

The Metropolitan Water District of Southern California

Agenda

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

OW&S Committee

T. Quinn, Chair
S. Faessel, Vice Chair
L. Ackerman
D. Alvarez
J. Armstrong
G. Cordero
D. De Jesus
D. Erdman
L. Fong-Sakai
M. Gold
S. Goldberg
C. Kurtz
R. Lefevre
J. Lewitt
C. Miller
B. Pressman
N. Sutley

One Water and Stewardship Committee - Final - Revised 1

Meeting with Board of Directors *

October 7, 2024

3:30 p.m.

Monday, October 7, 2024 Meeting Schedule

**09:00 a.m. EOT
11:15 a.m. Break
11:45 a.m. LEG
12:45 p.m. LEGAL
01:45 p.m. EIA
03:30 p.m. OWS**

Agendas, live streaming, meeting schedules, and other board materials are available here:

**<https://mwdh2o.legistar.com/Calendar.aspx>. Written public comments received by 5:00 p.m. the business days before the meeting is scheduled will be posted under the Submitted Items and Responses tab available here:
<https://mwdh2o.legistar.com/Legislation.aspx>.**

If you have technical difficulties with the live streaming page, a listen-only phone line is available at 1-877-853-5257; enter meeting ID: 862 4397 5848.

Members of the public may present their comments to the Board on matters within their jurisdiction as listed on the agenda via in-person or teleconference. To participate via teleconference 1-833-548-0276 and enter meeting ID: 815 2066 4276 or to join by computer [click here](#).

MWD Headquarters Building • 700 N. Alameda Street • Los Angeles, CA 90012

Teleconference Locations:

Marriott Center City • 124 St. Charles Avenue • New Orleans, LA 70130

525 Via La Selva • Redondo Beach, CA 90277

Sheraton New Orleans Hotel • 500 Canal Street • New Orleans LA 70130

1545 Victory Boulevard 2nd Floor • Glendale CA 91201

Boulevard Green • 1412 Lower Green Circle • Columbus OH 43212

Allendale Ins Agency • 337 W. Foothill Blvd. • Glendora CA 91741

Cedars-Sinai Imaging Medical Group • 8700 Beverly Boulevard • Los Angeles, CA 90048

3008 W. 82nd Place • Inglewood, CA 90305

* The Metropolitan Water District's meeting of this Committee is noticed as a joint committee meeting with the Board of Directors for the purpose of compliance with the Brown Act. Members of the Board who are not assigned to this Committee may participate as members of the Board, whether or not a quorum of the Board is present. In order to preserve the function of the committee as advisory to the Board, members of the Board who are not assigned to this Committee will not vote on matters before this Committee.

1. **Opportunity for members of the public to address the committee on matters within the committee's jurisdiction (As required by Gov. Code Section 54954.3(a))**

**** CONSENT CALENDAR ITEMS -- ACTION ****

2. **CONSENT CALENDAR OTHER ITEMS - ACTION**

- A. Approval of the Minutes of the One Water and Stewardship Committee for September 9, 2024 (Copies have been submitted to each Director, any additions, corrections, or omissions) [21-3853](#)

Attachments: [10072024 OWS 2A \(09092024\) Minutes](#)

3. **CONSENT CALENDAR ITEMS - ACTION**

- 7-4 Authorize the General manager to enter into Reverse Cyclic Program agreements with participating agencies to defer deliveries of purchased supplies under various water supply conditions; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA [21-3864](#)

Attachments: [10082024 OWS 7-4 B-L](#)
[10072024 OWS 7-4 Presentation](#)

- 7-5 Authorize resolutions to support two applications selected to receive United States Department of the Interior, Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant Program funding for Fiscal Year 2024 totaling \$2 million; and authorize the General Manager to accept this funding and enter contracts with the United States Department of the Interior, Bureau of Reclamation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA [21-3865](#)

Attachments: [10082024 OWS 7-5 B-L](#)
[10072024 OWS 7-5 Presentation](#)

- 7-6 Review and consider the Lead Agency's certified 2022 Final Environmental Impact Report for the Chino Basin Program and take related CEQA actions, and authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the program [21-3866](#)

Attachments: [10082024 OWS 7-6 B-L](#)
[10072024 OWS 7-6 Presentation](#)

- 7-7** Authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA [21-3873](#)

Attachments: [10082024 OWS 7-7 B-L](#)
[10072024 OWS 7-7 Presentation](#)

**** END OF CONSENT CALENDAR ITEMS ****

4. OTHER BOARD ITEMS - ACTION

NONE

5. BOARD INFORMATION ITEMS

NONE

6. COMMITTEE ITEMS

- a. Bay-Delta and Conveyance: Managing Risks and Water Supply Reliability [21-3876](#)

Attachments: [10072024 OWS 6a Report](#)
[10072024 OWS 6a Presentation](#)

- b. Update on Basin States Discussions Regarding Post-2026 Operational Guidelines [21-3877](#)

Attachments: [10072024 OWS 6b Presentation](#)

- c. Update on Conservation as a California Way of Life [21-3878](#)

Attachments: [10072024 OWS 6c Presentation](#)

- d. Update on Conservation Program. [ADDED ITEM 9.30.2024] [21-3905](#)

Attachments: [10072024 OWS 6d Presentation](#)

- e. Draft Climate Adaptation Master Plan for Water Policy Framework [21-3880](#)

Attachments: [10072024 OWS 6e Presentation](#)

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

- a. Bay-Delta Resources activities [21-3854](#)
Colorado River Resources activities
Sustainability, Resilience and Innovation activities
Water Resource Management activities

Attachments: [10082024 OWS 7a Bay-Delta Resources Activities](#)
[10082024 OWS 7a Colorado River Resources Activities](#)
[10082024 OWS 7a Sustainability, Resilience, and Innovation Activities](#)
[10072024 OWS 7a Water Resource Management Activities](#)

8. COMMITTEE REPORTS

- a. Report on the Delta Conveyance Design and Construction Authority Meeting [21-3855](#)
- b. Report on Delta Conveyance Finance Authority Meeting [21-3856](#)
- c. Report on the Bay-Delta Ad Hoc Meeting [21-3857](#)

9. SUBCOMMITTEE REPORTS AND DISCUSSION

- a. Discuss and provide direction to Subcommittee on Demand Management and Conservation Programs and Priorities [21-3858](#)

10. FOLLOW-UP ITEMS

NONE

11. FUTURE AGENDA ITEMS

12. ADJOURNMENT

NOTE: This committee reviews items and makes a recommendation for final action to the full Board of Directors. Final action will be taken by the Board of Directors. Committee agendas may be obtained on Metropolitan's Web site <https://mwdh2o.legistar.com/Calendar.aspx>. This committee will not take any final action that is binding on the Board, even when a quorum of the Board is present.

Writings relating to open session agenda items distributed to Directors less than 72 hours prior to a regular meeting are available for public inspection at Metropolitan's Headquarters Building and on Metropolitan's Web site <https://mwdh2o.legistar.com/Calendar.aspx>.

Requests for a disability-related modification or accommodation, including auxiliary aids or services, in order to attend or participate in a meeting should be made to the Board Executive Secretary in advance of the meeting to ensure availability of the requested service or accommodation.

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
MINUTES

ONE WATER AND STEWARDSHIP COMMITTEE

September 9, 2024

Chair Quinn called the meeting to order at 2:48 p.m.

Members present: Directors Ackerman (AB 2449 just cause), Alvarez (entered after roll call), Armstrong, De Jesus (teleconference posted location), Erdman, Faessel, Fong-Sakai, Gold (teleconference posted location), Goldberg, Kurtz, Lefevre (teleconference posted location), Lewitt, Miller, Pressman (teleconference posted location), and Quinn.

Members absent: Directors Cordero and Sutley.

Other Board Members present: Directors Dennstedt (teleconference posted location), Gray (teleconference posted location), McCoy, McMillan (teleconference posted location), Ortega, Ramos (teleconference posted location), Seckel, and Smith (teleconference posted location).

Director Ackerman indicated that she was participating under AB 2449 “just cause” regarding an injury. Director Ackerman appeared by audio and on camera and stated that she was alone.

Committee Staff present: Bednarski, Crosson, Goshi, Hasencamp, Hawk, Munguia, Schlotterbeck, Upadhyay, and Wheeler.

1. OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE COMMITTEE ON MATTERS WITHIN THE COMMITTEE'S JURISDICTION

None.

CONSENT CALENDAR ITEMS -- ACTION

2. CONSENT CALENDAR OTHER ITEMS -- ACTION

- A.** Approval of the Minutes of the One Water and Stewardship Committee Meeting for August 19, 2024.

3. CONSENT CALENDAR ITEMS – ACTION

- 7-4** Subject: Authorize the General Manager to enter into agreements with the Plumas Community Protection I Forest Resilience Bond LLC, North Feather I Foreset Resilience Bond LLC, and Upper Butte Creek I Forest Resilience Bond LLC to establish watershed partnerships and forest health pilot investigations in the Northern Sierra Nevada: the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Motion: Authorize the General Manager to enter into agreements with the Plumas Community Protection I Forest Resilience Bond LLC, North Feather I Forest Resilience Bond LLC, and Upper Butte Creek I Forest Resilience Bond LLC to establish watershed partnerships and forest health pilot investigations in the Northern Sierra Nevada, each agreement is not to exceed \$200,000 per year for a maximum of two years.

Presenter: None.

No presentation was given. Director Miller made a motion, seconded by Director Armstrong, to approve the consent calendar consisting of items 2A and 7-4.

The following Director provided comments or asked questions:

1. Fong-Sakai

Staff responded to Director's questions and comments.

Director Ackerman announced before the vote that no one was in the room with her 18 years of age or older.

The vote was:

Ayes:	Directors Ackerman, Alvarez, Armstrong, De Jesus, Erdman, Faessel, Gold, Goldberg, Kurtz, Lefevre, Lewitt, Miller, Pressman, and Quinn.
Noes:	Director Fong-Sakai (Item 7-4)
Abstentions:	None.
Absent	Directors Cordero and Sutley.

The motion for item 2A passed by a vote of 15 ayes, 0 noes, 0 abstentions, and 2 absent.
The motion for item 7-4 passed by a vote of 14 ayes, 1 no, 0 abstentions, and 2 absent.

END OF CONSENT CALENDAR ITEMS

4. OTHER BOARD ITEMS – ACTION

None

5. BOARD INFORMATION ITEMS

9-2 Subject: Proposed modifications to the Reverse Cyclic Program.

Presented by: Anna M. Garcia, Associate Engineer, Water Resource Management

Mr. Goshi provided background and introductory comments.

Ms. Garcia provided a presentation on potential modifications to the Reverse-Cyclic Program to defer deliveries of purchased water under various water supply conditions.

The following Directors provided comments or asked questions:

1. Gold
2. Miller
3. Fong-Sakai

Staff responded to Directors' questions and comments.

9-3 Subject: Update on proposed agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and rights of first refusal during 2025 through 2027.

Presented by: Sarah J. Bartlett, Program Manager, Water Resource Management

Mr. Goshi provided background and introductory comments.

Ms. Bartlett provided a presentation on water transfer agreements with Western Canal Water District (Western) and Richvale Irrigation District (Richvale) for annual north-of-Delta water transfers during 2025 through 2027. Under the proposed agreements, Metropolitan would pay an option to each agency, located in the Feather River service area, in return for the first right to annually call on each agency's available water transfer supplies during 2025 through 2027.

The following Directors provided comments or asked questions:

1. Fong-Sakai
2. Miller
3. Lefevre
4. Ortega

Staff responded to Directors questions and comments.

6. COMMITTEE ITEMS

Chair Quinn announced a reordering of the Agenda where item 6d would be heard ahead of the other Committee Items.

d. Subject: Update on State Water Project Overview

Presented by: Brandon J. Goshi, Interim Manager,
Water Resource Management

Interim General Manager, Deven N. Upadhyay provided background and introductory comments.

Mr. Goshi gave an overview presentation of the State Water Project, with discussion on its significance for the Metropolitan Water District of Southern California in terms of investment, benefits, and ongoing challenges.

Chair Quinn announced that Committee Item 6b would be deferred to the following month and requested an abbreviated version of Item 6c.

a. Subject: Update on Webb Tract Rice Development and Wetland
Restoration Projects

Presented by: Malinda Stalvey, Program Manager, Bay-Delta Initiatives

Ms. Hawk provided background and introductory comments.

Ms. Stalvey gave a presentation on Webb Tract Rice Development and Wetland Restoration Projects status.

The following Directors provided comments or asked questions:

1. Miller

Staff responded to Directors' questions and comments.

b. Subject: Update on Conservation as a California Way of Life

This item was deferred.

c. Subject: Update on Conservation

Presented by: Karina Sandique, Associate Resource Specialist,
Water Resource Management

Ms. Sandique provided an abbreviated presentation on the Conservation Program highlighting biennial expenditures and commitments, activity on turf and tree replacement, device incentives, and fiscal year 22/23-23/24 achievements.

7. MANAGEMENT ANNOUNCEMENTS AND HIGHLIGHTS

- a. Subject: Bay-Delta Resources, Colorado River Resources, Sustainability, Resilience and Innovation, and Water Resource Management activities

Presented by: John Bednarski, Interim Assistant General Manager

Mr. Bednarski reported on operations of water transport through the Delta, and Sites Water Rights application status.

8. COMMITTEE REPORTS

- a. Report on the Delta Conveyance Design and Construction Authority Meeting

There was none.

- b. Report on Delta Conveyance Finance Authority Meeting

There was none.

- c. Report on Bay-Delta Ad Hoc Meeting

Chair Quinn provided a report on behalf of Director McMillen on the Bay-Delta Ad Hoc meeting held on August 26, 2024.

9. SUBCOMMITTEE REPORTS AND DISCUSSION

Director Armstrong noted that the Subcommittee on Demand Management and Conservation Programs and Priorities is planning to meet in January 2025.

10. FOLLOW-UP ITEMS

None.

11. FUTURE AGENDA ITEMS

None.

12. ADJOURNMENT

The next meeting will be held on October 7, 2024.

The meeting adjourned at 4:30 p.m.



- **Board of Directors**
One Water and Stewardship Committee

10/8/2024 Board Meeting

7-4

Subject

Authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Staff proposes the Board approve modifications to the Reverse-Cyclic Program (“Program”) that it previously approved for 2022, including authorizing the General Manager to implement the Program based on various water supply conditions. Staff presented an informational report on potential modifications to the Program to the One Water and Stewardship Committee in September 2024. Staff have incorporated committee feedback into the proposed modifications and are returning to the committee for approval. The Program helped preserve Metropolitan’s limited State Water Project (“SWP”) supplies in calendar year (“CY”) 2022 by allowing member agencies to defer delivery of water purchased that year. Metropolitan is proposing modifications to the Reverse-Cyclic Program to defer deliveries of purchased supplies under various water supply conditions. Under the recommended modifications to the Program, the General Manager would have the discretion to initiate the Program under various water supply conditions—when surplus supplies are available—or when Metropolitan must preserve supplies during low SWP allocation years. In wet years when member agencies are unable to accept Metropolitan deliveries due to capacity limitations or in dry years when Metropolitan must preserve limited available stored supplies, member agencies would be able to purchase supplies at that year’s full-service rate for deferred delivery in a future year.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions consistent with the terms in

Attachment 1.

Fiscal Impact: None expected. In dry years, the difference in revenues due to increases in the full-service rate between the time of purchase and the time of delivery is anticipated to be offset with savings to Metropolitan that would accrue from having to acquire water during drought years of the pre-purchase. In wet years, the Program is implemented when Metropolitan has plenty of water in storage and would store that water regardless of the pre-sale. In those wet years, Metropolitan would also increase its sales revenue by recording a full-service rate transaction when a delivery cannot take place due to capacity constraints. Metropolitan benefits from the time value of the money by receiving revenues this year for deliveries that will be made in a future year.

Business Analysis: In dry years, Metropolitan would improve regional reliability by shifting demands from years with low SWP allocation to higher allocation years. In wet years, Metropolitan would increase revenue

by allowing member agencies to purchase water they are unable to accept due to capacity limitations and constraints.

Option #2

Do not authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions.

Fiscal Impact: Potential loss of a full-service water sale in wet years. In dry years, an increase in costs to acquire additional water for the region.

Business Analysis: Not implementing the Reverse-Cyclic Program could decrease the SWP supplies available to the entire region, potentially increase costs necessary to meet demands in dry years, and reduce estimated revenues from full-service sales in wet and dry years.

Alternatives Considered

None

Applicable Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Metropolitan Water District Administrative Code Section 4209: Contracts

Metropolitan Water District Administrative Code Section 4507: Billing and Payment of Water Deliveries

By Minute Item 43514, dated April 13, 1999, the Board adopted the Water Surplus and Drought Management Plan

Related Board Action(s)/Future Action(s)

By Minute Item 52707, dated February 8, 2022, the Board authorized the General Manager to enter into Reverse-Cyclic agreements with participating agencies to preserve the availability of State Water Project supplies to Metropolitan.

Summary of Outreach Completed

Staff presented the potential modifications to the Reverse-Cyclic Program to the member agency managers meeting in August 2024.

Staff brought an informational report on the potential modifications to the Reverse-Cyclic Program to the One Water and Stewardship Committee in September 2024.

California Environmental Quality Act (CEQA)

CEQA determination(s) for Option #1:

The proposed action of entering into agreements is not defined as a project under CEQA because it involves continuing administrative activities, such as general policy and procedure making (Section 15378(b)(2) of the State CEQA Guidelines) and because it involves other government fiscal activities which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment (Section 15378(b)(4) of the State CEQA Guidelines). The deferred delivery of water is exempt from CEQA as it consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features involving negligible or no expansion of existing or former use (Section 15301 of the State CEQA Guidelines).

CEQA determination(s) for Option #2:

None required

Details and Background

Background

Metropolitan seeks to expand its portfolio of actions available to improve the region's resiliency at a time when some member agencies are unable to accept planned Metropolitan deliveries due to managing their high local supplies. While the back-to-back wet years have allowed Metropolitan to reach record-high dry-year storage levels, Metropolitan continues to experience low demands due to the overall cooler weather and member agency capacity constraints resulting from refilled reservoirs and replenishment basins. To mitigate these capacity impacts, staff proposes modifying the Reverse-Cyclic Program to allow member agencies to purchase supplies for future delivery. Allowing the purchases generates revenue in the current year to help meet the financial needs Metropolitan is experiencing in this biennial budget and water rates cycle.

Staff is proposing to modify the Reverse-Cyclic Program to provide Metropolitan with additional flexibility to allow the purchase of water and defer deliveries under various water supply conditions and to provide the General Manager with the authority to enter into agreements with the member agencies. In September 2024, staff provided an introduction and overview of the proposed modifications to the One Water and Stewardship Committee.

Proposed Modifications to the Reverse-Cyclic Program

Staff recommends that the Board approve the Reverse-Cyclic Program based on terms modified from the 2022 version of the Program and authorize the General Manager to initiate the Program at the General Manager's discretion without additional Board authorization. These proposed modifications provide staff with additional flexibility to allow the purchase of water and defer deliveries under various water supply conditions. Staff will evaluate the supply and demand conditions through the Water Surplus and Demand Management (WSDM) process and provide a WSDM recommendation to the General Manager when there is a need to initiate the Program. In the years the General Manager initiates the Program, these agreements will allow member agencies to purchase water for delivery in a future dry or wet year per the terms described in **Attachment 1**.

