955 Act. *San Luis & Delta-Mendota Authority v. Haugrud*, 848 F.3d 1216 (9th Cir. 2017). On April 20, 2017, the Bureau of Reclamation executed its Record of Decision re Long-Term Plan to Protect Adult Salmon in the Lower Klamath River Final Environmental Impact Statement (FARs ROD). The Bureau selected the Proposed Action of providing supplemental flows from mid-August to late September, from Lewiston Dam to prevent a disease outbreak in the lower Klamath River in years when the flow in the lower Klamath River is projected to be less than 2,800 cfs. The Bureau relied on Section 2 of the 1955 Act for the statutory authority for its decision.

The current state of the fishery in the Delta and in the Klamath-Trinity river system remains unstable and imperiled due to continued federal mismanagement, particularly in the coordinated operation of the CVP and SWP. Abundance and fishery allowances for Chinook salmon in 2017 were at the lowest levels since the stock was first managed in 1978. In consideration of the unprecedented low stock size, the Pacific Fishery Management Council significantly limited 2017 marine fisheries affecting Klamath River fall Chinook ("KRFC"). The harvest guideline for the in river Tribal fishery was set to 814 adult KRFC. The Yurok and Hoopa Valley Tribe share the annual harvestable surplus of KRFC on a 50-50 basis with non-Tribal fisheries. This harvest of only 814 chinook salmon was the lowest ever reserved for the two tribes whose collective membership exceeds 8,000 persons. Adding to the collapse of the tribal fishery for Klamath River Chinook were record low returns of Coho salmon, which are listed (since 1997) under the Federal ESA as a "threatened" species. Klamath-Trinity origin Coho salmon are part of the Southern Oregon Northern California Coastal (SONCC) Evolutionarily Significant Unit (ESU) that are listed under the Federal ESA.

The federal statutory directive to return fish species in the Klamath and Trinity Rivers to pre-TRD levels has fallen woefully short due to mismanagement and continuing failure to recognize the priority for use of TRD water necessary to protect fish and other in-basin needs and for economic development. As an example, Trinity hatchery mismanagement has contributed to the instability and degradation of the fishery through CVP/SWP coordination mismanagement lacking proper oversight or goal and objective review. Nor can the tribes or their members

achieve the promised moderate livelihood based on fish. The United States, the State of California, and the Bureau of Reclamation, collectively and independently have a responsibility to ensure protection, preservation, and restoration of the Tribe's fisheries resources, which at the present time are in extremely imperiled condition. Any action taken by Corps with respect to DCP must be consistent with existing legal obligations to the tribes and the Trinity and Klamath Rivers.

Scoping Comments:

1. The DCP EIS Must Fully Account For, Develop, and Implement Necessary Measures for Mitigation, Restoration, Preservation and Propagation of the Affected Fish Species, Habitat, and Indian Trust Assets.

As noted, the August 20, 2020 Notice of Intent appears to be too focused on physical construction plans while largely ignoring the connected environmental impacts of the coordinated operations of the SWP and CVP on the Delta and the Trinity River. The Corps' limited authority over DCP operations does not mean that environmental impacts of DCP operations can lawfully be omitted from the EIS.

To ensure full disclosure of environmental impacts, inclusion of fisheries protection in the EIS statement of purpose is required as a benchmark against which EIS alternatives will be measured. All alternatives considered for the DCP must consider ways to fully implement the mitigation, restoration, preservation, and propagation of fish and wildlife and tribal cultural uses as mandated by Congress and required by the United States' and the State's obligations.