General Terms

The following conditions will apply each year the General Manager initiates the Reverse-Cyclic Program:

- If interest in the Program exceeds the total pre-purchase amount made available by Metropolitan, Metropolitan will calculate each member agency's portion using their "peak gap" (the agency's highest 5-year annual purchase less the agency's average 5-year purchase). Each agency may pre-purchase an amount proportional to the total of all interested agencies' peak gap amounts.
- Metropolitan will bill the member agency at the full-service water rate in effect, plus the treatment charge, if applicable, at the time of the purchase.
- Metropolitan will include member agency purchases under the Program as allocated supply under a Metropolitan Water Supply Allocation Plan implementation or any other allocation or shortage program that may be implemented.
- When Metropolitan determines water is available to deliver to participating agencies, Metropolitan will deliver water to reduce the balance of supplies deferred under the Program.
 - Metropolitan, at its sole discretion, shall determine when the water may be returned.
 - Deliveries will be negotiated based on the conditions for Metropolitan and the member agency but will not exceed five full calendar years from the date of purchase unless the Parties mutually agree to a different delivery schedule.
 - Metropolitan will make best efforts to prioritize deliveries to the member agency if there is a critical need; for example, the groundwater storage basin reaches low levels where wells are not operable, or the basin reaches emergency storage levels.

- If Metropolitan is unable to deliver the pre-purchased water within five years due to the member agency's inability to receive the water, then losses shall be applied to the pre-purchased water at a rate of 20 percent per year. Metropolitan will not apply any losses to the pre-purchased water if the water is delivered within five years or if delivered after five years due to Metropolitan's inability to deliver the water within that time period.
- Each year the Program is initiated, supplies available will be determined based on water supply conditions.

Member agency purchases under the Program will be part of the member agency's Revised Base Firm Demand for the year of the purchase. Purchases made under this Program will be included in the determination of the member agency's Readiness-to-Serve Charge at the time of purchase but will not be included in the determinations of the Capacity Charge because the deferred delivery will be completed at Metropolitan's discretion.

Initiating Dry Year Pre-Sales

The Program would be initiated in a dry year when the General Manager determines that the supply conditions warrant deferring the use of limited stored supplies due to the risk of shortage. For example, the Program may be initiated when there is a need to strategically work with the member agencies to reduce deliveries to help preserve limited available supplies and to avoid additional resource and operational costs that would be necessary without deferment. Metropolitan proposes offering the Program in dry years under the following conditions:

- The member agency and Metropolitan agree to defer Metropolitan deliveries of water purchased to allow Metropolitan to preserve limited stored supplies.
- When the General Manager initiates the Program to preserve limited stored supplies, Metropolitan would certify that the purchase reduces deliveries.

Initiating Wet Year Pre-Sales

The Program would be initiated when the General Manager deems it necessary to pre-sell water in wet years with SWP allocations of 40 percent or higher. For example, the General Manager may initiate the Program at times when Metropolitan is unable to complete deliveries due to member agency capacity constraints or limitations. Metropolitan proposes offering the Program in wet years under the following conditions:

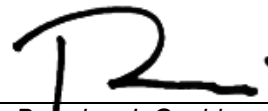
- The member agency and Metropolitan agree to defer Metropolitan deliveries of water purchased.

Reporting and Billing

Metropolitan regularly reports to the Board on developing supply and demand conditions through WSDM Plan reports. Staff provides these monthly reports through the winter and spring and keeps the Board apprised of developing conditions, including the potential use of storage assets and the likelihood of storing or withdrawing supplies. Implementation of the Program will be incorporated into this regular reporting. Under the Program, Metropolitan will bill the member agency the full-service water rate plus the treatment charge, if applicable, at the time of the purchase. Under the Program, billing will occur before delivery is made, modifying the timing of billing required under Section 4507 of the Metropolitan Administrative Code (normally required at the time of delivery); all other aspects of Section 4507 will continue to apply. Metropolitan will include purchases made under this Program to determine the member agency's Readiness-to-Serve Charge at the time of sale but will not include the purchase or delivery in the determination of the agency's Capacity Charge because the initiation of the Program and the deliveries are at Metropolitan's discretion.

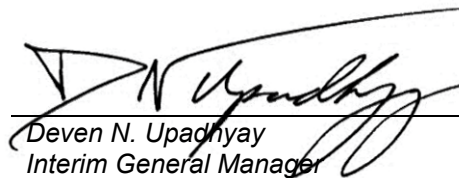
Summary

The proposed Reverse-Cyclic Program would help member agencies purchase planned supplies in times when Metropolitan may be unable to meet a member agency's normal demands due to a need to preserve dry-year storage or because the member agency is temporarily unable to accept Metropolitan deliveries in a wet year due to operational or capacity constraints. Metropolitan will bill member agencies the full-service rate and applicable treatment charge in effect at the time of purchase. In doing so, the member agency will avoid paying the projected higher service rate that would be in place when Metropolitan makes the deferred delivery. Additionally, Metropolitan will benefit from increased revenue in the year the Program is initiated. With this delegation of authority to the General Manager, Metropolitan will have the additional operational flexibility (1) to save limited storage in a dry year for a future drought year and (2) to assist member agencies with making a planned purchase in a wet year when they cannot accept their full normal delivery.



Brandon J. Goshi
Interim Manager,
Water Resource Management

9/24/2024

Date

Deven N. Upadhyay
Interim General Manager

9/30/2024

Date**Attachment 1 – Term Sheet Reverse-Cyclic Program**

Ref# wrm12701119

Term Sheet

Reverse-Cyclic Program

Program Purpose

To allow the purchase of water supplies and defer delivery of Metropolitan Water District of Southern California's (Metropolitan) water that an agency is unable to accept due to operational or capacity constraints or that Metropolitan is unable to complete due to a need to preserve dry-year storage.

Program Criteria

- Member agency and Metropolitan will enter into a Reverse-Cyclic Program ("Program") agreement to allow for delivery deferments of water purchased by member agencies, as provided under the Program.
- General Manager will determine the amount of water made available to be sold in the year the Program is initiated. This amount will be at General Manager's discretion based on water supply, hydrologic, financial, and operational conditions.
- Member agency will purchase the water at the time of the deferment.
- If interest in the Program exceeds the total pre-purchase amount made available by Metropolitan, Metropolitan will calculate each member agency's portion using their "peak gap" (the agency's highest 5-year annual purchase less the agency's average 5-year purchase). Each agency may pre-purchase an amount proportional to the total of all interested agencies' peak gap amounts.
- Metropolitan will bill the member agency at the full-service water rate in effect, plus the treatment charge if applicable, at the time of the purchase.
- Metropolitan will include member agency purchases under the Program as allocated supply under a Metropolitan Water Supply Allocation Plan implementation or any other allocation or shortage program that may be implemented.
- Water sold and delivered under the Program shall be documented and ineligible for other Metropolitan programs.

Dry-Year Deferment

- The member agency and Metropolitan agree to defer Metropolitan deliveries of water purchased to allow Metropolitan to preserve limited stored supplies.
- When the General Manager initiates the Program to preserve limited stored supplies, Metropolitan would certify that the purchase reduces deliveries.

Wet-Year Deferment

- The member agency and Metropolitan agree to defer Metropolitan deliveries of water purchased.

Delivery

- When Metropolitan determines water is available, Metropolitan would deliver water to the member agency to reduce the deferment balance under the Program.
 - Metropolitan, at its sole discretion, shall determine when the water may be returned.
 - Deliveries will be negotiated based on the conditions for Metropolitan and the member agency but will not exceed five full calendar years from the date of purchase unless the Parties mutually agree to a different delivery schedule.
 - Metropolitan will make best efforts to prioritize deliveries to the member agency if there is a critical need; for example, the groundwater storage basin reaches low levels where wells are not operable, or the basin reaches emergency storage levels.
 - Metropolitan will not apply any losses to the pre-purchased water if the water is delivered within five years or if delivered after five years due to Metropolitan's inability to deliver the water within that time. If Metropolitan is unable to deliver the pre-purchased water within five years due to the member agency's inability to receive the water, then losses shall be applied to the pre-purchased water at a rate of 20 percent per year.

Program Costs

- Metropolitan will bill the member agency at the full-service water rate in effect, plus the treatment charge if applicable, at the time of the purchase.
- Member agency purchases under the Reverse-Cyclic Program will be considered part of the member agency's Revised Base Firm Demand for the year in which the purchases are made.
- Purchases made under this program are to be included in the determination of the member agency's Readiness-to-Serve Charge at the time of purchase.
- The deliveries will not be counted towards the determination of the member agency's Capacity Charge because the deferred delivery of water will be made at Metropolitan's discretion.

Term

- The Reverse-Cyclic Program Agreements shall have a term of up to ten years unless previously terminated or extended upon mutual agreement.



One Water & Stewardship Committee

Proposed Modifications to the Reverse-Cyclic Program

Item 7-4

October 7, 2024

Item 7-4

Reverse- Cyclic Program (RCP)

Subject

Authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions.

Purpose

In wet years when member agencies are unable to accept Metropolitan deliveries due to capacity limitations or in dry years when Metropolitan must preserve limited available stored supplies, member agencies may purchase supplies at that year's full-service rate for deferred delivery in a future year.

Recommendation

Authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions

Fiscal and Budget Impact

None. Difference of water rate increase between the time of purchase and the time of delivery, which is anticipated to be offset with savings to Metropolitan from having to acquire water during drought years.

Reverse Cyclic Program (RCP) Overview

- When initiated, RCP allows the member agencies to purchase water at the current rate that Metropolitan will deliver in a future year.
 - Deliveries to member agencies when supplies are available, within five years
- Calendar year 2022 was a dry year and the RCP allowed the General Manager to preserve limited stored supplies.

Proposed Modification to RCP

Authorize and delegate the General Manager to offer the Program to **help manage supplies and increase revenue under various water supply conditions** such as when there is a need:

- to allow deferral of deliveries member agencies cannot temporarily accept due to capacity limitations or operational constraints
- to preserve limited Metropolitan stored water



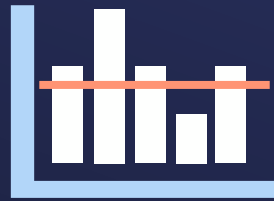
Committee and Member Agency Feedback



- Does this program decrease a future sale?
 - RCP does not decrease a future sale. Metropolitan benefits from the time value of the money by receiving revenues this year for deliveries that will be made in a future year.

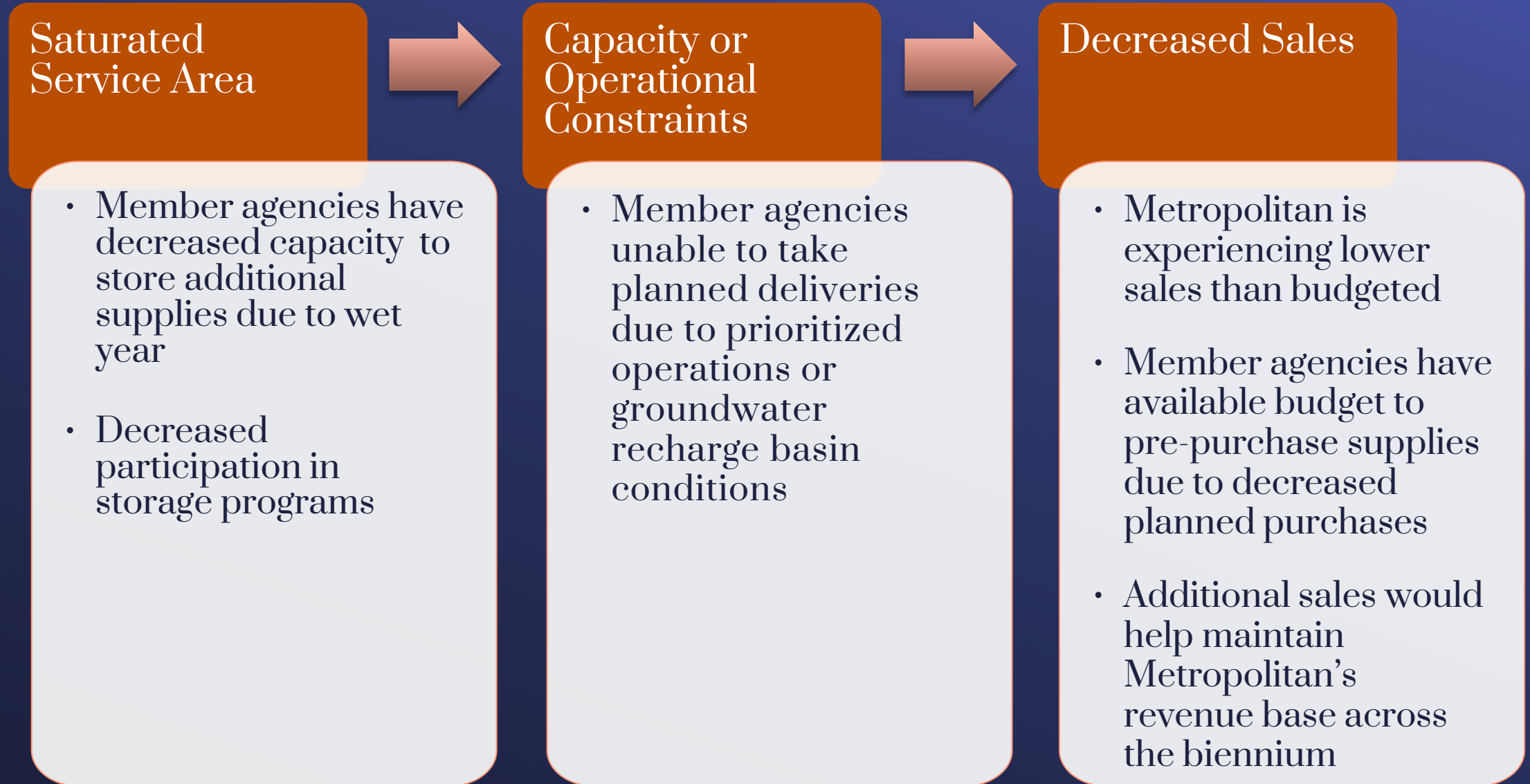


- Is this program storing water for the agency?
 - No, Metropolitan would deliver supplies when they are available during higher allocations.

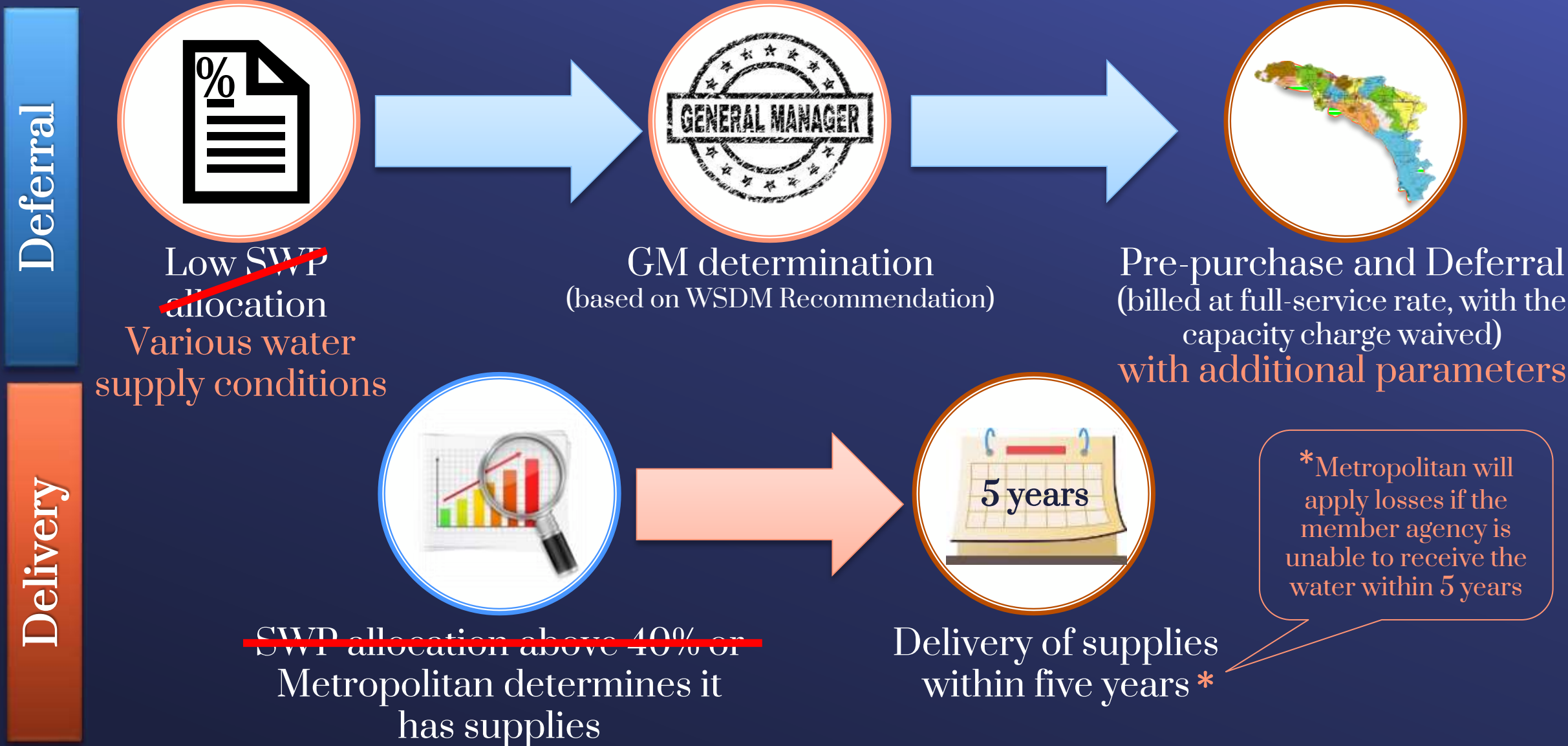


- The proposed baseline for Metropolitan deliveries creates a burden for agencies that don't have additional demands.
 - A baseline will no longer be considered

Why do we need the modifications now?



Proposed Modifications to the Reverse Cyclic Program



Program Terms

Program Terms



- At time of purchase, purchases would be included in the
 - Readiness to Serve Charge
 - Revised Base Firm Demand



- Purchases will be included as allocated supply under a Metropolitan allocation or shortage program (if/when implemented)



- Reverse Cyclic water shall be documented and ineligible for other Metropolitan programs



- Metropolitan staff to certify and reconcile deferred deliveries

Additional Proposed Modifications: Control Parameters

Proposed Modification



- General Manager to determine amount of water available for pre-sale at time of initiation
-



- 10-year agreement term with member agencies
-



- If interest exceeds water available for pre-sale, each agency may pre-purchase an amount proportional to their peak gap compared to the total of all interested agencies' peak gap amounts

Example of Interest Exceeding Water Available for Pre-Sale



Water Supply Available for Pre-Sale Under Program:
50,000 AF

Three (3) member agencies interested in purchasing supplies

Agency A

Interested in purchasing
40,000 AF

Agency B

Interested in purchasing
25,000 AF

Agency C

Interested in purchasing
20,000 AF

$85,000 \text{ AF} > 50,000 \text{ AF}$

Total Interest **Exceeds** Water Available for Pre-Sale

Example of Interest Exceeding Water Available for Pre-Sale

Agency A

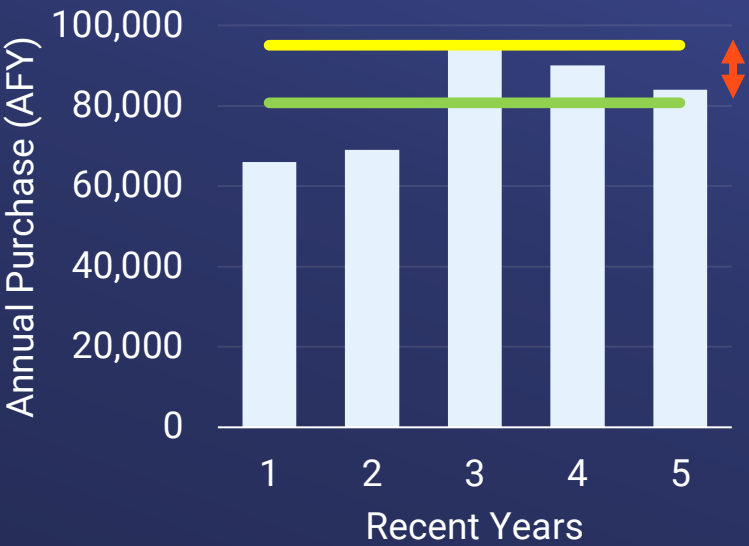
Historical Purchases



Maximum 178,000 AF
Average 139,000 AF
Peak Gap 39,000 AF

Agency B

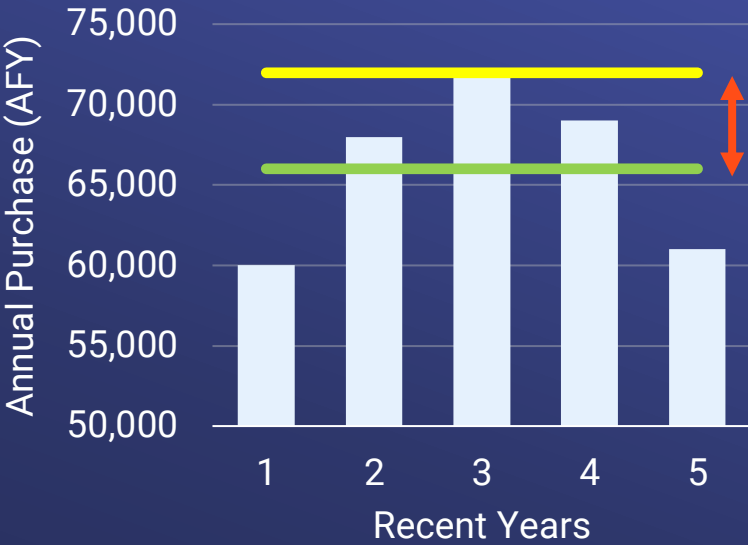
Historical Purchases



Maximum 95,000 AF
Average 80,800 AF
Peak Gap 14,200 AF

Agency C

Historical Purchases



Maximum 72,000 AF
Average 66,000 AF
Peak Gap 6,000 AF

*over previous 5-year period

Example of Interest Exceeding Water Available for Pre-Sale

Agency A

Agency B

Agency C

Peak Gap 39,000 AF + Peak Gap 14,200 AF + Peak Gap 6,000 AF

Sum of Peak Gaps equals 59,200 AF

Agency A

$$\frac{39,000 \text{ AF}}{59,200 \text{ AF}} = 66\%$$

Agency B

$$\frac{14,200 \text{ AF}}{59,200 \text{ AF}} = 24\%$$

Agency C

$$\frac{6,000 \text{ AF}}{59,200 \text{ AF}} = 10\%$$

Example of Interest Exceeding Water Available for Pre-Sale

Agency A

66%

Agency B

24%

Agency C

10%

Distribution of the 50,000 AF Available for Pre-Sale

50,000 AF ✖ 66%

=

33,000 AF

50,000 AF ✖ 24%

=

12,000 AF

50,000 AF ✖ 10%

=

5,000 AF

Summary

Modifications to the Reverse Cyclic Program would:

- Allow all member agencies to purchase water at the current rate for delivery in a future year.
 - Deferral of deliveries under various supply conditions, such as when member agencies are not able to accept deliveries due to capacity, operational constraints, or limitations.
- Allow Metropolitan to collect revenue now and deliver water when supplies are available
- Include additional parameters to provide Metropolitan flexibility on the initiation of deferrals and the delivery of water.

Reverse Cyclic Program Modifications

Board Options

- Option #1
Authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions consistent with the terms in Attachment 1.
- Option #2
Do not authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions.

Reverse Cyclic Program Modifications

Staff Recommendation

- Option #1
Authorize the General Manager to enter into Reverse-Cyclic Program agreements with participating agencies to defer deliveries of purchases under various water supply conditions consistent with the terms in Attachment I.





- **Board of Directors**
One Water and Stewardship Committee

10/8/2024 Board Meeting

7-5

Subject

Authorize resolutions to support two applications selected to receive United States Department of the Interior, Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grants Program funding for Fiscal Year 2024 totaling \$2 million; and authorize the General Manager to accept this funding and enter contracts with the United States Department of the Interior, Bureau of Reclamation; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

On February 22, 2024, Metropolitan applied to the U.S. Department of the Interior, Bureau of Reclamation's (Reclamation) fiscal year 2024 (FY24) WaterSMART: Water and Energy Efficiency Grants Program. Metropolitan requested \$2 million to support two regional conservation programs: (1) a total of \$1.75 million was requested to increase funding available for the Residential Direct Install Program for devices, and (2) \$250,000 was requested to expand the reach of a Direct Install Turf Replacement Program for Disadvantaged Communities. On August 5, 2024, Metropolitan was notified the submitted applications are now being considered for award of financial assistance agreements for FY24. In order to proceed in the agreement process, Metropolitan must obtain resolutions from the Board of Directors committing Metropolitan to the financial and legal obligations associated with a financial assistance award. If approved, this action would adopt resolutions (**Attachment 1 and Attachment 2**) supporting Metropolitan's commitment to the financial and legal obligations. This action also authorizes the General Manager to accept up to \$2 million in grant funding and enter into contracts with Reclamation for the WaterSMART: Water and Energy Efficiency Grants Program for FY24. If authorized, Metropolitan would pay the non-federal cost share of \$2 million over three years from the conservation program budget.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation:

Option #1

Authorize resolutions to support two applications selected to receive for United States Department of the Interior, Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grant Program funding for FY24 totaling \$2 million; and authorize the General Manager to accept this funding and enter contracts with the United States Department of the Interior, Bureau of Reclamation.

Fiscal Impact: The addition of \$2 million in grant funds to existing Metropolitan funding would require Metropolitan to commit to a non-federal cost share of \$2 million. This cost share is budgeted as existing Metropolitan funding in the conservation program budget.

Business Analysis: Grant funding will allow Metropolitan to leverage existing Metropolitan funding appropriated for the Residential Direct Install Program and the Direct Install Turf Replacement Program as non-federal cost share to reach more participants in each respective program.

Option #2

Do not support or accept grant funding.

Fiscal Impact: None

Business Analysis: Without the grant funds, Metropolitan would reach fewer participants in the conservation program.

Alternatives Considered

Not applicable

Applicable Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter into Contracts

By Minute Item 52582, dated November 8, 2021, the Board authorized the expansion of the Residential Direct Install Program and modifications to the Turf Replacement Program.

By Minute Item 48772, dated August 16, 2011, the Board adopted the Long-Term Conservation Plan and revisions to the water conservation policy principles.

Related Board Action(s)/Future Action(s)

Not applicable

Summary of Outreach Completed

Not applicable

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is not defined as a project under CEQA because it involves the creation of government funding mechanisms or other government fiscal activities which do not involve any commitment to any specific project which may result in a potentially significant physical impact on the environment. (State CEQA Guidelines Section 15378(b)(4)).

CEQA determination for Option #2:

None required

Details and Background

Background

Reclamation's WaterSMART (Sustain and Manage America's Resources for Tomorrow) Program provides a framework for federal leadership and assistance to stretch and secure water supplies for future generations in support of the Department's priorities identified in Presidential Executive Order (E.O.) 14008: Tackling the Climate Crisis at Home and Abroad. WaterSMART Water and Energy Efficiency Grants will advance the Biden-Harris Administration's Justice40 Initiative. Established by E.O. 14008, the Justice40 Initiative has made it a goal that 40 percent of the overall benefits of certain federal investments, such as climate, clean energy, and other areas, flow to disadvantaged communities. Water and Energy Efficiency Grants also support the goals of the Interagency Drought Relief Working Group established in March 2021 and the National Drought Resiliency Partnership. Through WaterSMART, Reclamation provides financial assistance to water managers for projects that seek to conserve and use water more efficiently and accomplish other benefits that contribute to resilience and sustainability in the West.

Metropolitan incentivizes improvements to indoor and outdoor water-use efficiency by offering a variety of rebates for indoor and outdoor devices and conversions from turf to more California-friendly landscapes. These

incentives are integral components of Metropolitan's efforts to sustain momentum toward achieving the Integrated Resources Plan goals for urban water conservation. As in recent years, staff identified the WaterSMART: Water and Energy Efficiency Grants Program as a viable opportunity to secure external funding to support our regional water-use efficiency efforts, and on February 22, 2024, Metropolitan submitted two applications for consideration to Reclamation. On August 5, 2024, Metropolitan was notified the submitted applications are now being considered by Reclamation to receive awards under the FY24 WaterSMART: Water and Energy Efficiency Grants Program.

Residential Direct Install Program for Devices

Since 2014, Metropolitan and the Southern California Gas Company (SoCal Gas) have partnered to provide water and energy efficiency programming to income-qualified consumers within Metropolitan's service area and to customers of SoCal Gas. The two parties continue to develop collaborative programming measures through a Memorandum of Understanding that is in effect through December 31, 2024. On November 9, 2021, the Board authorized the expansion of the Residential Direct Install Program in partnership with SoCalGas to provide no-cost direct installations of clean energy and water-saving measures to income-qualified residences. Through the Residential Direct Install Program, eligible consumers receive no-cost energy upgrades funded by SoCal Gas and high-efficiency toilets, showerheads, faucet aerators, and weather-based irrigation controllers through financial support from Metropolitan. This initiative enhances Metropolitan's suite of indoor and outdoor incentives to consumers within underserved communities.

If adopted, Metropolitan would use the \$1.75 million in awarded grant funds to increase Metropolitan's share of program funding to provide direct installation services for more water-efficiency devices in the Residential Direct Install Program with SoCalGas. Reclamation requires awarded applicants to provide at least a 50 percent cost share or dollar-for-dollar match based on total project costs. Staff anticipates \$1.75 million to be expended annually for the direct installation of water-efficiency devices in the Residential Direct Install Program for the current biennial budget. Accepting WaterSMART grant funds will add an additional \$1.75 million, bringing the total program budget to \$3.5 million. This increased budget will allow Metropolitan to provide funding for more installations than previously anticipated at no additional costs to Metropolitan beyond what was already budgeted for in the current biennium.

Direct Install Turf Replacement Program

For over 30 years, Metropolitan has invested hundreds of millions of dollars to help Southern Californians improve their outdoor water-use efficiency. Throughout this time, various iterations of turf replacement and device rebate programs have evolved to improve customer access to rebates, enhance incentives, and promote the environmental benefits of landscape transformation beyond water savings. To date, over 220 million square feet of turf in Southern California has been replaced with water-efficient landscaping because of the combined efforts of the Bureau of Reclamation, State of California, Metropolitan, and our local water suppliers.

The Water Efficiency Team staff is in the process of developing a Direct Install Turf Replacement Program for Disadvantaged Communities, which will seek to remove the financial barriers imposed by traditional rebate programs by replacing turf with drought-tolerant alternatives at no cost to qualifying participants across Metropolitan's service area. The overall goal of the Project is to expand existing Turf Replacement Program efforts to improve outdoor water-use efficiency and establish resiliency in underserved communities.

Currently, the FY 2024/25 budget allocates \$250,000 for a small-scale Direct Install Turf Replacement Program. If adopted, Metropolitan would use the \$250,000 in awarded grant funds to supplement the Direct Install Turf Replacement Program budget. Reclamation requires awarded applicants to provide at least a 50 percent cost share or dollar-for-dollar match based on total project costs. Accepting WaterSMART grant funds will add an additional \$250,000, bringing the total program budget to \$500,000. This increased budget will allow Metropolitan to provide funding for more turf replacement direct installations than previously anticipated at no additional costs to Metropolitan beyond what was already budgeted for in the current biennium.

Required Resolutions

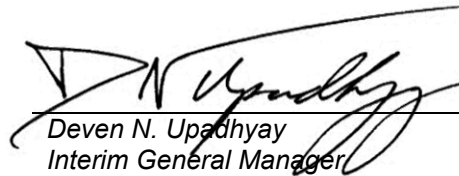
The WaterSMART program requires a board resolution supporting the grant proposals prior to the execution of an agreement of a financial assistance award. Each board resolution documents Metropolitan's commitment to the financial and legal obligations associated with accepting a financial assistance award, authorizes the General Manager to accept funding, delegates authority to the General Manager to enter into a contract, recognizes that Metropolitan is capable of providing up to \$2 million in matching funds, and commits Metropolitan to work with Reclamation to meet established deadlines. The resolutions do not obligate Metropolitan to accept funding. Metropolitan has the discretion to accept or decline potential funding prior to an agreement being executed.



Brandon J. Goshi
Interim Manager,
Water Resource Management

9/26/2024

Date



Deven N. Upadhyay
Interim General Manager

9/30/2024

Date

Attachment 1 – Resolution XXXX: RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA IN SUPPORT OF ITS PROPOSAL FOR FUNDING UNDER THE WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR THE RESIDENTIAL DIRECT INSTALL PROGRAM FOR DEVICES FOR DISADVANTAGED COMMUNITIES

Attachment 2 – Resolution XXXX: RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA IN SUPPORT OF ITS PROPOSAL FOR FUNDING UNDER THE WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR THE DIRECT INSTALL TURF REPLACEMENT PROGRAM FOR DISADVANTAGED COMMUNITIES

Ref# wrm12701119

RESOLUTION XXXX**RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA IN SUPPORT OF ITS PROPOSAL FOR FUNDING UNDER THE WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR THE RESIDENTIAL DIRECT INSTALL PROGRAM FOR DEVICES FOR DISADVANTAGED COMMUNITIES**

WHEREAS, the U.S. Bureau of Reclamation (Reclamation) is requesting proposals for water use efficiency activities from the WaterSMART: Water and Energy Efficiency Grants for FY 2024; and

WHEREAS, the submittal of a proposal for grant funding by Metropolitan has been determined to be exempt from the California Environmental Quality Act (CEQA) under Sections 15378 (b)(4) and 15061 (b)(3) of the State CEQA Guidelines.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of The Metropolitan Water District of Southern California that the Board supports the proposal for the Residential Direct Install Program for Disadvantaged Communities under Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY 2024.

BE IT FURTHER RESOLVED that Metropolitan's Board authorizes Metropolitan's General Manager to accept grant funding of up to \$1,750,000.00.

BE IT FURTHER RESOLVED that Metropolitan's Board delegates legal authority to Metropolitan's General Manager to enter into an agreement with Reclamation, subject to the approval of the General Counsel, relevant to receipt of the requested WaterSMART grant.

BE IT FURTHER RESOLVED that Metropolitan is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan.

BE IT FURTHER RESOLVED that if selected for funding, Metropolitan will work with Reclamation to meet established program deadlines.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held (Enter Board Meeting Date).

Secretary of the Board of Directors
of The Metropolitan Water District
of Southern California

RESOLUTION XXXX**RESOLUTION OF THE BOARD OF DIRECTORS OF THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA IN SUPPORT OF ITS PROPOSAL FOR FUNDING UNDER THE WATERSMART: WATER AND ENERGY EFFICIENCY GRANTS FOR THE DIRECT INSTALL TURF REPLACEMENT PROGRAM FOR DISADVANTAGED COMMUNITIES**

WHEREAS, the U.S. Bureau of Reclamation (Reclamation) is requesting proposals for water use efficiency activities from the WaterSMART: Water and Energy Efficiency Grants for FY 2024; and

WHEREAS, the submittal of a proposal for grant funding by Metropolitan has been determined to be exempt from the California Environmental Quality Act (CEQA) under Sections 15378 (b)(4) and 15061 (b)(3) of the State CEQA Guidelines.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of The Metropolitan Water District of Southern California that the Board supports the proposal for the Direct Install Turf Replacement Program for Disadvantaged Communities under Reclamation's WaterSMART: Water and Energy Efficiency Grants for FY 2024.

BE IT FURTHER RESOLVED that Metropolitan's Board authorizes Metropolitan's General Manager to accept grant funding of up to \$250,000.00.

BE IT FURTHER RESOLVED that Metropolitan's Board delegates legal authority to Metropolitan's General Manager to enter into an agreement with Reclamation, subject to the approval of the General Counsel, relevant to receipt of the requested WaterSMART grant.

BE IT FURTHER RESOLVED that Metropolitan is capable of providing the amount of funding and/or in-kind contributions specified in the funding plan.

BE IT FURTHER RESOLVED that if selected for funding, Metropolitan will work with Reclamation to meet established program deadlines.

I HEREBY CERTIFY that the foregoing is a full, true, and correct copy of a resolution adopted by the Board of Directors of The Metropolitan Water District of Southern California at its meeting held (Enter Board Meeting Date).

Secretary of the Board of Directors
of The Metropolitan Water District
of Southern California



One Water & Stewardship Committee

Authorize resolutions to support water use efficiency programs selected to receive USBR FY24 WaterSMART: Water and Energy Efficiency Grants Program funding

Item 7-5

October 7, 2024

Item 7-5
USBR
WaterSMART:
Water and
Energy
Efficiency
Grants Program
(WEEG)

Subject

Authorize resolutions to support two applications selected to receive United States Department of the Interior, Bureau of Reclamation FY24 WaterSMART: Water and Energy Efficiency Grants Program funding totaling \$2 million; and authorize the General Manager to accept this funding and enter contracts with the United States Department of the Interior, Bureau of Reclamation.

Purpose

Obtain the required Board resolutions for staff to proceed in negotiating financial assistance awards with USBR

Staff Recommendation and Fiscal Impact

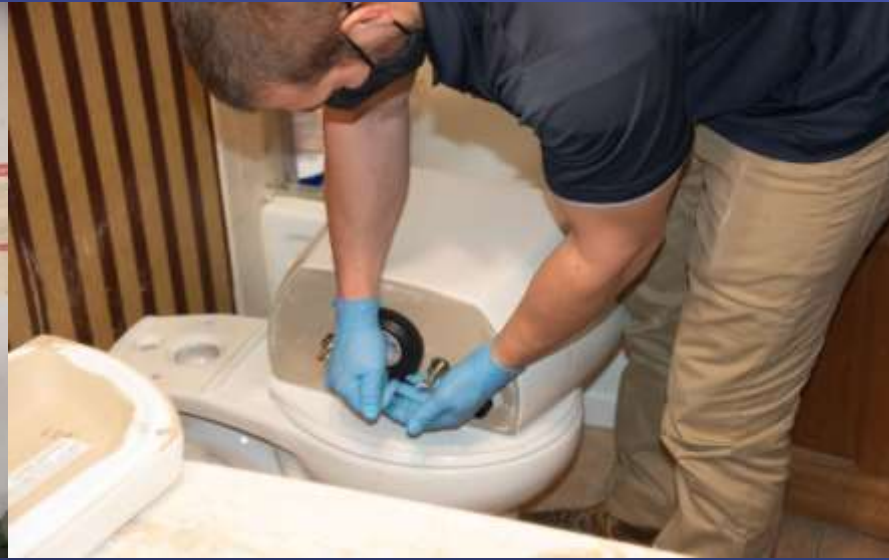
Option #1: Authorize resolutions to support applications selected to receive FY24 WaterSMART: WEEG Program funding totaling \$2 million; and authorize the General Manager to accept this funding and enter contracts with USBR. Accepting grant funds would require Metropolitan to commit to a non-federal cost share of \$2 million. This cost share is budgeted as existing Metropolitan funding in the conservation program budget.