Specific examples of protective and restorative measures that the EIS should evaluate and ultimately adopt include:

- Since 2017, the State Water Resources Control Board has required recognition of Tribal Traditional Culture (CUL), Tribal Subsistence Fishing (T-SUB), and Subsistence Fishing (SUB) beneficial uses to inland surface waters. The Tribal Traditional Culture beneficial use protects activities specific to Native American Cultures and their historic uses of California's waters, including practices not covered by existing beneficial uses. The functions of the consumption of fish and shellfish components of the Tribal Tradition and Culture, Tribal Subsistence Fishing, and Subsistence Fishing beneficial uses, include risks to human health from the consumption of noncommercial fish or shellfish.
- Long term impacts on aquatic species, salinity and flow patterns within the Delta that will result from the DCP. At least six fish species that spend all or portions of their life cycle in the Delta are already listed as threatened or endangered under federal or state laws.
- Impacts to wildlife and air quality associated with increased road usage and traffic during construction activities.
- Impacts to shorelines, wetlands, and cultural resources resulting from haul roads, borrow pits, intake and forebay construction and levy armoring. These ground-

altering activities threaten sacred burials and village and use areas, cultural resources that are irreplaceable. Following construction, operation of the DCP may further erode these sensitive areas. The Delta is a diminishing landscape because of development. The DCA increases risks to these resources rather than restoring them. These natural resources are critically important to fish and wildlife which, in turn, are critical to our culture.

- Address increasing toxic algae problems in the Delta. Bright-green blotches of algae have been popping up all over the Delta since early summer 2020, from Discovery Bay to the Stockton waterfront, befouling the air and poisoning the water with toxins that can sicken or even kill humans and animals. This year's harmful algal blooms may be the worst ever; the DCP and Water Resilience Portfolio for California may aggravate the problem. "There are certain areas of the Delta that don't get a lot of flow for long periods of time, usually in the summer when it's really warm. Cyanobacteria love that," says scientist Brian Bergamaschi of the U.S. Geological Survey (USGS).
- Development of alternatives that reduce reliance on water diversion from the Delta and protect tribal beneficial uses.
- Full funding and implementation of actions under the 2000 Trinity River Restoration ROD.
- Augmentation of Trinity River flows beyond the requirements of the 2000 ROD as necessary for preservation and propagation of fish in the Trinity and/or Klamath Rivers when conditions warrant.
- Funding and developing infrastructure to establish and maintain temperature of water releases from TRD facilities suitable for fish and wildlife preservation and propagation.
- Upgrading the TRD hatchery facilities and funding Hoopa Valley Tribe plans for additional selective harvest.
- Accumulating and maintaining in TRD carryover storage for use in the Trinity/Klamath basin for beneficial uses, up to 150,000 acre-feet of Proviso 2 water.

In summary, no Delta Conveyance Project should be undertaken without full recognition and implementation of the Congressional priorities and mandate to mitigate, restore, preserve, and propagate fish and wildlife of the Delta and Trinity River and to provide for water in the Trinity/Klamath basin. Our Tribe depends on the Delta just as our neighboring tribes depend on water and fish of the Trinity and Klamath Rivers. The EIS must recognize that the Corps of Engineers and the Bureau of Reclamation, as federal trustees to the Tribe, must exercise statutory and contractual authority to the fullest extent to protect the tribal resources and the in-basin water needs, as well as tribal needs in the Delta. The Corps must identify and avoid any impacts related to the DCP water deliveries to SWP or CVP contractors whose entitlement to use water is manifestly junior to the tribes' right under federal law.

2. Recognize Priorities for use of TRD water downstream of Lewiston Dam.

As described above, the Trinity River Fishery Restoration ROD of 2000 resulted from Congress's requirement in CVPIA Section 3406(b)(23). In that subsection, Congress directed

that the ROD concerning “the minimum Trinity River instream fishery releases established under this paragraph [(b)(23)] and the operating criteria and procedures referred to in subparagraph (A) shall be implemented accordingly.” Thus, federal law demands compliance with the ROD. The ROD provides detailed flow releases for each day, depending on the water year type. These are mandatory. It also projects that “long-term average water exports to the Central Valley would be 630,000 acre-feet.”

Further, Proviso 1 TRD water for fishery preservation and propagation is also established in the 2017 FARs ROD. There may be additional Proviso 1 needs identified in the future, which also will have priority over diversions to the CVP. 1955 Act Proviso 2 water for economic development must also be protected from export. Accordingly, the EIS must make no assumption that, on average, more water can be exported from the Trinity System to the DCP and the CVP-DWR coordinated operation than remains after the amounts required to fulfill Proviso 1 and Proviso 2 priorities. Only water surplus to the flow releases of those provisos, and other federal obligations, is available to the coordinated operations of the CVP and SWP.