USBR WaterSMART: Water and Energy Efficiency Grants Program (WEEG)

- Annual federal grant opportunity focusing on quantifiable and sustained water savings
- Prioritizes projects that have sustainability benefits, address the impacts of climate change and enhance drought resiliency

MWD's Active/Pending USBR WaterSMART: WEEG Grant Projects			
Program Year	Project Title	Funding Request	Status
FY22	Regional Public Agency Turf Replacement Incentive Program	\$2M	Awarded implemented into turf replacement program on November 1, 2022.
FY23	Regional Residential and CII Turf Replacement Incentive Program	\$5M	Awarded implemented into turf replacement program on March 4, 2024.
FY24	Residential Direct Install Program for Disadvantaged Communities	\$1.75M	Awarded, seeking resolution
	Direct Install Turf Replacement Program for Disadvantaged Communities	\$250K	Awarded, seeking resolution

Residential Direct Install Program for DAC in Partnership with Southern California Gas Company



- \$1.75M application submitted in February 2024, selected for funding in August 2024
- Funding will be implemented directly into MWD's existing Residential Direct Install Program in Partnership with SoCalGas to reach approximately 3,200 additional homes
- Metropolitan would simply need to modify the program order authorizing SoCalGas to spend an additional \$3.5M on measures funded by MWD to implement grant funds

Direct Install Turf Replacement Program for DAC



- \$250K application submitted in February 2024
 - MWD notified of selection for funding in August 2024
- Funding to be implemented into a direct install turf replacement program to reach approximately 40 homes (~20 grant funded) in the MWD service area
- Staff finalizing scope and preparing RFP/RFQ to hire landscape contractors
- Anticipate a Summer 2025 Program Launch

Cost-Share Requirement

USBR WaterSMART: Water and Energy Efficiency Grants Program Cost Share Commitment			
Project Title	Total Project Costs	USBR Grant Request	MWD Cost Share
Residential Direct Install Program for Disadvantaged Communities	\$3.5M	\$1.75M	\$1.75M
Direct Install Turf Replacement Program for Disadvantaged Communities	\$500K	\$250K	\$250K
Total Cost Share Commitment			\$2M

- Cost Share: 50%, or dollar for dollar match based on total project costs is required
- MWD applied for \$1.75M and \$250K, respectively, as that was the total amount included in our FY24-26 budget for these programs and the maximum we could commit as matching funds

Board Options

- Option #1: Authorize the resolutions to support two applications selected to receive for United States Department of the Interior, Bureau of Reclamation WaterSMART: Water and Energy Efficiency Grants Program funding for FY24 totaling \$2 million; and authorize the General Manager to accept this funding and enter contracts with the United States Department of the Interior, Bureau of Reclamation.
- Option #2: Do not support or accept grant funding

Staff Recommendation

- Option #1





- **Board of Directors**
One Water and Stewardship Committee

10/8/2024 Board Meeting

7-6

Subject

Review and consider the Lead Agency's certified 2022 Final Environmental Impact Report for the Chino Basin Program and take related CEQA actions, and authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the program

Executive Summary

Since 2018, Metropolitan staff have been collaborating with the Inland Empire Utilities Agency (IEUA) to develop the Chino Basin Program (CBP), a Proposition 1 Water Storage Investment Program (WSIP) project. The CBP accomplishes three main goals: stores advanced treated recycled water in the Chino Basin groundwater basin, allows for environmental water releases from Lake Oroville into the Feather River for fishery benefit (pulse flows), and provides the infrastructure for replacement water supply to meet the supply and demand requirements within Metropolitan's service area. Under the proposed program, IEUA would invest state and local funds in local infrastructure to produce and store 375,000 acre-feet (AF) of advanced treated recycled water to be exchanged over a 25-year term. When required, this stored water would be exchanged for an equivalent portion of Metropolitan's State Water Project (SWP) Table A allocation. To make Metropolitan's water supply whole, an equivalent amount of stored CBP water would be delivered to Metropolitan's distribution system directly via pump-in or by in-lieu means to meet IEUA service area demands. Staff has provided the Board with multiple informational items on this proposed program, the most recent of which was in August 2024, to the One Water and Stewardship Committee.

In April 2022, the Board authorized the General Manager to negotiate an agreement with IEUA consistent with the draft terms presented at that time. Staff has since been working on specific agreement language consistent with the terms approved by the Board. This letter details the final agreement terms that have since been negotiated, also found in **Attachment 1**. The Metropolitan/IEUA Exchange Agreement is part of a suite of agreements necessary to execute the CBP, only some of which require Metropolitan as a signatory. Staff will return as necessary for board approval on additional agreements.

Metropolitan's role in the CBP is that of a facilitating SWP contractor. Metropolitan agrees to facilitate the exchange of SWP supplies with stored water in the CBP and participate in necessary related agreements. This agreement does not commit Metropolitan to funding any portion of the CBP facilities. Metropolitan would only operate, maintain, and administer the Rialto Pipeline service connection for direct pump-in from CBP.

The CBP provides environmental, local, and regional benefits to multiple parties, including Metropolitan. The pulse flows from Lake Oroville to the Feather River will provide fishery and ecosystem benefits. IEUA will retain ownership of the CBP facilities once the commitment to the state has been fulfilled, providing another source for local supply. The direct pump-in connection to the Rialto Pipeline could allow another source of supply to reach an otherwise SWP Dependent Area of Metropolitan's service area. Additionally, the CBP allows for an emergency use provision, where up to 50,000 AF (40,000 AF in a single year) could be borrowed by Metropolitan for use within its service area.

Metropolitan will continue collaborating with IEUA to develop the CBP. Design and construction for CBP facilities are expected to begin in 2025 and 2027, respectively. The program is expected to be operational around 2032.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Review and consider the Lead Agency's certified 2022 Final Environmental Impact Report for the Chino Basin Program and take related CEQA actions, and authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the program

Fiscal Impact: None

Business Analysis: Participation in the CBP will improve regional reliability and provide access to additional emergency supplies for Metropolitan's service area.

Option #2

Do not authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the Chino Basin Program

Fiscal Impact: None

Business Analysis: Not participating in the CBP will miss an opportunity to improve regional reliability and provide access to additional emergency supplies for Metropolitan's service area.

Applicable Policy

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By the 1999 Strategic Plan Policy Principles, Metropolitan is a regional provider of water for its service area and a steward of regional infrastructure.

By the General Manager's Business Plan for FYs 2020/21 and 2021/22, one of Metropolitan's strategic priorities is to promote sustainability.

By Minute Item 42287, dated February 11, 1997, the Board adopted a set of policy principles on water recycling.

By Minute Item 52784, dated April 12, 2022, the Board authorized the General Manager to negotiate an agreement consistent with the draft terms of the Metropolitan Water District/Inland Empire Utilities Agency Exchange Agreement.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

Acting as the Lead Agency, Inland Empire Utilities Agency certified a Final Environmental Impact Report (EIR) on May 20, 2022, for the Chino Basin Program. The Lead Agency also approved the Findings of Fact, the Statement of Overriding Considerations, and the Mitigation Monitoring and Reporting Program. The Final EIR and related CEQA documents are included in **Attachment 2 and Attachment 3**.

The Board has reviewed and considered these environmental documents and adopts the findings of the Lead Agency. (State CEQA Guidelines Section 15096.);

CEQA determination for Option #2:

Not applicable

Details and Background

Background

California's Proposition 1 in 2014 allocated \$7.5 billion for water system investments, with \$2.7 billion dedicated specifically to the implementation of the WSIP. The California Water Commission selected eight projects to

conditionally fund under the WSIP based on their associated public benefits. One of the conditionally funded projects is IEUA's CBP. The CBP's conditional WSIP funding has been increased twice to adjust for inflation, with the latest funding amount totaling \$215.2 million. In 2021, Metropolitan provided a letter of intent to continue collaborating with IEUA as its potential facilitating SWP contractor. Staff presented the Proposition 1 WSIP projects and an overview of the CBP to the Board in June 2021 and March 2022. In April 2022, the Board authorized the General Manager to negotiate an agreement consistent with the draft terms of the Metropolitan Water District/Inland Empire Utilities Agency Exchange Agreement. In April 2023, staff presented an informational update on the program's progress to the Board. Staff presented another oral update on CBP progress to the Board in August 2024.

Chino Basin Program Overview

The CBP is an innovative advanced treatment, storage, water exchange, and reliability program. Under the CBP, IEUA would construct an advanced water treatment facility to treat up to 15,000 acre-feet (AF) of recycled water per year. After treatment, the water would be stored in the Chino Basin groundwater basin using distribution facilities and injection wells constructed as part of the program.

As part of the water exchange agreement with the state, IEUA would agree to store up to 375,000 AF of advanced treated recycled water in the Chino Basin over a 25-year period. This stored water would be made available for exchange for an equivalent amount of Metropolitan's SWP Table A supplies. The exchanged SWP Table A supplies would provide the physical water supply for pulse flows released from Lake Oroville into the Feather River. The maximum amount of Table A supplies Metropolitan would transfer to the Department of Water Resources (DWR) for a pulse flow is 40,000 AF in one year.

To complete the exchange, IEUA would extract stored groundwater from the CBP and deliver it to Metropolitan's distribution system directly or by in-lieu pumping to meet IEUA service area demands. The amount of stored CBP water extracted by IEUA for in-lieu or direct delivery to Metropolitan would be equivalent to the exchanged Table A supplies. As a result, Metropolitan and its service area would remain whole in terms of water supply. The exchange would only occur during years when DWR determines that SWP operations and SWP contractor supplies would not be at risk. As a result, the state would not request an exchange in critically dry years. IEUA's extraction of stored CBP water for repayment to Metropolitan is also referred to as "local performance" within the Metropolitan/IEUA Exchange Agreement.

The CBP provides environmental, local, and regional benefits to multiple parties, including Metropolitan. The pulse flows from Lake Oroville to the Feather River will provide fish and ecosystem benefits. IEUA will retain ownership of the CBP facilities once the commitment to the state has been fulfilled, providing another source for local supply. The direct pump-in connection to the Rialto Pipeline could allow another source of supply to reach an otherwise SWP Dependent Area of Metropolitan's service area, and reach multiple member agencies in the Central Pool. Additionally, the CBP allows for an emergency use provision, where up to 50,000 AF (40,000 AF in a single year) could be borrowed by Metropolitan for use within its service area in emergency conditions.

Metropolitan's Role as a Facilitating State Water Contractor

A key component of the CBP requires SWP supplies that are stored in Lake Oroville to be exchanged and used to provide pulse flows in the Feather River. Since IEUA is not an SWP contractor, IEUA requested Metropolitan's participation in the CBP as a facilitating SWP contractor. Metropolitan would agree to facilitate the exchange of SWP supplies with stored water in the CBP and participate in necessary related agreements. The CBP is being developed under a tenet of "No Harm," meaning that its development and operation cannot adversely affect any of the parties or participants in the program. This tenet extends to the SWP and its contractors, to Metropolitan and its service area, and to IEUA and its member local agencies.

Metropolitan/IEUA Exchange Agreement Terms

In April 2022, the Board authorized the General Manager to negotiate an agreement consistent with the draft terms provided for the Metropolitan/IEUA Exchange Agreement. A summary of the final agreed-upon terms for this agreement is found below. The agreement terms are provided in **Attachment 1**.

The Metropolitan/IEUA Exchange Agreement is only one of the multiple expected agreements necessary to execute the CBP. Metropolitan is not expected to be a signatory to all CBP agreements. However, acknowledging that terms of other CBP agreements could affect Metropolitan's rights and responsibilities, an "Opportunity for Review" clause has been included in the Metropolitan/IEUA Exchange Agreement. This clause allows both IEUA and Metropolitan to review copies of final, executed versions of all other CBP agreements for a 90-day review period. Both parties would work cooperatively to develop any revisions deemed necessary. If IEUA and Metropolitan cannot agree on mutually acceptable revisions, either party may withdraw from the Metropolitan/IEUA Exchange Agreement upon 15 days' notice.

Planning, Design, and Construction

Metropolitan's role within the CBP is that of a facilitating partner. Therefore, the Metropolitan/IEUA Exchange Agreement does not commit Metropolitan to participate in funding or operation of CBP facilities. Metropolitan will not have any ownership rights aside from its portion of the Rialto Pipeline service connection. Metropolitan shall operate, maintain, and administer the Rialto Pipeline service connection for pump-in operations. IEUA will have primary CEQA responsibility for the CBP and all related facilities. IEUA will also be responsible for formalizing a service connection request for the Rialto Pipeline connection and providing information as required to Metropolitan.

Operation and Performance

An operating committee of staff from both Metropolitan and IEUA will be formed. The operating committee will produce an Annual Operating Plan that considers IEUA's facilities, availability of Metropolitan facilities, and timing of payback schedules, among other items, to determine if a pulse flow can be accommodated in a given year.

IEUA's delivery of stored CBP water to Metropolitan, referred to as local performance, will be accomplished through a combination of pump-in to the Rialto Pipeline and in-lieu production by participating IEUA member agencies. With a maximum annual local performance requirement of 40,000, local performance would be achieved by 30,000 AF of in-lieu production and 10,000 AF of direct pump-in to the Rialto Pipeline. Local performance will be fulfilled by the end of the following calendar year after a pulse flow occurs unless otherwise agreed to by the operating committee.

To ensure that adequate demands within the IEUA service area exist to provide local performance through in-lieu means, IEUA will enter into a "Take or Pay" contract to pay Metropolitan's supply rate for 30,000 AF in each year of the agreement. In a year where a pulse flow does not occur, Metropolitan will credit the supply rate against IEUA's actual Metropolitan purchases. In years where a pulse flow occurs, Metropolitan would credit back the supply rate commensurate with a certification of pumping from CBP facilities that indicates satisfactory performance.

Pump-in operations to Metropolitan's system via the Rialto Pipeline will also be subject to water quality requirements. Consistent with existing Metropolitan policy, pump-in water must not cause degradation in Metropolitan's facilities and water quality and must be consistent with Metropolitan's Policy for Acceptance of New Water into Conveyance Facilities. Prior to the introduction of pump-in water to Metropolitan's facilities, IEUA must provide to Metropolitan for review and approval the results of water quality tests from the pump-in water. Specific testing requirements have been provided to IEUA by Metropolitan. If Metropolitan determines the monitoring results indicate the water does not meet new source water policy standards, pump-in operations will cease immediately.

Failure to perform the agreed-upon exchange obligations for each of the respective parties is referred to in the agreement as "non-performance." IEUA's non-performance refers to the inability to execute and deliver the agreed-upon pump-in or in-lieu amount. Metropolitan's non-performance refers to the inability or unwillingness to transfer its Table A supplies to the state. Under IEUA non-performance, IEUA will return the non-performance water as soon as possible but in no event later than 12 months from the notice of non-performance. IEUA has three options to return non-performance water: (1) buy the water outright from Metropolitan (through a cyclic storage agreement or similar), (2) deliver water purchased on the open market to Metropolitan through the Rialto

Pipeline, or (3) implement an operating committee-approved alternative method. In the event that repayment of non-performance extends beyond 12 months after the notice of non-performance, IEUA shall purchase 1.5 times the remaining non-performance water quantity as cyclic storage water. Should Metropolitan be unable to meet its performance obligations, Metropolitan would be responsible for any state financial or water remuneration incurred by IEUA for the performance in question.

IEUA has a WSIP obligation to provide up to 50,000 AF (up to 40,000 AF in a single year) of water for emergency situations. IEUA and Metropolitan jointly believe the emergency use obligation language in the state public benefits contract would be interpreted to enable Metropolitan to initiate an emergency call for the use of this provision, provided that adequate CBP supplies are in storage. This provides an emergency benefit to Metropolitan's service area. IEUA and Metropolitan reserve the right to void the IEUA/Metropolitan Exchange Agreement should such emergency call provisions become unavailable to the parties.

Next Steps

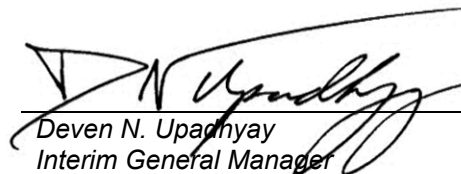
Staff will continue working with IEUA to determine other necessary agreements for program implementation, specifically for Metropolitan. Staff will continue to support program development, including participation in IEUA's current preliminary design report efforts. Design and construction for CBP facilities are expected to begin in 2025 and 2027, respectively. The program is expected to be operational around 2032.



Brandon J. Goshi
Interim Manager,
Water Resource Management

9/23/2024

Date



Deven N. Upadhyay
Interim General Manager

10/1/2024

Date

Attachment 1 – Term Sheet for Exchange Agreement between Metropolitan Water District of Southern California and Inland Empire Utilities Agency to Assist in Implementation of the Chino Basin Program

Attachment 2 – Final PEIR for the Chino Basin Program

Attachment 3 – Notice of Determination for the Chino Basin Program

Ref# wrm12698008

Term Sheet for Exchange Agreement between Metropolitan Water District of Southern California (Metropolitan) and Inland Empire Utilities Agency (IEUA) to Assist in Implementation of the Chino Basin Program (CBP)

Program Overview

1. IEUA's performance obligation under its Public Benefit Contract agreement with the State is 375,000 AF minus any credit received for Carriage Water.
2. The maximum annual amount requested for pulse flow shall be up to 40,000 AF. This volume shall be achieved through a combination of In-Lieu Production (30,000 AF) and Direct Pump-In (10,000 AF).
3. California Department of Fish and Wildlife (CDFW) has indicated pulse flows would only occur in below-normal and dry years. The water supplies being used for the pulse flows under the CBP will be provided by Metropolitan transferring a portion of its Table A supplies to the Department of Water Resources (DWR). DWR would follow its normal process for allocating Table A supplies to the State Water Contractors consistent with the terms and conditions of the existing State Water Project contract. Then, in call years, CDFW/DWR would determine the amount of Table A supplies needed to facilitate the desired pulse flow and request this amount from the Parties (referred to as a Pulse Flow Call).
4. IEUA and Metropolitan will both receive copies of final, fully executed versions of all other CBP agreements with a 90-day review period. IEUA and Metropolitan shall work cooperatively to develop any revisions deemed necessary. If IEUA and Metropolitan cannot agree on mutually acceptable revisions, either Party may withdraw from the IEUA/Metropolitan Exchange Agreement upon 15 days' notice.

Planning, Design, and Construction

1. Metropolitan's role in the CBP is to facilitate the exchange of water with DWR and IEUA. This agreement does not commit Metropolitan to participate in funding or operation of CBP Facilities (except the Rialto Pipeline service connection), nor will it have any ownership rights in the CBP Facilities.
2. IEUA shall be responsible for formalizing a service connection request and providing information as required for Metropolitan to implement the service connection.
3. Metropolitan shall operate, maintain, and administer the Rialto Pipeline service connection for pump-in operations.
4. IEUA will have primary California Environmental Quality Act responsibility for the CBP and CBP Facilities (including the service connection).

Operation and Performance

1. An Operating Committee composed of appropriate representatives from Metropolitan and IEUA shall be formed. The Operating Committee will meet to determine whether a take is feasible and create an Annual Operating Plan. Upon receiving notification of CDFW's interest in executing a pulse flow, the Parties will convene the Operating Committee to determine the feasibility of accommodating the pulse flow.
2. IEUA's repayment to Metropolitan through in-lieu and pump-in (collectively referred to as "local performance") will be completed by the end of the calendar year following a Pulse Flow Call unless otherwise agreed to by the Operating Committee.

3. IEUA will enter a Take or Pay Contract to pay Metropolitan's Supply Rate for 30,000 AF each year. In years where a pulse flow does not occur, Metropolitan will credit the supply rate against IEUA's Metropolitan purchases. In years where a pulse flow occurs, Metropolitan would credit back the supply rate if a certification of pumping from CBP indicates satisfactory in-lieu performance.
4. IEUA has an obligation to provide up to 50,000 AF (limited to a maximum of 40,000 AF in any year) of water for emergency situations, provided sufficient CBP supplies have been stored. Emergency situations include any circumstances when water shortages exist within the IEUA or Metropolitan service areas.
5. IEUA and Metropolitan believe the emergency use obligation language in the State public benefits contract must be interpreted to enable Metropolitan to initiate an emergency call. Parties reserve the right to void this agreement should such emergency call provisions be unavailable to the Parties. Emergency use by Metropolitan shall be credited against the total local performance obligation needed by IEUA.
6. Pump-in operations to the Rialto Pipeline must not cause degradation in Metropolitan's facilities and water quality and must be consistent with Metropolitan's Policy for Acceptance of New Water into Conveyance Facilities. A detailed pump-in proposal will be developed by the Operating Committee. The proposal must be approved by Metropolitan prior to any implementation, which will be the responsibility of IEUA.
7. Prior to the introduction of pump-in water to Metropolitan's facilities, IEUA must provide to Metropolitan for review and approval the results of water quality tests from the pump-in water. If Metropolitan determines the monitoring results indicate the water does not meet new source water policy standards, pump-in operations will cease immediately.
8. Failure to perform the agreed-upon exchange obligations for the respective Party is referred to as "non-performance." IEUA's non-performance refers to the inability to execute the agreed-upon pump-in or in-lieu amount. Under IEUA non-performance, IEUA will return the non-performance water as soon as possible but in no event later than 12 months from the notice of non-performance. IEUA has three options to return non-performance water: (1) Buy the water outright from Metropolitan (through a cyclic storage agreement or similar), (2) Deliver water purchased on the open market to Metropolitan through the Rialto Pipeline, or (3) Implement an Operating Committee-approved alternative method. In the event that repayment of non-performance extends beyond 12 months after the notice of non-performance, IEUA shall purchase 1.5 times the remaining non-performance water quantity as cyclic storage water.
9. Should Metropolitan be unable to meet its performance obligations, Metropolitan would be responsible for any State financial or water remuneration incurred by IEUA for the performance in question.

**FACTS AND FINDINGS REGARDING
FINAL SUBSEQUENT ENVIRONMENTAL IMPACT REPORT
FOR THE INLAND EMPIRE UTILITIES AGENCY PROGRAM
ENVIRONMENTAL IMPACT REPORT FOR THE CHINO BASIN PROGRAM
(SCH#2021090310) AND CANDIDATE STATEMENT OF OVERRIDING
CONSIDERATIONS REGARDING THE ENVIRONMENTAL EFFECTS FROM
IMPLEMENTING THE CHINO BASIN PROGRAM**

A. INTRODUCTION

The Inland Empire Utilities Agency (IEUA), in approving (certifying) the Chino Basin Program final Program Environmental Impact Report (PEIR) incorporating changes to the Chino Basin Program draft Program Environmental Impact Report, make the findings described below. These findings are based on the facts presented in public hearings on this matter, presented in the staff reports, environmental documents, and other information presented to the IEUA and summarized in this document. A statement of overriding considerations is presented at the end of these facts and findings in compliance with Section 15093 of the State CEQA Guidelines. The Final PEIR for the CBP ("Project"), State Clearinghouse (SCH) #2021090310, will be referred to herein as the "FPEIR". The total action that may be implemented by approval of the proposed CBP consists of all of the actions outlined in the FPEIR.

IEUA concluded that a Program EIR should be prepared to address the potential significant adverse environmental impacts that may result from implementing the CBP. IEUA based this determination to prepare a program EIR for the CBP on the fact that the EIR would need to evaluate the potential broad scope or programmatic environmental impacts that would result from constructing and implementing the whole of the proposed project.

The FPEIR has been prepared as the complete environmental document that encompasses all the issues addressed in the Draft PEIR (DPEIR), which determined the issues with a potential to cause significant adverse environmental impacts. The FPEIR serves as an informational document intended for use by IEUA, and responsible agencies such as Department of Water Resources (DWR), the California Department of Fish and Wildlife (CDFW), and Metropolitan Water District (MWD), as well as the general public in evaluating the potential environmental effects of implementing this project. IEUA prepared the Draft Program Environmental Impact Report (DPEIR) to address all topics required to be analyzed by CEQA and the CEQA Guidelines, as follows: aesthetics, agriculture and forestry resources, air quality, biological resources, cultural resources, energy, geology/soils, greenhouse gas emissions/climate change, hazards and hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation, tribal cultural resources, utilities/service systems, and wildfire.

The proposed project could result in significant impacts to the following environmental issues: Biological Resources, Greenhouse Gas, and Utilities and Service Systems, based on the facts, analyses and findings in the DPEIR.

Based upon data provided in the DPEIR, it was concluded that the proposed project could result in potentially significant adverse impacts because, even with the implementation of substantial mitigation measures to avoid contributing to cumulatively considerable impacts to covered

species and supporting habitat, which can be substantially mitigated by implementing the Upper Santa Ana River Habitat Conservation Plan (HCP), impacts to the Santa Ana sucker (SAS) cannot be completely avoided. This is because, the proposed CBP project operations may result in a reduction in surface flows in the Santa Ana River and into Prado Basin. Additionally, Low Impact Development ordinances, local policies, and municipal storm water detention regulations will encourage water conservation and surface runoff detention, resulting in a cumulative reduction in surface flows reaching Prado Basin. Thus, the CBP is forecast to cause potentially significant unavoidable adverse impact to biological resources, specifically implementation of the CBP will contribute cumulatively to potential significant impacts to the Santa Ana Sucker due to the reduction in cumulative flows to the Santa Ana River.

In addition, as a result of the uncertainty surrounding the future power mix and energy demands of the proposed CBP, the CBP would potentially fail to procure its electricity from carbon-neutral electricity sources by 2045. Therefore, the long-term, indirect impacts of the CBP's operational GHG emissions would be potentially significant. Additionally, construction-related GHG emissions associated with the CBP would exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027), and therefore would potentially hinder the statewide GHG emission reduction target for 2030. As such, while mitigation ensuring IEUA implements all feasible GHG reduction measures during operations would minimize impacts to the greatest extent feasible, construction-related impacts from implementation of the proposed CBP would be potentially significant. Thus, exceedances of applicable SCAQMD regional thresholds are considered significant and unavoidable, and the construction and operation of the proposed project could create a significant cumulative impact to global climate change. Furthermore, as a result of significant impacts related to construction-related GHG emissions that would exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027), the proposed CBP could result in significant and unavoidable GHG impacts related to construction of new or expansion or modifications to existing water and wastewater facilities, as the expansion of such facilities are proposed under the CBP. As such, water and wastewater infrastructure impacts under Utilities and Service Systems are considered significant and unavoidable.

All other potential environmental issues evaluated in the DPEIR were determined to be less than significant either without mitigation or with implementation of the mitigation measures identified therein.

Approval and implementation of the CBP for 25 years beginning in 2028 constitutes the "proposed project" that was evaluated in the DPEIR. It is the total project outlined in Chapters 2 and 3 of the DPEIR that constitutes the proposed project considered in this FPEIR.

B. PROJECT SUMMARY

B.1 PROJECT LOCATION

The Chino Basin consists of about 235-square-miles of the upper Santa Ana River watershed. The boundary of the Chino Basin is legally defined in the 1978 Judgment in the case of Chino Basin Municipal Water District vs. the City of Chino et al. The Chino Basin is an alluvial valley that is relatively flat from east to west and slopes from the north to the south at a one to two percent grade. Valley elevation ranges from about 2,000 feet in the foothills to approximately 500 feet near Prado Dam. The Chino Basin is bounded:

- on the north by the San Gabriel Mountains and the Cucamonga Basin;
- on the east by the Rialto-Colton Basin, Jurupa Hills, and the Pedley Hills;

- on the south by the La Sierra Hills and the Temescal Basin; and
- on the west by the Chino Hills, Puente Hills, and the Spadra, Pomona, and Claremont Basins.

The Chino Basin is one of the largest groundwater basins in Southern California with about 5,000,000 acre-feet (AF) of groundwater and an unused storage capacity of approximately 1,000,000 AF. Cities and other water supply entities produce groundwater for all or part of their municipal and industrial supplies; and about 300 to 400 agricultural users continue to produce groundwater from the Basin. The Chino Basin is an integral part of the regional and statewide water supply system. Prior to 1978, the Basin was in an overdraft condition. After 1978, the Basin has been operated as described in the 1978 Judgment.¹

The principal drainage course of the Chino Basin is the Santa Ana River, which flows 69-miles across the Santa Ana River Watershed from its origin in the San Bernardino Mountains to the Pacific Ocean. The Santa Ana River enters the Basin at the Riverside Narrows and flows along the southern boundary to the Prado Flood Control Reservoir where it is eventually discharged through the outlet at Prado Dam into Orange County. Chino Basin is traversed by a series of ephemeral and perennial streams that include: Chino Creek, San Antonio Creek, Cucamonga Creek (Mill Creek), Deer Creek, Day Creek, Etiwanda Creek and San Sevaine Creek.

These creeks carry significant flows only during, and for a short time after, storm events that typically occur from November through March. Year-round flow occurs along the entire reach of the Santa Ana River due to year-round surface inflows at Riverside Narrows, discharges from municipal water recycling plants to the River between the Narrows and Prado Dam, and rising groundwater. Rising groundwater occurs in Chino Creek, in the Santa Ana River at Prado Dam, and potentially other locations on the Santa Ana River depending on climate and season.

The Chino Basin is mapped within the USGS – Corona North, Cucamonga Peak, Devore, Fontana, Guasti, Mount Baldy, Ontario, Prado Dam, Riverside West and San Dimas Quadrangles, 7.5 Minute Series topographic maps. The center of the Basin is located near the intersection of Haven Avenue and Mission Boulevard at Longitude 34.038040N, and Latitude 117.575954W.

B.2 PROJECT OBJECTIVES

The CBP has identified the following project objectives, which also help address local, State and Federal objectives as follows:

- **Meet Permit Compliance for the Continued Use of Recycled Water in the Chino Groundwater Basin:** The project provides groundwater recharge facilities to recharge high quality recycled water, thus reducing TDS levels within the Chino Groundwater Basin.
- **Maintain Commitments for Salt Management to Enable Sustainable Use of Recycled Water in the Basin:** With the implementation of AWPf with an expected effluent concentration of 100 mg/L, the recycled water TDS will be significantly reduced.
- **Develop Infrastructure That Addresses Long Term Supply Vulnerabilities:** The CBP would improve the use of recycled water at a regional level through new regional pipelines enabling greater potential access to recycled water and enhances local groundwater

¹ Original judgment in Chino Basin Municipal Water District vs. City of Chino, et al., signed by Judge Howard B. Weiner, Case No. 164327. File transferred August 1989, by order of the Court and assigned new case number RCV51010. The restated Judgment can be found here:

<http://www.cbwm.org/docs/WatermasterCourtFilings/2012%20Watermaster%20Restated%20Judgment.pdf>

supplies through the installation of additional extraction wells and through the installation of new wellhead treatment systems that would bring existing out-of-service wells online.

- **Provide a Source of Water for Emergency Response:** The project results in 15,000 AFY in local supplies which can be used to augment the water supply portfolio during unplanned or catastrophic events.
- **Develop an Integrated Solution to Produce State and Federal Environmental Benefits:** The project develops a highly reliable new water supply formally dedicated to environmental benefit that can be deployed dynamically and managed flexibly to address varying and changing ecological needs.

B.3 PROJECT CHARACTERISTICS

IEUA is proposing to develop the CBP, which would provide a regional water resources and groundwater management program for the Chino Basin. The CBP's scope is a revolutionary, first-of-its-kind program designed to help the region move beyond traditional water management practices and into a new era of water use optimization. The CBP promotes proactive investment in managing the water quality of the Chino Groundwater Basin and in meeting regional water supply reliability needs in the face of climate change, while leveraging California's interregional plumbing system and the Chino Basin's future potential for water recycling to produce benefits to local, State, and federal interest.

The CBP was submitted for Proposition 1 – Water Storage Investment Program (WSIP) funding and was awarded \$206.9M in conditional funding in July 2018. As a result, IEUA has developed the CBP program for which California Environmental Quality Act (CEQA) compliance has been determined to be required in order to implement this unique proposed conjunctive use program.

Under the WSIP, the CBP is proposed as a 25-year conjunctive use project that would develop and utilize a new advanced water purification facility (AWPF) to treat and store up to 15,000 acre-feet per year (AFY) of recycled water in the Chino Basin and extract the water during call years, which will likely be in dry seasons. The CBP would increase additional available groundwater supplies in the adjudicated Chino Basin through increased water recycling that would result from operation of a new AWPF and through groundwater storage by operation of new injection wells. The CBP would thereby enable IEUA to dedicate a commensurate amount of this “new” water locally generated from the AWPF to remain in the State Water Project system at Lake Oroville in Northern California that would otherwise be delivered to Southern California. The additional Lake Oroville water would subsequently be released in the form of “pulse flows” in the Feather River to improve habitat conditions for native salmonids and achieve environmental benefits.

IEUA's partner and the State Water Project Contractor that will facilitate the exchange for the CBP is Metropolitan Water District of Southern California (MWD). The CBP would produce 15,000 AFY of “new” water supply for a period of 25-years to provide for the State exchange, to be used in blocks of up to 50,000 AFY in hydrologically drier years when pulse flows in the Feather River would provide the most ecosystem benefit and other State Water Project (SWP) operations would not be affected. The exchange would be administered through agreements with the California Department of Water Resources (DWR), the California Department of Fish and Wildlife (CDFW), MWD, and other project partners.

Additionally, new water stored in the Chino Basin would also enhance emergency response water supply availability for IEUA and other participating agencies during crises such as flood or seismic events that disrupt imported water infrastructure. The infrastructure included in the CBP is consistent with infrastructure identified to reduce recycled water salinity for regulatory compliance

as well as water infrastructure that has been identified through IEUA's Integrated Water Resources Plan (IRP) effort.

The CBP would rely on water transfer agreements through MWD. For every acre-foot of water requested for north of the Delta ecosystem benefits, IEUA would pump locally stored groundwater and deliver it to MWD or use the water locally instead of taking raw imported water from MWD (referred to as "in lieu"). MWD would then leave behind an equivalent amount of water in Lake Oroville to be dedicated and released for the requested ecosystem benefit. The CBP can be operated in a way to provide up to 50,000 AFY of water for up to 7.5 years, with a consecutive draw of no more than 3 years, of the 25-year program (up to 375,000 AF total) as long as the groundwater extraction does not exceed the approved borrow amount. This would result in balancing the PUTs (the components to recharge purified water to the Chino Basin) and TAKES (the components to extract groundwater and convey potable water supply) to the Chino Basin at the end of the 25-year program, i.e., up to 375,000 AF would be recharged over 25 years and the same amount could be extracted over 25 years. The CBP includes two main categories of infrastructure facilities: PUT and TAKE components.

The annual PUT (the components to recharge purified water to the Chino Basin) and periodic TAKE cycles (the components to extract groundwater and convey potable water supply) would require the development of various facilities to support the overall CBP. These potential facilities are separated into four project categories: (1) Project Category 1: Well Development (Injection wells, extraction wells, etc.); (2) Project Category 2: Conveyance Facilities and Ancillary Facilities; (3) Project Category 3: Groundwater Storage Increase; and, (4) Project Category 4: Advanced Water Purification Facility and Other Water Treatment Facilities.

Ultimately, the CBP brings together these components cost-effectively and greatly enhances flexibility and resiliency to regional and local water operations, particularly during future extended droughts expected as climate change continues to impact California. The CBP's proposed AWPf, new injection and extraction facilities, conveyance facilities, and water system interconnections will allow more optimal management of local water supplies, including meeting water quality requirements for the continued use of recycled water within the Chino Basin, improved storage and recovery operations, as well as redundancies in water delivery infrastructure that will facilitate future rehabilitation and replacement of existing infrastructure.

Additionally, the proposed CBP requires an increase in the Safe Storage Capacity of the Chino Basin in order to accommodate an addition of up to 150,000 AF of managed storage above the existing Safe Storage Capacity (700,000 AF through June 30, 2030, and to 620,000 AF from July 1, 2030 through June 30, 2035). As such, the CBP would contemplate a tiered increase in Safe Storage Capacity that would accommodate CBP storage requirements as well as Chino Basin Watermaster (Watermaster) stakeholder storage requirements as follows: the CBP proposes an increase in Safe Storage Capacity up to 700,000 AF through June 30, 2039, and to 580,000 AF from July 1, 2039 through June 30, 2048, with the Safe Storage Capacity decreasing to 500,000 AF thereafter. The storage increase would accommodate the CBP during its 25-year planning horizon, and any future required increase in storage that may be necessary to accommodate the increased recharge and extraction capacities provided by CBP infrastructure would be addressed in future CEQA documentation. Overall, the CBP may: reduce dependence on imported water through development of infrastructure that would provide a new local source of water; improve water quality by reducing the expected TDS concentration of the AWPf effluent by 100 mg/L; and provide a new local water supply for the Basin as a result of the creation of the AWPf that would enable IEUA to continue treating recycled water to below the regulatory limits set by the Santa Ana Regional Water Quality Control Board's (RWQCB) Basin Plan for continued Basin use. This

proposed tiered increase would supersede the Safe Storage Capacity that was approved in March of 2021 by the IEUA Board and subsequently approved by the Watermaster in May 2021. Furthermore, as storage space in the Basin is regulated by the Watermaster, a Storage Agreement will be required in order for the proposed modification to the Safe Storage Capacity to be adopted.

Implementation of physical components of this project such as development of conveyance facilities, installation of the AWPf, and construction of the wells and water treatment facilities will, in most cases, each require the submittal of a Notice of Intent (NOI) to the State Water Resources Control Board (SWRCB) for a NPDES (National Pollution Discharge Elimination System) general construction stormwater discharge permit. This permit is granted by submittal of an NOI to the SWRCB, but is enforced through a Storm Water Pollution Prevention Plan (SWPPP) that identifies construction best management practices for the site. In the project area, the Santa Ana Regional Water Quality Control Board (RWQCB) enforces the best management practice requirements described in the NPDES permit by ensuring construction activities adequately implement a SWPPP.

Regulatory permits to allow fill and/or alteration activities due to project activities such as pipeline installation are likely to be required from the Army Corps of Engineers (ACOE), the Regional Board, and California Department of Fish and Wildlife (CDFW) over the life of the CBP. A Section 404 permit for the discharge of fill material into “waters of the United States” may be required from the ACOE; a Section 401 Water Quality Certification may be required from the Regional Board; a Report of Waste Discharge may be required from the Regional Board; and a 1600 Streambed Alteration Agreement may be required from the CDFW.

The U.S. Fish and Wildlife Service (USFWS) and/or CDFW may need to be consulted regarding threatened and endangered species documented to occur within an area of potential impact for future individual projects. This could include consultations under the Fish and Wildlife Coordination Act.

Land use permits may be required from local jurisdictions, such as individual cities and the two Counties (Riverside and San Bernardino). Air quality permits may be required from the South Coast Air Quality Management District (SCAQMD). Encroachment permits may be required from local jurisdictions, such as individual cities, California Department of Transportation (Caltrans), the two counties (Riverside and San Bernardino), Flood Control agencies, and private parties such as Southern California Edison, The Gas Company, or others such as BNSF Railway Company. Watermaster has a separate approval process for determining material physical injury to the stakeholders within the Chino Basin.

The above is considered to be a partial list of possible permitting agencies for future individual CBP projects.

C. ENVIRONMENTAL REVIEW

The entire administrative record, including the CBP PEIR, public comments and responses, IEUA Staff reports, and these facts, findings and statement of overriding considerations, serve as the basis for the IEUA's environmental determination. The IEUA Board's environmental determination is that the CBP FPEIR addresses all of the potential impacts from implementing the proposed project as outlined above and defined in detail in Chapter 3 of the CBP FPEIR. The detailed environmental impacts and proposed mitigation measures for the future development of the proposed project's facilities are presented in Chapter 4 of the CBP FPEIR, in the Chapter 1

Executive Summary and in the response to comments which is part of the CBP FPEIR. Alternatives to the proposed project are discussed in Chapter 5 of the CBP FPEIR. Evaluations of growth inducement, cumulative impacts, and irreversible commitment of resources are provided in Chapter 6, Topical Issues, of the CBP FPEIR. The findings outlined in the following section of this document contain a summary of the facts used in making findings and determinations for each of the environmental issues addressed in the CBP FPEIR.