3. Avoid assuming that changes in the timing of TRD water exports to the CVP can be made.

Trinity River water is stored behind Trinity Dam, then flows approximately 10 miles to Lewiston Dam, where it is either released by the Bureau of Reclamation to the Trinity River or diverted to the Sacramento River. During warm weather, the temperature of water released to the Trinity can rise substantially as it flows between the two dams, especially when Trinity Dam releases are small and little flow is present in that reach. For this reason, the ROD provides: “the TRD [will] be operated to release additional water to the Trinity River, and the timing of exports to the Central Valley would be shifted to later in the summer to help meet Trinity River instream temperature requirements.”

Compliance with Trinity River instream temperature requirements is required by water quality standards of the North Coast Regional Water Quality Control Board (NCRWQCB), the water rights permits of the Bureau of Reclamation, and by the Biological Opinion adopted by the ROD. The Biological Opinion includes a mandatory condition, as follows: “7. In dry and critically dry water year types, Reclamation and USFWS shall work cooperatively with the upper Sacramento River Temperature Task Group to develop temperature control plans that provide for compliance with temperature objectives in both the Trinity and Sacramento rivers.”

The NCRWQCB temperature objectives are:

Lewiston Dam to Douglas City Bridge

60°F July 1 – September 14

56°F September 15 – October 1

Lewiston Dam to confluence of North Fork Trinity River

56°F

October 1 - December 31

Further, Water Rights Order 90-5, which governs the Bureau of Reclamation’s TRD water rights certificates, provides:

Permittee shall not operate its Trinity River Division for water temperature control on the Sacramento River in such a manner as to adversely affect salmonid spawning and egg incubation in the Trinity River. Adverse effects shall be deemed to occur when average daily water temperature exceeds 56F at the Douglas City Bridge between September 15 and October 1, or at the confluence of the North Fork Trinity River between October 1 and December 31 due to factors which are (a) controllable by permittee and (b) are a result of modification of Trinity River operations for temperature control on the Sacramento River. If the temperatures in the Trinity River exceed 56F at the specified locations during the specified periods, Permittee shall immediately file with the Chief of the Division of Water Rights a report containing project operational data sufficient to demonstrate that the exceedance was not due to modifications of Trinity River operations for water temperature control on the Sacramento River. If, within fifteen days, the Chief of the Division of Water Rights does not advise Permittee that it is violating this condition of its water right, Permittee shall be deemed not to have caused the exceedance in order to control temperature on the Sacramento River.

These temperature standards require rigorous adherence; they can become unattainable if the schedule for water exports to the CVP-SWP is modified. Accordingly, it is essential that the EIS not assume that changes in the schedule of Trinity River exports are possible even if that is desirable from the standpoint of the Delta conveyance.

4. Recognize the influence that management of TRD carryover has on the ability to meet water quality standards in Trinity River

End of season carryover storage behind Trinity Dam influences the ability to meet water temperature standards protective of salmon spawning below Lewiston Dam. Specifically, the total volume of cold water available on 1 June is of significance; this can vary substantially from year to year with volume of runoff, volume and temperature profile of carryover from previous years, and temperature of the present year's runoff into Trinity Lake.

Limitations of TRD infrastructure also affect the ability to meet water temperature needs, as the current facilities cannot be operated to avoid considerable heat gain during summer months. As described in a letter written on 23 May 2016 by the Chair of the Trinity River Restoration Program, Federico Barajas, in a letter to Reclamation Regional Director, David Murillo, "*During periods of drought, and in the future under virtually all climate warming scenarios, the 2-3°F increase in water temperature that occurs in Lewiston Reservoir will likely elevate temperatures to unsuitable levels for salmonids for which Reclamation has Tribal Trust, Public Trust, and Endangered Species Act (ESA) responsibilities.*" Nevertheless, water temperature standards for Trinity River below Lewiston Dam were exceeded in October 2015 for a period of two weeks during the onset of salmon spawning and incubation.