1. **Consideration of the EIR:** The CEQA environmental review process for the CBP was initiated in September of 2021 with the release of a Notice of Preparation (NOP) for public review and comment. The NOP was distributed to responsible and interested agencies and organizations and the State Clearinghouse, and was provided on IEUA's website as a link available to the public. A scoping meeting was held on October 6, 2021 in the IEUA Board Room, in the City of Chino, California.

As previously indicated, this FPEIR has been prepared to address the issues identified above in Section B and provide an informational document intended for use by the IEUA, interested and responsible agencies and parties, and the general public in evaluating the potential environmental effects of implementing the CBP. Technical documents relied upon for the analyses are provided in the appendices in Volume 2 of the DPEIR. The air quality and greenhouse gas emissions forecasts, and energy analysis were provided by Woodard & Curran; the cultural resources memorandum was provided by CRM TECH; the hydrology and water quality analyses were provided by West Yost; and the biological analysis was provided by Jacobs. Brown and Caldwell and WSC, Inc., also prepared the Chino Basin Program Assumptions Technical Memorandums that were relied upon to develop the project description. Additionally, the CBP Feasibility Study prepared by IEUA and GEI Consultants, Inc., was utilized in support of responding to comments on the project during the public review period. The NOP identified the full scope of environmental issues for focus in a draft PEIR. After review of the NOP comments, the scope of the draft PEIR (DPEIR) was finalized and no additional issues were added to the scope of the DPEIR beyond those mentioned in Section B of this document.

The proposed project DPEIR was released to the public for review and comment on October 28, 2021. The mandatory 45-day review period closed on December 13, 2021. A total of 7 comment letters were received on the DPEIR.

The CBP final Program Environmental Impact Report (FPEIR) dated May 8, 2022 was transmitted to all interested parties, including public agencies that commented on the DPEIR, to fulfill the requirements of Section 21092.5 of CEQA. The FPEIR and all supporting material has been made available to the IEUA Board and a summary of the FPEIR and its findings presented directly to the Board for consideration in making its decision to certify the FPEIR and approve the CBP.

The IEUA Board makes the following certifications pursuant to the California Environmental Quality Act Guidelines Section 15090. The Board finds and certifies that the CBP FPEIR has been completed in compliance with CEQA. The Board certifies that all voting members have reviewed and considered the FPEIR prior to approving the proposed CBP Project. In addition, all voting Board members have reviewed and considered the additional information presented at or prior to the public hearing on May 18, 2022. The Board further finds and certifies that the FPEIR reflects the independent judgment and analysis of IEUA, the Board and its Staff and the CBP FPEIR is adequate to make a decision for this proposed project.

2. **Full Disclosure:** The IEUA Board finds and certifies that the CBP FPEIR constitutes a complete, accurate, adequate and good faith effort at full disclosure under CEQA.
3. **Location of Record Proceedings:** The documents and other materials which constitute the record of proceeding upon which this decision is based are in the custody of the IEUA located at 6075 Kimball Avenue, Chino, CA 91708. This information is provided in compliance with Public Resources Code Section 21081.6(a)(2).
4. **Inland Empire Utilities Agency as Lead Agency under CEQA:** The Inland Empire Utilities Agency is the “lead agency” as defined by CEQA Guidelines Section 15050. In compliance with its authority and responsibility for overseeing wastewater treatment and imported water for the Chino Basin, IEUA has prepared the DPEIR and FPEIR for the proposed project, compiled these candidate facts, findings and Statement of Overriding Considerations in accordance with the CEQA Guidelines and the Public Resources Code, and will carry out all other duties and responsibilities required of a lead agency under CEQA and the CEQA Guidelines.

D. FINDINGS

Presented below are the environmental findings made by IEUA after its review of the documents referenced above; and consideration of written and oral comments on the proposed project at public hearings, including all other information provided during the decision-making process. These findings provide a summary of the information contained in the FPEIR, related technical documents, and the public hearing record that have been referenced by the IEUA Board in making its decision to approve the CBP.

The CBP FPEIR prepared for the proposed project addresses the consequences of implementing the components of the proposed project and operation of the future AWPf, wells, pipelines and associated infrastructure. This FPEIR, and supporting technical studies, evaluated 20 major environmental issues categories for potential significant adverse impacts. The major environmental issue categories presented consist of all those listed in the CEQA Guidelines' Appendix G Environmental Checklist Form. Short and long-term impacts and project-specific and cumulative impacts were evaluated from implementation of the proposed project. Some of the issue categories contained several sub-issues which are summarized below.

Of these 20 major environmental categories, the IEUA Board concurs with the findings in the CBP FPEIR, that the issues and sub-issues discussed below are either not significant without mitigation or they can be mitigated below a level of significance through implementation of mitigation measures. However, the Board concludes that impacts to greenhouse gas/climate change emissions and exceeding the greenhouse gas regional emission significance thresholds established by the South Coast Air Quality Management District (SCAQMD) as a result of the CBP cannot be fully mitigated to a level of insignificance even after imposition of all feasible mitigation. Additionally, the CBP is forecast to cause significant unavoidable adverse impact to biological resources, specifically implementation of the CBP will contribute cumulatively to potential significant impacts to the Santa Ana Sucker due to the reduction in cumulative flows to the Santa Ana River. Finally, it was concluded that the proposed CBP would result in significant impacts related to the construction-related GHG emissions that would result from the extension of water- and waste-water-related infrastructure, as such water and wastewater infrastructure impacts under Utilities and Service Systems are considered significant and unavoidable. For these issues that cannot be mitigated below a level of significance, the IEUA Board finds that overriding considerations exist which make these forecasted impacts acceptable.

Unavoidable (unmitigable) significant adverse environmental impacts of the project are described in Section F of this document. This discussion is followed by an analysis and comparison of the alternatives to the proposed project that are described in Section G of this document. Project benefits are described in Section H. The balancing of benefits and impacts and the Statement of Overriding Considerations for this project are described and evaluated in Section I of this document.

Mitigation measures referenced in this document are also contained in the Mitigation Monitoring and Reporting Program (MMRP) and are incorporated as part of the CBP FPEIR. The MMRP sets forth each mitigation measure and identifies the person or entity responsible for overseeing or enforcing the implementation of these mitigation measures. The monitoring program ensures that the measures identified in the CBP FPEIR will be implemented in accordance with mitigation discussions in the FPEIR.

E. NON-SIGNIFICANT IMPACTS IDENTIFIED IN THE FPEIR (CEQA GUIDELINES § 15091(a)(I))

The following issues were identified in the CBP FPEIR as having no potential to cause significant impact or were capable of having impacts reduced below a significant level by implementing the identified mitigation measures. All of these issues were fully addressed and substantiated in the FPEIR. All the following references are to findings in the CBP FPEIR. In the following presentation, each issue is identified; it is followed by a summary description of the potential significant adverse environmental effect and a short discussion of the findings and facts in the administrative record, as defined above.

The Inland Empire Utilities Agency Board hereby finds that all mitigation measures identified in the CBP FPEIR are feasible and will be implemented to mitigate identified impacts of this project and will be incorporated into or will be required of the project to avoid or substantially lessen potentially significant environmental impacts to either a less than significant level of impact or to the maximum extent feasible. Public Resources Code Section 21081 states that no public agency shall approve or carry out a project for which an environmental impact report has been certified which identifies one or more significant effects on the environment that would occur if the project is approved or carried out unless the public agency makes one or more of the following findings with respect to each significant effect:

- (1) Changes or alterations have been required in, or incorporated into, the project which mitigate or avoid the significant environmental effects thereof as identified in the completed environmental impact report;
- (2) Such changes or alterations are within the responsibility and jurisdiction of another public agency and such changes have been, or can and should be, adopted by such other agency; and/or
- (3) Specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental impact report.

The Inland Empire Utilities Agency Board hereby finds, pursuant to Public Resources Section 21081 and CEQA Guidelines Section 15091(a)(1), that the following issues are nonsignificant adverse impacts because they either have no potential to cause a significant adverse impact or

because mitigation measures will be implemented, as outlined below, to reduce a potential significant impact to a less than significant level. The IEUA Board further finds that no additional mitigation measures or project changes are required to reduce the potential impacts discussed in this section to a less than significant level of impact. These issues and the measures adopted to mitigate them to a level of insignificance are as follows:

Issues Determined to be Nonsignificant in the CBP FPEIR

1. Aesthetics:

a. Would the project have a substantial adverse effect on a scenic vista?

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-11 to 4-12, FPEIR)

Facts: The most significant visual resources in the project area are the hills and mountains surrounding the Chino Basin, pastoral landscapes in and within view of the project area and the Prado Basin wetlands that occur in the southern portion of the Chino Basin. The predominant scenic vistas in the CBP area, as identified in local General Plans (Cities of Upland, Pomona, Montclair, Chino Hills, Chino, Ontario, Rancho Cucamonga, Eastvale, Jurupa Valley, Fontana, Claremont, Pomona and Counties of San Bernardino and Riverside), are: the views of the San Gabriel, San Bernardino and Santa Ana Mountains, Chino Hills, Jurupa Hills, Puente Hills and San Jose Hills, Tonner Canyon, Prado Basin, the Chino farmlands, and certain road corridors.

For all 4 Project Categories, construction was determined to result in less than significant impacts due to the temporary nature of construction. Due to the varied footprints of the types of projects proposed, as well as the speculative nature of the locations for future CBP projects, mitigation was required to minimize the potential for an individual project to impact a scenic vista.

The implementation of Mitigation Measure (MM) **AES-1** would ensure that the proposed facilities' contribution to cumulative scenic vista impacts would be reduced to less than cumulatively considerable by meeting the local design and landscape standards. Furthermore, the implementation of MM **AES-2** will ensure that impacts to scenic resources from the implementation of future CBP facilities will be avoided or assessed further in future CEQA documentation if not avoidable.

Ultimately, with the implementation of mitigation, no permanent significant adverse effect on a scenic vista or the visual character of the area is forecast to result from implementing the proposed project.

b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-13 to 4-15, FPEIR)

Facts: There are roadways classified as eligible for state scenic highway status within the Chino Basin; however, there are no officially designated scenic highways. Eligible state scenic highways include: State Route (SR) 142 south of SR 71 and SR 71 south of SR 83 (Caltrans, 2016). The most significant visual resources are the hills and mountains surrounding the Chino Basin and the pastoral landscape that occurs

in the southern portion of the Chino Basin. The activity with the highest potential to conflict with local agency design guidelines is construction disturbance of the landscape. Such disturbance can be reduced to an acceptable level by landscaping or revegetating disturbed areas.

Many of the facilities, including the proposed AWPf and wellhead treatment facilities at existing well sites, that are likely to be implemented under the CBP would be installed within existing, developed water facility sites, many of which are in commercialized or industrial areas. The existing facilities are surrounded by block walls and/or chain link fences and, in some cases, vegetative visual buffers. Additionally, some of these facilities are landscaped. As such, on-site operations, including the proposed CBP facilities that would be installed within developed sites, would generally not be visible from off-site, and the visual character of these sites would not change. As specific facilities are proposed in the future, given that the specific locations for many other CBP facilities are presently unknown, mitigation is required to ensure that impacts to scenic resources are minimized to below significance thresholds.

The implementation of MM **AES-3** would ensure that the proposed facilities' impacts to scenic resources, such as trees, are minimized to a level of less than significant through replacement of trees, avoidance of scenic resources, or by undergoing a second tier CEQA evaluation. Furthermore, MM **AES-4** would ensure that future facilities are either not located within sites containing scenic resources or will undergo subsequent CEQA documentation to fully analyze the impacts thereof if not avoidable.

With implementation of mitigation as discussed above, development under the CBP will be consistent with current general plan requirements for protecting scenic resources and scenic highway visual values. No permanent loss of significant scenic resources will result from implementing the proposed project.

- c. **Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning or other regulations governing scenic quality?**

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-15 to 4-17, FPEIR)

Facts: The proposed CBP facilities will utilize a variety of types of sites including existing facilities, underground systems within road- and through-ways, and new sites that may be undeveloped or highly disturbed to meet CBP objectives. Installation of aboveground facilities has a potential to modify the existing view or visual setting at future specific project sites which could cause a substantial negative visual impact. All facilities will be required to comply with the local jurisdiction zoning codes and other regulations governing scenic quality. However, mitigation measures are required to ensure compliance with the applicable zoning code, and to ensure that the proposed facilities will conform with design requirements established by local jurisdictions.

Although the specific project sites will be altered, and the impacts may be considered an adverse change, the change is not considered sufficient to be characterized as a

significant adverse impact due to the limited area that will be impacted at any one facility location, and the fact that the pipelines are not visible once construction is complete. The visual character and quality of the project area is not forecast to be significantly degraded. The facilities would be constructed to meet local jurisdiction current design standards.

The implementation of MM **AES-5** would ensure compliance with the applicable zoning code. Furthermore, MM **AES-6** would ensure that future facilities will conform with design requirements established by local jurisdictions.

Based on the specific criteria identified above, the existing visual character and quality of future sites will be modified, but it will be modified in a manner consistent with the local City/County General Plans vision for specific sites and roadways within their various jurisdictions. With adherence to community standards and through compliance with mitigation measures ensuring compliance with design requirements and zoning standards, the negative effects to aesthetics would be less than significant.

- d. **Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-17 to 4-19, FPEIR)

Facts: Some of the proposed CBP facilities will require the installation of night lighting, possibly including areas where little or no night lighting currently exists. The development of some of the proposed facilities are to be within existing facility sites, which already have some lighting features, though sites have not been selected for many other future CBP facilities. Glare from new light fixtures that may be installed as part of proposed improvements has a potential to result in spill over lighting onto adjacent sensitive receptors such as residential, rural or wildlife habitat portions within the project area. Though no unusual or unique sources of light and glare are anticipated to be required in support of CBP facilities, mitigation to address the new or increased lighting that may result from the proposed CBP facilities is required.

The implementation of MM **AES-7** would ensure that light and glare impacts from future structures associated with the CBP are minimized to a level of less than significant.

With implementation of mitigation to ensure that this future increase in lighting does not result in a new source of substantial light or glare which would adversely affect day or nighttime views in the area, implementation of the CBP is not forecast to result in any significant light or glare effects.

Mitigation Measures

The IEUA has determined that the proposed project would have a potentially significant impact as a result of aesthetics or visual modifications from future CBP projects. Mitigation measures to reduce those potential impacts to below a level of significance are provided below.

AES-1 *Proposed facilities shall be designed in accordance with local design standards and integrated with local surroundings. Landscaping shall be installed in conformance with local landscaping design*

guidelines as appropriate to screen views of new facilities and to integrate facilities with surrounding areas.

- AES-2** *Future CBP facilities at unknown locations shall either (1) be located outside of scenic viewsheds identified in the General Plan or Municipal Code corresponding to a proposed location for a future facility; (2) be unobtrusive to scenic vistas due to height or other mitigating factors as confirmed by a visual simulation that demonstrates this; or (3) where (1) or (2) are not possible, undergo subsequent CEQA documentation to assess potential aesthetic impacts a future CBP facility may have upon contain scenic resources.*
- AES-3** *Should the removal of trees be required for a specific project, IEUA shall comply with the local jurisdiction's tree ordinance, municipal code, or other local regulations. If no tree ordinance exists within the local jurisdiction, and a project will remove healthy trees as defined by a qualified arborist, (1) the IEUA shall replace all trees removed at a 1:1 ratio, and (2) the specific location selected for a CBP facility shall avoid rock outcroppings and other scenic resources as defined in CEQA Guidelines Appendix G. If this cannot be accomplished a second tier CEQA evaluation shall be completed.*
- AES-4** *Future proposed facilities defined within the CBP at unknown locations shall either (1) be located within sites that avoid rock outcroppings and other scenic resources as defined in CEQA Guidelines Appendix G, or (2) undergo subsequent CEQA documentation to assess potential impacts from locating a future facility in an area that may contain scenic resources.*
- AES-5** *CBP facility implementation will conform with design requirements established in the local jurisdiction planning documents, including but not limited to the applicable zoning code, except where such compliance is not required by California law.*
- AES-6** *When CBP above ground facilities are constructed in the future, the local agency design guidelines for the project site shall be followed to the extent that they do not conflict with the engineering and budget constraints established for the facility and except where such compliance is not required by California law.*
- AES-7** *Future CBP projects shall implement at least the following measures, unless they conflict with the local jurisdiction's light requirements, in which case the local jurisdiction's requirements shall be enforced:*
- *Use of low-pressure sodium lights where security needs require such lighting to minimize impacts of glare; Projects within a 45-mile radius of the Mount Palomar Observatory and located within Riverside County must adhere to special standards set by the County of Riverside relating to the use of low-pressure sodium lights.*
 - *The height of lighting fixtures shall be lowered to the lowest level consistent with the purpose of the lighting to reduce unwanted illumination.*
 - *Directing light and shielding shall be used to minimize off-site illumination.*
 - *No light shall be allowed to intrude into sensitive light receptor areas.*
 - *Non-reflective materials and/or coatings shall be used on the exterior of all water storage reservoirs if constructed in a publicly visible location.*

IEUA finds that implementation of the above measures would reduce potential adverse aesthetics impacts to a level of less than significant. As described in Subchapter 4.2 of the FPEIR, all potential aesthetic impacts associated with the CBP can be mitigated to a less than significant impact level. Mitigation measures would: minimize impacts to scenic vistas through enforcing future projects to meet local design standards; minimize impacts to scenic resources through avoidance of such resources, or through assessment in subsequent CEQA documentation; minimize impacts to scenic resources such as trees through enforcement of compliance with local jurisdiction tree ordinance(s); minimize conflicts with regulations governing scenic quality through enforcing compliance with applicable zoning code and design requirements established by local jurisdictions; and, minimize light and glare impacts by enforcing local jurisdiction light and glare minimization standards. The above measures will be integrated into the proposed facilities that will be constructed without additional impacts on the environment. Since the proposed projects as analyzed above with the implementation of the above identified mitigation measures will not

directly or indirectly cause significant adverse impact to aesthetic resources, the proposed project is not forecast to contribute to cumulatively significant aesthetic impacts within the project area.

2. Agricultural Resources:

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

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-26 to 4-28, FPEIR)

Facts: The Chino Basin area historically contained significant agricultural resources; citrus ranches in the north and primarily dairy ranches and vegetable farms located in the southwestern portion of the County of San Bernardino. There are several areas of land designated by the California Department of Conservation as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance within the Chino Basin area which includes portions of Riverside County. Those new facilities located north of State Highway (SH) 60 will not cause the loss of any important farmland. Those located south of SH 60 have a potential to cause the loss of some important farmland soil resources. Within the southern portion of the Basin, some wellhead treatment facilities, conveyance facilities and support equipment may be required to be located within important farmland areas resulting in a potentially significant impact to such resources. Where this occurs mitigation will be implemented to avoid or compensate for such impacts. To offset the impacts to important farmland in the southern Chino Basin, projects can compensate for such impacts to farmland resources by participating in important farmland mitigation banks, either ones created in the local area or mitigation banks established in other areas of California.

The implementation of MM **AGF-1** would ensure the proposed facilities' contribution to project specific or cumulative farmland impacts would be reduced to less than cumulatively considerable. If designated important farmland cannot be avoided, the IEUA shall conduct a California Land Evaluation and Assessment (LESA) model evaluation. If the evaluation determines the loss of important farmland will occur, IEUA shall either (1) relocate and avoid the site, or alternatively IEUA shall (2) where relocation is not possible, undergo subsequent CEQA documentation to assess potential impacts that a future CBP facility may have upon agricultural resources.

With the implementation of mitigation to address any CBP facilities located within important farmland, through avoidance of important farmlands during site selection or through subsequent CEQA documentation, the CBP would avoid or further analyze such impacts, thereby reducing impacts to a level of less than significant.

- b. **Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?**

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-28 to 4-29, FPEIR)

Facts: The same circumstance exists for the six cities that no longer include any designated agricultural land. The proposed project cannot conflict with existing land use designations. On the other hand, there are five agencies, the two counties and the cities of Chino, Chino Hills and Eastvale that still have some land assigned agricultural designations. The critical issue for such designated land is whether such designated land constitutes "important farmlands" in contrast to low value (from an

agricultural perspective) agricultural land, such as grazing land. Where future CBP water facilities or operations are proposed for implementation, a potential does exist for impact to important farmlands. However, mitigation is provided to minimize potential impacts to high value agricultural land.

The implementation of MM **AGF-1** includes the need to conduct a LESA Model if a facility is proposed on land designated as important farmland. If there is a determination that the loss of farmland is significant based on the LESA Model, the IEUA shall either (1) relocate and avoid the site, or alternatively IEUA shall (2) where relocation is not possible, undergo subsequent CEQA documentation to assess potential impacts that a future CBP facility may have upon agricultural resources.

With the implementation of mitigation to address any CBP facilities located within important farmland, through avoidance or providing a LESA Model of important farmlands during site selection and through avoidance or subsequent CEQA documentation, the CBP would avoid or further analyze such impacts, thereby reducing impacts to a level of less than significant

- c. **Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?**

Finding: No Impact (pg. 4-29 to 4-30, FPEIR)

Facts: The Chino Basin does not include zoning designations for forest land, timberland, or timberland zoned Timberland Production. The project area borders the San Bernardino National Forest, but it does not overlap with the Chino Basin boundaries.

With no acreage designated for timberland development in the Chino Basin by any of the local jurisdictions, no potential exists to adversely impact timberland through conflicts with such land use designation.

- d. **Would the project result in the loss of forest land or conversion of forest land to non-forest use?**

Finding: Less Than Significant with Mitigation Incorporated (pg. 4-30 to 4-31, FPEIR)

Facts: The southern-most portion of the Chino Basin overlaps with riparian woodland areas along the Santa Ana River; Chino Creek; and Mill Creek; and in the Prado Basin. Certain areas of these riparian woodlands may qualify as forest land. Other than these specific areas, no contiguous area of forest land occur in the Chino Basin. Further, no jurisdictions have designated areas within their jurisdiction with zoning designations for forest land.

All projects in the remainder of the Basin (outside of the southernmost portion of the Basin identified above) would not result in the loss of forest land or conversion of forest land to non-forest use, and therefore, would not contribute to any effect on forest or timberland losses from CBP implementation. However, as the locations for many future CBP facilities are presently unknown, and given that there is minimal potential for the CBP facilities to impact lands that might qualify as forest land, mitigation is required to reduce impacts to a level of less than significant.

For all projects implemented in the Chino Basin that actually impact “forest land/riparian woodland” MM **AGF-2** shall be required when five acres or more of such woodland is impacted in support of CBP projects.

With the implementation of mitigation to address the loss of significant riparian woodland/forest land (defined as loss of over five acres), through compensatory mitigation where significant riparian woodland/forest land exists, the CBP would avoid or compensate for forestry impacts, thereby reducing impacts to a level of less than significant.

- e. **Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?**

Finding: No Impact (pg. 4-31 to 4-32, FPEIR)

Facts: As previously stated, no Williamson Act lands exist within the Chino Basin. Ultimately, the CBP may develop land adjacent to or within agricultural or forestry uses, which could contribute to changes within the existing environment which would result in conversion of agricultural or forestry uses to non- agricultural or non-forestry use.

The implementation of each mitigation measure involves avoidance as the first mitigation approach, but provides contingency measures to address impacts that cannot fully avoid these resources. Two of the mitigation measures require tests of onsite resources (the LESA Model or an evaluation to determine whether woodlands qualify as “forest land”) to determine whether they qualify as resources of sufficient importance that would require mitigation of potential impacts.

For the whole of that which would be developed and implemented as part of the CBP implementation of MMs **AGF-1** and **AGF-2** will reduce potentially significant adverse impacts to agricultural, forest, and timber resources to a less than significant impact level.

Mitigation Measures

The IEUA has determined that the proposed project would have a potentially significant impact as a result of the development of proposed CBP facilities that have a reasonable possibility of removing some agricultural or forestry land from operation. Mitigation measures to reduce the impact to below a level of potential significance are provided below.

AGF-1 *For all proposed facilities in the southern portion of the Chino Basin (south of SR 60), the potential for impact to Important Farmlands (Prime Farmland, Farmland of Statewide Importance, or Unique Farmland) shall be determined prior to final site election. If important farmland cannot be avoided and individually exceeds 5 acres or cumulatively exceeds 10 acres of important farmland lost to agricultural production over the life of the program, IEUA shall provide compensatory mitigation in the form of comparable important farmland permanently conserved in either a local or State-approved important farmland mitigation bank at a mitigation ratio of 1:1. The acquisition of this compensatory mitigation shall be completed within one year of initiating construction of the proposed facility and verification shall be documented by IEUA.*

AGF-2 *For all proposed facilities that may impact riparian woodland/forest land in the portion of the Chino Basin (SR 60), the potential for impacts to riparian woodland/forest land shall be determined prior to final site election. If important forest land cannot be avoided and permanently will exceed 5 acres*

in area, IEUA shall relocate and avoid the site, or alternatively IEUA shall conduct an evaluation to determine if it qualifies with the State definition of “forest land.” If the evaluation determines the permanent loss of important forestland will occur, IEUA shall provide compensatory mitigation in the form of comparable forest land permanently conserved in either a local or State-approved important forest land mitigation bank at a mitigation ratio of 1:1. Alternatively, IEUA may carry out a forest land creation program at a 1:1 ratio for comparable woodland. The acquisition or creation of this compensatory mitigation shall be completed/initiated within one year of initiating construction of the proposed facility and verification shall be documented by IEUA.

IEUA finds that implementation of the above measures would reduce potential adverse impacts associated with the conversion of important agricultural and/or forest lands. The above measure can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the proposed facilities that will be constructed without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant adverse impact to agricultural lands, the proposed project is not forecast to contribute to cumulatively significant conversion of agricultural or forest lands within the project area.

3. Air Quality

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

Finding: Less Than Significant Impact With Mitigation Incorporated (pg. 4-56, FPEIR)

Facts: The CBP would involve the replacement of imported water with a local water supply, which would add reliability to the IEUA water portfolio serving existing customers as well as future customers associated with planned growth in the area. Therefore, the proposed CBP would not lead to unplanned population, housing or employment growth that exceeds the forecasts used in the development of the AQMP. Furthermore, with implementation of MM **AQ-1** (discussed below under question [b]) and adherence to existing regulations, the proposed CBP would not result in emissions of criteria air pollutants that would conflict with the AQMP regional rules and regulations established to achieve the federal air quality standards. Therefore, impacts related to the applicable air quality control plan would be less than significant with mitigation incorporated.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-57 to 4-59, FPEIR)

Facts: Consistent with South Coast Air Quality Management District (SCAQMD) guidance, maximum daily construction-related VOC, NO_x, carbon monoxide, sulfur oxide, PM₁₀, and PM_{2.5} emissions from demolition, site preparation, grading, infrastructure installation, building construction, paving, and other activities have been quantified for each year of construction activities and compared to the regional significance thresholds for construction-related emissions, along with the project maximum daily emissions with mitigation implemented for Construction:

- VOC: threshold 75; Project Yearly Max 32 Exceeds Threshold? No
- NO_x: threshold 100; Project Yearly Max 280; Exceeds Threshold? Yes
- CO: threshold 550; Project Yearly Max 238; Exceeds Threshold? No
- SO_x: threshold 150; Project Yearly Max 1; Exceeds Threshold? No
- PM₁₀: threshold 150; Project Yearly Max 57; Exceeds Threshold? No

- $PM_{2.5}$: threshold 55; Project Yearly Max 29; Exceeds Threshold? No

Mitigation is required to minimize impacts related to construction emissions, specifically to minimize NO_x emissions. IEUA may choose to meet the performance standard of MM **AQ-1** in a variety of ways. For example, IEUA may choose to require its contractor(s) to utilize a fleet in which 75 percent of the construction equipment and vehicles, with the exception of drill rigs, used for construction activities are equipped with Tier 4 Final engines. Implementation of this scenario to achieve the performance standard of MM **AQ-1** would reduce maximum daily construction emissions of NO_x to below the SCAQMD regional significance threshold. As such, CBP construction would not cause a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard; impacts are less than significant with mitigation.

Long-term operation of individual projects implemented under the CBP would involve occasional operations and maintenance trips and increased energy consumption to operate the AWPf, wellhead treatment facilities, pump stations, and injection and extraction wells. No overlap between construction and operation is anticipated to occur. While emissions of criteria pollutants would result from motor vehicle trips associated with maintenance and operation of the CBP facilities, these emissions would be negligible due to the minimal trips generated by the project.

Operational electricity consumption would not result in direct project emissions of criteria air pollutants. Only direct emissions of criteria pollutants from energy sources that combust on-site, such as natural gas, are attributed to individual projects. None of the individual projects implemented under the proposed CBP would result in the combustion of natural gas on-site. Criteria pollutant emissions from the power plants that would provide electricity to CBP facilities are associated with the power plants themselves, which are stationary sources permitted by air districts and/or the U.S. EPA, and are subject to local, state and federal control measures. Thus, emissions of criteria pollutants related to electricity consumption are not attributable to individual projects.

Therefore, operational emissions of criteria air pollutants would be minimal and would not have the potential to exceed the SCAQMD regional significance thresholds. Operational impacts are less than significant with mitigation

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Finding: Less Than Significant Impact (pg. 4-59 to 4-63, FPEIR)

Facts: Although multiple individual projects under the CBP may be constructed simultaneously, each project under construction is not anticipated to be located in such close proximity to other projects under construction that multiple individual projects would affect the same sensitive receptor. Thus, it is unlikely that the combined effects of individual projects under all project categories would result in greater localized air quality impacts related to criteria air pollutant emissions than those evaluated above for each project category. No additional localized air quality impacts related to criteria air pollutant emissions would occur as a result of the combined project categories.

As discussed under checklist item (b), operation of individual projects under the proposed CBP would result in negligible long-term criteria air pollutant emissions that would not exceed SCAQMD emissions standards. If a project is consistent with the latest adopted AQMP and does not exceed the SCAQMD significance thresholds, it can be assumed that it would not have a substantial adverse impact on public health because the AQMP is designed to be consistent with the federal Clean Air Act and the SCAQMD thresholds are set at the level at which a project would cause or have a cumulatively considerable contribution to an exceedance of a federal or State ambient air quality standard, which are protective of public health. Therefore, project operation would not expose sensitive receptors to substantial criteria air pollutant concentrations, and impacts would be less than significant.

Furthermore, based on the low background level of carbon monoxide in the SCAB, continued improvement in vehicle emissions standards for new cars in accordance with State and federal regulations, and the low level of operational carbon monoxide emissions associated with operation of CBP facilities, the CBP would not create new hotspots or contribute substantially to existing hotspots. Therefore, the CBP would not expose sensitive receptors to substantial concentrations of carbon monoxide, and impacts would be less than significant.

SCAQMD CEQA guidance does not require preparation of a health risk assessment for short-term construction emissions. Moreover, CBP construction sites would be distributed throughout the Chino Basin such that people affected by construction-related toxic air contaminant (TAC) emissions generated at one construction site would not be affected by construction-related TAC emissions generated at another construction site should construction activities occur simultaneously. Therefore, the CBP is not forecast to result in the exposure of off-site sensitive receptors to significant amounts of carcinogenic or toxic air contaminant during construction. Additionally, none of the project types proposed by the CBP include the types of facilities mentioned in the SCAQMD Air Toxics "Hot Spots" Program annual reporting. Therefore, the CBP would not result in the exposure of off-site sensitive receptors to significant amounts of carcinogenic or toxic air contaminant during operation. No impacts would occur.

Ultimately, the CBP would have a less than significant potential to expose sensitive receptors to substantial pollutant concentrations and no mitigation is required.

- d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Finding: Less Than Significant Impact (pg. 4-64, FPEIR)

Facts: Potential odor sources associated with the proposed project may result from construction equipment exhaust during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed project's uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the lead agency's solid waste regulations. The project would be

required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed project construction and operations, particularly the new AWP in Rancho Cucamonga, would be less than significant and no mitigation is required.

Mitigation Measures

The IEUA has determined that the proposed project would have a potentially significant impact as a result of the emissions generated by the development proposed CBP facilities. Mitigation measures to reduce the impact to below a level of potential significance are provided below.

AQ-1: *IEUA shall require its contractor(s) to use off-road equipment that meets the U.S. EPA certified Tier 4 Final engines or engines that are certified to meet or exceed the emission ratings for U.S. EPA Tier 4 Final or Interim engines such that average daily nitrogen oxide (NO_x) emissions are verified to be below the SCAQMD regional significance threshold of 100 pounds per day.*

IEUA finds that implementation of the above measure would reduce potential adverse impacts associated with the generation of emissions during construction of the proposed CBP facilities. The above measure can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the proposed facilities that will be constructed without additional impacts on the environment. Since the proposed project, as analyzed above will not cause significant adverse impact to air quality, implementation of the CBP is not forecast to result in any unavoidable project specific or cumulative adverse impacts to air quality.

4. Biological Resources: Impacts under Biological Resources, checklist questions “a,” “b,” “d,” and “f” are significant and cannot be mitigated to a level of insignificance. The discussion of this specific issue under Biological Resources is located below in Section F of this document. The checklist questions under Biological Resources that can be mitigated to a level of less than significant are as follows:

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-100 to 4-102, FPEIR)

Facts: Based on the background review and subsequent windshield surveys, numerous jurisdictional waters occur in the Study Area where the CBP will be implemented. Many of the jurisdictional waters (built waterways) are heavily managed by local agencies, which serve public water needs, flood control, and agricultural production. As a result, some of these jurisdictional waters support few natural biological functions and values.

Direct impacts on natural and man-made features include the removal or modification of local hydrology, the redirection of flow, and the placement of fill material. In the case of man-made features, these impacts would remove or disrupt the limited biological functions that these features provide. In natural areas, these activities would remove or disrupt the hydrology, vegetation, wildlife use, water quality conditions, and other biological functions provided by the resources.

Temporary impacts on jurisdictional waters include the placement of temporary fill during construction in both man-made and natural jurisdictional waters. Temporary fill could be placed during the construction of access roads and staging/equipment storage areas. The temporary fill would result in a temporary loss of jurisdictional waters and could potentially increase erosion and sediment transport into adjacent areas.

A Jurisdictional Determination and subsequent approval of the determination by the regulatory agencies will be conducted on each facility that is determined to impact jurisdictional waters as the design becomes available and construction of a particular facility is scheduled to occur within the foreseeable future. As stated above under Biological Resources issues “a” and “b”, the mitigation strategy includes avoidance of impacts on sensitive habitat to the extent possible through requiring the following: acquisition of regulatory permits and implementing subsequent mitigation that would minimize impacts related to discharge of fill or streambed alteration of jurisdictional areas (**BIO-3**); require jurisdictional water preconstruction surveys to determine the potential impacts thereof, which will inform the mitigative actions required to minimize impacts to jurisdictional waters/areas (**BIO-4**); require specific measures pertaining to water diversion to minimize impacts to jurisdictional waters during construction (**BIO-24**); and, require the continued preparation of annual Prado Basin Habitat Sustainability Monitoring Program and review of impacts thereof in subsequent environmental documents should the monitoring program suggest that habitat is adversely impacted (**BIO-25**).

With implementation of mitigation measures outlined herein, unforeseen direct impacts, indirect impacts, and temporary impacts to natural and man-made water bodies would be mitigated to a level of less than significant. As such, the CBP would have a less than significant potential to have a substantial adverse effect on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.

- e. **Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-102, FPEIR)

Facts: The proposed CBP will be developed within the Chino Basin including the following local jurisdictions and areas: Chino, Chino Hills, Fontana, Ontario, Rancho Cucamonga, Upland and unincorporated areas of San Bernardino County. The Basin and CBP area also include limited areas of Riverside County. As such, future CBP infrastructure facilities would be subject to various local ordinances.

One of the main concerns under this issue is the potential for the CBP to conflict with a tree preservation policy. MM **BIO-10**, which requires the maximization of the preservation of trees. Furthermore, under Aesthetics, MM **AES-3** requires the implementing agency to comply with the local jurisdiction’s tree ordinance, municipal code, or other local regulations and provides subsequent requirements where a tree preservation ordinance does not exist, including completion of a second tier CEQA evaluation, to further minimize impacts thereof. Additionally, MM **LU-1** ensures that the facilities associated with the CBP are developed to minimize conflicts with adjacent land uses, which would further minimize the CBP’s potential impacts to or

conflicts with any local policies or ordinances protecting biological resources. With the implementation of the above mitigation measures, as well as the entirety of the compiled mitigation designed to minimize impacts to biological resources, impacts related to the CBP's potential to result in conflicts with local ordinances would be less than significant.

Mitigation Measures

IEUA has determined that the proposed project could have a potentially significant impact on biological resources checklist items "c" and "e." Mitigation measures to reduce the impact to below a level of potential significance are provided below.

To reduce or prevent activities that may adversely affect rivers, streambeds or wetlands, the following mitigation measures will be incorporated into any specific projects and/or contractor specifications for future project-related impacts to protect sensitive resources and habitat.

BIO-3: *Prior to discharge of fill or streambed alteration of state or federal water jurisdictional areas, IEUA shall obtain regulatory permits from the U.S. Army Corps of Engineers, local Regional Water Quality Control Board and the California Department of Fish and Wildlife as required. Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensatory habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for jurisdictional waters without any riparian or wetland habitat to be mitigated at a 1:1 ratio. For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1 and the ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. A Habitat Mitigation and Monitoring Proposal shall be prepared and reviewed and approved by the appropriate regulatory agencies. IEUA will also obtain permits from the regulatory agencies (U.S. Army Corps of Engineers, Regional Water Quality Control Board, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) if any impacts to jurisdictional areas will occur. These agencies can impose greater mitigation requirements in their permits, but IEUA will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.*

BIO-4: *Jurisdictional Water Preconstruction Surveys: A federal and state jurisdictional water preconstruction survey will be conducted at least three months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values.*

Implementation of the following mitigation measure will ensure that project design and site selection reduce impacts to sensitive biological resources to the extent feasible.

BIO-10: *Maximize the preservation of individual oak, sycamore and walnut trees within proposed CBP Infrastructure sites. Preservation is defined within this measure as follows: existing oak, sycamore and walnut trees within a given Project site shall be retained within the site to the maximum extent feasible except where their preservation would interfere with functional and reasonable project design. Where the preservation of individual trees is not possible, IEUA shall comply with the local jurisdiction's tree ordinance, municipal code, or other local regulations. If no tree ordinance exists within the local jurisdiction, and a project will remove healthy trees as defined by a qualified arborist,*

(1) IEUA shall replace all trees removed at a 1:1 ratio, and (2) the specific location selected for a well shall avoid rock outcroppings and other scenic resources as defined in CEQA Guidelines Appendix G. If this cannot be accomplished a second tier CEQA evaluation shall be completed.

Implementation of the following mitigation measures will ensure that project construction impacts to sensitive biological resources, including the potential effects of invasive species, are reduced to the extent feasible.