5. Model water deliveries in recognition of 1955 Act priorities for use of Trinity River water.

The second exception in Section 2 of the 1955 Act states: "That not less than 50,000

acre-feet shall be released annually from the Trinity Reservoir and made available to Humboldt County and downstream water users.” That mandate requires the annual 50,000 acre-feet release from the Trinity Division to be made in such a way that the water will be available for use by Humboldt County and downstream users. In other words, the 50,000 acre-feet comes with the attributes of TRD storage, regulation and scheduling.

The State of California issued several permits for the Trinity Division. Permit 11968 includes conditions that limit diversions. Permit Condition 9 states “Permittee [Bureau of Reclamation] shall release sufficient water from Trinity and/or Lewiston Reservoirs into the Trinity River so that not less than an annual quantity of 50,000 acre-feet will be available for the beneficial use of Humboldt County and other downstream users.” Permit Condition 10 states: “This permit shall be subject to the prior rights of the county in which the water sought to be appropriated originates to use such water as may be necessary for the development of the county, as provided in Section 10505 of the Water Code of California.”

In previous planning, such as the Delta Plan planning process, it appears that modelers assumed that the 1955 Act’s reserved 50,000 acre-feet of water could be treated as available for diversion to the Central Valley and the DCP. This is unlawful. In 1979 the Solicitor of the Department of the Interior reviewed the legal status of the fishery flow releases and the 50,000 acre-feet of water developed and controlled by the Trinity Division. The Solicitor wrote:

On occasion the Congress has specifically limited the Secretary’s discretion in meeting the general CVP priorities. For example, in authorizing the Trinity River Division of the CVP in 1955, Congress specifically provided that in-basin flows (in excess of a statutorily prescribed minimum) determined by the Secretary to be necessary to meet in-basin needs take precedence over needs to be served by out-of-basin diversion. See Pub. L. No. 84-386, §2. In that case, Congress’ usual direction that the Trinity River Division be integrated into the overall CVP, set forth at the beginning of section 2, is expressly modified by and made subject to the provisos that follow giving specific direction to the Secretary regarding in-basin needs.

Memorandum opinion from the Solicitor to the Assistant Secretary, Land and Water Resources 3-4 (December 7, 1979) (1979 Opinion). See also Memorandum from Solicitor to Secretary (M-37030) re Trinity River Division Authorization’s 50,000 Acre-Foot Proviso and the 1959 Contract between the Bureau of Reclamation and Humboldt County, December 23, 2014. So long as the EIS does not confirm that the 50,000 acre-feet entitlement for the Trinity Basin is unavailable to the DCP and CVP-DWR coordinated operation, it will significantly overstate the benefits of the alternatives under consideration.

In summary, no further planning for the Delta Conveyance Project should occur that assumes the availability for diversion of any Trinity River water resources that are committed by law to the Trinity River Basin and its communities. The EIS should preclude the availability for use in a delta conveyance water allocated to: the ROD flow releases; the 50,000 acre-feet of additional Trinity Division water for Humboldt County and downstream users; the carryover storage for preservation of temperatures needed for the Trinity River fishery; or the area of origin rights of Trinity County.

The Corps of Engineers has previously expressed interest in developing a meaningful government-to-government relationship with tribal stakeholders, and we cannot imagine that you would ask us to choose between addressing the immediate health and safety needs of our citizens (on one hand) and providing more extensive input on a future project that threatens the environmental and cultural resources on which those citizens depend (on the other). Please contact our Executive Director of Cultural Resources, James Sarmiento, directly at (530) 957-6261 or jsarmiento@ssband.org if you have any questions or concerns.

Sincerely yours,



Regina Cuellar
Chairperson
Shingle Springs Band of Miwok Indians

cc:

Christina Snider, Executive Secretary, Native American Heritage Commission
Debbie Treadway, Chief Deputy Executive Secretary, Native American Heritage Commission
Nadine Small, Department of Water Resources
Anecita Agustinez, Tribal Policy Advisor, Department of Water Resources
Kathryn Mallon, Director, Delta Conveyance Design and Construction Authority
Wade Crowfoot, Secretary, California Natural Resources Agency