BIO-24 *Dewatering/Water Diversion Plan: If construction is planned to occur where there is open or flowing water, prior to the commencement of construction IEUA shall submit the Dewatering Plan prepared in coordination with the resource agencies (e.g., USACE, SWRCB/RWQCB, and CDFW, as appropriate). The Dewatering Plan shall identify how open or flowing water will be routed around construction areas, such as through the creation of cofferdams. If cofferdams are constructed, implementation of the following cofferdam or water diversion measures shall be implemented to avoid and lessen impacts on jurisdictional waters during construction:*

- The cofferdams, filter fabric, and corrugated steel pipe are to be removed from the creek bed after completion of the project.*
- The timing of work within all channelized waters is to be coordinated with the regulatory agencies.*
- The cofferdam is to be placed upstream of the work area to direct base flows through an appropriately sized diversion pipe. The diversion pipe will extend through the Contractor's work area, where possible, and outlet through a sandbag dam at the downstream end.*
- Sediment-catch basins immediately below the construction site are to be constructed when performing in-channel construction to prevent silt- and sediment-laden water from entering the main stream flow. Accumulated sediments shall be periodically removed from the catch basins.*

BIO-25 *Permanent Water Diversion Projects: IEUA shall continue to support preparation of the annual Prado Basin Habitat Sustainability Monitoring Program. IEUA shall conduct a second-tier CEQA evaluation for a proposed water diversion project associated with the CBP. The potential impacts to Prado Basin and sensitive habitat (for example riparian, wetland, or critical habitat) from implementation of such diversion projects shall receive public review, including pertinent wildlife management agencies and interested parties.*

Two other measures are also required to minimize impacts under biological resources, though these measures (**AES-4**, and **LU-1**) are provided under their respective sections herein.

IEUA finds that implementation of the above measures would reduce potential impacts to wetlands, impacts related to compliance with local policies or ordinances pertaining to the protection of biological resources, and impacts related to compliance with applicable local ordinances. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project, as analyzed above, will not directly or indirectly cause significant adverse wetland or local policy impacts under biological resources with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable wetland or local policy impacts related to implementation of the CBP.

5. Cultural Resources

- a. **Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?**
- b. **Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-133 to 4-139, FPEIR)

Facts: Since the proposed project is at the programmatic level, specific locations for the proposed CBP facilities, with the exception of the AWPf at RP-4, have not been have yet to be determined. As such, where the locations of CBP facilities are unknown, impacts to specific historical, archaeological, and paleontological resources are speculative. Previously unknown and unrecorded cultural resources may be unearthed during excavation and grading activities for individual projects. If previously unknown potentially unique buried archaeological or paleontological resources are uncovered during excavation or construction, significant impacts could occur. Therefore, mitigation will be implemented that would require site-specific studies to identify potentially significant historical, archaeological, and paleontological resources. Additional studies would minimize potential impacts to historical, archaeological, and paleontological resources.

Note that, no buildings, structures, objects, sites, features, or artifacts of prehistoric or historical origin were encountered within or adjacent to RP-4 during the cultural site survey. Therefore, IEUA concurs with a finding of No Impact regarding “historical resources.” No further cultural resources investigation is recommended for the project unless construction plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are discovered during earth-moving operations associated with the project, all work in that area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds. As such, MM **CUL-1** must be implemented to ensure impacts would be less than significant. MM **CUL-1** would exclude highly disturbed sites from requiring further cultural resource evaluation, unless IEUA is seeking additional state funding or federal funding for the project, and would require the IEUA to adhere to procedures pertaining treatment of cultural resources that may be accidentally discovered during earthmoving activities.

MM **CUL-2** would ensure that future CBP Infrastructure facilities that are located within undisturbed areas, within a site that will require substantial earthmoving activities and/or excavation, and/or IEUA is seeking State funding, will require a follow-on Phase I Cultural Resources Investigation. This mitigation measure includes several phases or steps beyond the completion of a Phase I Cultural Resources Investigation that would cover the identification, evaluation, mitigation, and monitoring associated with a given project where resources may be located. This would ensure that adequate mitigation is provided in the event that significant cultural resources are located within a given CBP Infrastructure project site.

MM **CUL-3** would ensure that, after each phase of the studies required by MM **CUL-2** has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures is prepared and submitted to SCCIC, EIC, NHMLAC, and/or SBCM. This would ensure that any discoveries are properly documented for future researchers that may seek information regarding the CBP Infrastructure project site.

It can be anticipated that projects proposed under CBP may involve modifications to or may otherwise encounter common infrastructure features that are more than 50 years of age, but have a low potential to be considered historically significant, such as existing roadways and minor, utilitarian structures serving as pumphouses or reservoirs, as well as numerous historic-period buildings that are adjacent to the project boundaries but are unlikely to receive any direct or indirect impact. A

programmatic agreement, enforced through MM **CUL-4** would outline the proper treatment of such properties in future project-specific studies, which will greatly streamline the design and completion of such studies, facilitate the State Historic Preservation Officer (SHPO) review process, and minimize potential project delays.

The potential construction impacts of the CBP Infrastructure project, in combination with other projects as a result of growth in the area, could contribute to a cumulatively significant impact to specific historical, archaeological, and paleontological resources if encountered during project construction. However, implementation of MMs **CUL-1** through **CUL-4** would minimize the contributions of CBP Infrastructure projects to this significant cumulative impact, and the project's contribution would not be cumulatively considerable.

c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

Finding: Less Than Significant Impact (pg. 4-139 to 4-140, FPEIR)

Facts: Given the large size of the Chino Basin, there is a potential that a given CBP Project site could be located in a sensitive area. As such, in the event that human remains are inadvertently discovered during project construction activities, the human remains could be inadvertently damaged, which could result in a significant impact. Implementation of the proposed project would comply with provisions of state law regarding discovery of human remains, including Public Resources Code Section 5097.98 and Health and Safety Code Section 7050.5. If human remains are accidentally exposed during site grading, Section 7050.5 of the California Health and Safety Code requires a contractor to immediately stop work in the vicinity of the discovery and notify the County Coroner, who must follow procedures to ensure the most likely descendant (MLD) has an opportunity to be consulted. Since this process is statutorily mandated, no additional mitigation is required to ensure that the impacts to human remains will be less than significant.

Mitigation Measures

IEUA has determined that the proposed project could have a potentially significant impact on unknown subsurface cultural resources. Mitigation measures to reduce the impact to below a level of potential significance are provided below.

CUL-1: *Where a future discretionary project requiring additional CEQA review is proposed within an existing facility that has been totally disturbed due to it undergoing past engineered site preparation (such as a well site or water treatment facility site), the agency implementing the CBP project will not be required to complete a follow on cultural resources report (Phase I Cultural Resources Investigation) unless IEUA is seeking additional State or federal funding, in which case IEUA shall prepare a Phase I Cultural Resources Investigation to satisfy State CEQA-plus or federal agency requirements.*

Where a Phase I Cultural Resources Investigation is not required or has already been completed (such as at RP-4), the following shall be required to minimize impacts to any accidentally exposed cultural resource materials:

- Should any subsurface cultural resources be encountered during construction of these facilities, earthmoving or grading activities in the immediate area of the finds shall be halted and an onsite inspection shall be performed immediately by a qualified archaeologist meeting the Secretary of Interior Standards for Archaeology. Responsibility for making this determination shall be with IEUA's trained onsite inspector. An archaeological professional shall assess the find, determine its*

significance, and make recommendations for appropriate mitigation measures in accordance with the State CEQA Guidelines.

CUL-2: *Where a future discretionary project requiring additional CEQA review is proposed within an undisturbed site and/or a site that will require substantial earthmoving activities and/or excavation, and/or IEUA is seeking State or federal funding, IEUA shall complete a follow-on cultural resources report (Phase I Cultural Resources Investigation) regardless of whether IEUA is seeking State or federal funding.*

Where a Phase I Cultural Resources Investigation is required, the following phases of identification, evaluation, mitigation, and monitoring shall be followed for a given CBP Infrastructure facility:

1. ***Phase I (Identification):** A Phase I Investigation to identify historical, archaeological, or paleontological resources in a project site shall include the following research procedures, as appropriate:*
 - *Focused historical/archaeological resources records searches at SCCIC and/or EIC, depending on the project location, and paleontological resources records searches by NHMLAC, SBCM, and/or the Western Science Center in Hemet;*
 - *Historical background research, geoarchaeological profile analysis, and paleontological literature review;*
 - *Consultation with the State of California Native American Heritage Commission, Native American tribes in the surrounding area in accordance with AB52, pertinent local government agencies, and local historic preservation groups;*
 - *Field survey of the project area by qualified professionals of the pertinent discipline and at the appropriate level of intensity as determined on the basis of sensitivity assessment and site conditions;*
 - *Field recordation of any cultural resources encountered during the survey and proper documentation of the resources for incorporation into the appropriate inventories or databases.*
2. ***Phase II (Evaluation):** If cultural resources are encountered in a project site and cannot be avoided, a Phase II investigation shall be required to evaluate the potential significance of the resources in accordance with the statutory/regulatory framework outlined above. A typical Phase II study consists of the following research procedures:*
 - *Preparation of a research design to discuss the specific goals and objectives of the study in the context of important scientific questions that may be addressed with the findings and the significance criteria to be used for the evaluation, and to formulate the proper methodology to accomplish such goals;*
 - *In-depth exploration of historical, archaeological, or paleontological literature, archival records, as well as oral historical accounts for information pertaining to the cultural resources under evaluation;*
 - *Fieldwork to ascertain the nature and extent of the archaeological/paleontological remains or resource-sensitive sediments identified during the Phase I study, such as surface collection of artifacts, controlled excavation of units, trenches, and/or shovel test pits, and collection of soil samples;*
 - *Laboratory processing and analyses of the cultural artifacts, fossil specimens, and/or soil samples for the proper recovery, identification, recordation, and cataloguing of the materials collected during the fieldwork and to prepare the assemblage for permanent curation, if warranted.*
3. ***Phase III (Mitigation/Data Recovery):** For resources that prove to be significant under the appropriate criteria, mitigation of potential project impact is required. The first option is avoidance by selecting and implementing a CBP Infrastructure facility at an alternative site without significant cultural or paleontological resources. Depending on the characteristics of each resource type and the unique aspects of significance for each individual resource, mitigation may be accomplished through a variety of different methods, which shall be determined by a qualified archaeologist, paleontologist, historian, or other applicable professional in the "cultural resources" field. Typical mitigation for historical, archaeological, or paleontological resources, however, may focus on the following procedures, aimed mainly at the preservation of physical and/or archival data about a significant cultural resource that would be impacted by the project:*
 - *Data recovery through further excavation at an archaeological site or a paleontological locality to collect a representative sample of the identified remains, followed by laboratory processing and analysis as well as preparation for permanent curation;*

- *Comprehensive documentation of architectural and historical data about a significant building, structure, or object using methods comparable to the appropriate level of the Historic American Buildings Survey (HABS) and the Historic American Engineering Record (HAER) for permanent curation at a repository or repositories that provides access to the public;*
 - *Adjustments to project plans to minimize potential impact on the significance and integrity of the resource(s) in question.*
4. *Phase IV (Monitoring): At locations that are considered sensitive for subsurface deposits of undetected archaeological or paleontological remains, all earth-moving operations shall be monitored continuously or periodically, as warranted, by qualified professional practitioners. Archaeological monitoring programs shall be coordinated with the nearest Native American groups, who may wish to participate, as put forth in mitigation measures TCR-1 through TCR-3.*
- CUL-3:** *After each phase of the studies required by mitigation measure CUL-2 has been completed, where required, a complete report on the methods, results, and final conclusions of the research procedures shall be prepared and submitted to South Central Coastal Information Center (SCCIC), Eastern Information Center (EIC), Natural History Museum of Los Angeles County (NHMLAC), and/or San Bernardino County Museum (SBCM), as appropriate and in addition to IEUA for the project, for permanent documentation and easy references by future researchers.*
- CUL-4:** *Prior to commencement of construction of CBP Infrastructure facilities (excluding those facilities that have undergone site specific Cultural Resources Investigations, such as at RP-4), IEUA shall confer with the CBP project stakeholders to establish a programmatic agreement with SHPO that will stipulate a set of mutually accepted guidelines that address research procedures and the types of potential cultural resources that may be excluded from further consideration before CBP Infrastructure facilities are implemented, such as common infrastructure features that are more than 50 years of age, but have a low potential to be considered historically significant, such as existing roadways and minor, utilitarian structures serving as pumphouses or reservoirs, as well as numerous historic-period buildings that are adjacent to the project boundaries but are unlikely to receive any direct or indirect impact. Once this agreement has been made with SHPO, IEUA shall retain the agreement in the Project file, and shall ensure that any CBP partner agencies are given copies of the agreement for reference on future CBP Infrastructure facilities. For CBP projects that are in development prior to an agreement with SHPO, all types of cultural resources shall be considered by the professionals assessing historical resources within the project footprint; regardless, the steps provided in mitigation measure CUL-2 shall be followed to assess and minimize impacts to sensitive cultural resources within a given site.*

IEUA finds that implementation of the above measures would reduce potential impacts to unknown subsurface cultural resources to a less than significant impact level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant adverse impact related to cultural, archeological, or historical resources with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable cultural resource impacts required to support the proposed project.

6. Energy

- a. **Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operations?**

Finding: Less Than Significant Impact (pg. 4-156 to 4-159, FPEIR)

Facts: Construction would involve equipment and trips that are typical for the type of facilities being constructed and would not involve excessive or unnecessary consumption of fuel. Through compliance with existing applicable regulations,

construction energy consumption associated with buildout of the CBP would not be inefficient, wasteful or unnecessary. Impacts would be less than significant.

CBP facilities would be constructed in compliance with existing regulations for building energy efficiency. In addition, the CBP includes exploration of options for new, on-site energy generation facilities in the IEUA service area, such as in-conduit hydropower facilities in locations of the potable water distribution system where energy can be produced in conjunction with reducing system pressure. Finally, investment in local water supplies that offsets the need for imported water is considered to be necessary to begin to reduce the amount of energy associated with water conveyance in the State. The 2017 Scoping Plan recognizes that about two percent of the total energy used in the State is related to water conveyance. As a result, the plan calls for, “increased water conservation and efficiency, improved coordination and management of various water supplies, greater understanding of the water-energy nexus, and deployment of new technologies in drinking water treatment, groundwater remediation and recharge, and potentially brackish and seawater desalination.” Therefore, given that the CBP would result in an overall net reduction in electricity consumption associated with local water supplies over the 25-year term of the proposed water transfer agreement and that CBP facilities would comply with existing applicable regulations, operational energy consumption associated with the CBP would not be inefficient, wasteful or unnecessary.

- b. **Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

Finding: Less Than Significant Impact (pg. 4-159 to 4-161, FPEIR)

Facts: As stated above, the CBP would not obstruct the 2017 Scoping Plan. Furthermore, the IEUA Climate Change Action Plan (CCAP) sets GHG emission reduction goals for IEUA operations, some of which are related to energy efficiency and the use of renewable energy. IEUA would also explore options for using additional on-site renewable energy, such as the use of a 2.5-MW solar array at the Inland Empire Regional Composting Facility and in-conduit hydropower facilities in locations of the potable water distribution system where energy can be produced in conjunction with reducing system pressure.

The CBP includes components that intentionally lower the power demand on the electrical grid, such as the potential inclusion of in-conduit hydropower facilities at certain locations of the potable water distribution system where energy can be produced in conjunction with reducing system pressure. Furthermore, during call-years, the CBP would offset imported water from the SWP, which would save energy and preclude SWP-related energy consumption. The CBP would also incorporate the use of available on-site renewable energy sources at RP-4, including the 1-MW wind turbine and 1.5-MW battery, to supply part of the energy demand of CBP facilities, if possible. Moreover, the CBP may use energy generated by the 2.5-MW solar array at the Inland Empire Regional Composting Facility. Therefore, the CBP would support the CCAP objective to strive for carbon neutrality through implementation of renewable power generation and beneficial use of resources. Accordingly, the CBP would not conflict with the CCAP, and thus the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

Cumulative growth in the Southern California Edison (SCE) service area would affect regional energy demand. SCE energy demand planning is based on future growth predictions from the General Plans of local jurisdictions. For this reason, development consistent with the applicable General Plan would also be consistent with SCE demand planning. Cumulative development within the SCE service area is not anticipated to result in a significant impact in terms of impacting energy supplies because the majority of cumulative projects would be consistent with their respective General Plans and the growth anticipated by SCE. The CBP would serve water supply needs for existing and planned water demand and would not result in or accommodate unplanned growth. Furthermore, the proposed CBP would result in a net reduction in baseline electricity consumption of approximately 116,720 MWh/year in call years, and a portion of this net reduction in electricity usage would reduce demand on regional SCE infrastructure during these call years. Therefore, the CBP, in combination with other cumulative projects, would not result in cumulatively considerable energy impacts.

Mitigation Measures

The IEUA has determined that the proposed project would have a less than significant impact as a result of the energy demanded by construction and operation of facilities associated with the CBP. No mitigation is required to minimize impacts under the issue of energy.

7. Geology/Soils

- a(i). **Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-171 to 4-173, FPEIR)

Facts: There are three faults delineated on the Alquist-Priolo Earthquake Fault Zoning Map within and adjacent to the Chino Basin: the Elsinore Fault Zone (Chino Fault), which crosses the western boundary of the Chino Basin; the Red Hill-Etiwanda Avenue Fault, which traverses the northern boundary of the Chino Basin; and, a segment of the Sierra Madre Fault Zone, Cucamonga Section passes through the northwestern portion of the Chino Basin. Because not all proposed CBP facility locations are determined at this time, there is the potential for projects to be constructed and operated within an Alquist-Priolo Fault Zone. Projects proposed that would be operated within these zones could expose structures to potential substantial adverse effects; therefore, mitigation is required to minimize impacts under this issue.

The implementation of MM **GEO-1** would ensure new facilities are located outside of delineated fault zones, or otherwise minimize impacts if located within a fault zone.

Ultimately, through the implementation of mitigation that would ensure that new facilities are located outside of delineated fault zones, or if located within a fault zone are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations or through a second-tier CEQA evaluation, fault rupture-related impacts would be less than significant. As specific facilities are proposed in the future, the associated environmental impacts will be evaluated in a subsequent

project-specific CEQA evaluation to allow a final determination on each future project's specific impacts. Such review is appropriate and consistent with utilization of a program environmental document in accordance with CEQA Guidelines Sections 15162 and 15168.

a(ii). Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (ii) Strong seismic ground shaking?

Finding: Less Than Significant Impact (pg. 4-173 to 4-175, FPEIR)

Facts: As addressed under issue a(i) above, the Chino Basin is located within a region that is seismically active. In the event of an earthquake in Southern California, some seismic ground shaking would likely be experienced in the project area sometime during the operational life of the facilities proposed as part of the CBP. Ground shaking could result in structural damage to new facilities, which in turn could affect operation of related systems. Some of the proposed facilities are non-habitable or will only require visits on an as-needed basis; however, the CBP proposes upgrades and improvements to existing facilities, and new facilities that currently or would require full time employees on-site. Therefore, structural and mechanical failure of facilities onset by seismic ground shaking could potentially threaten the safety of on-site workers.

The structural elements of proposed CBP facilities would undergo appropriate design-level geotechnical evaluations prior to final design and construction as required to comply with the CBC. The geotechnical engineer, as a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care required for projects in the San Bernardino and Riverside County areas. The California Professional Engineers Act (Building and Professions Code Sections 6700- 6799), and the Codes of Professional Conduct, as administered by the California Board of Professional Engineers and Land Surveyors, provides the basis for regulating and enforcing engineering practice in California. In addition, pipelines would be constructed according to industry standards using American Water Works Association (AWWA) guidelines. Compliance with these construction and building safety design standards would reduce potential impacts associated with ground shaking to a level of less than significant.

a(iii). Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (iii) Seismic-related ground failure, including liquefaction?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-176 to 4-177, FPEIR)

Facts: Given that the locations of many of the proposed CBP facilities are presently unknown, it is possible that future CBP facilities could be located within an area with a high potential for liquefaction, as liquefaction is known to occur within the Chino Basin area. CBP facilities located on or within (underground facilities, such as pipelines) soils with a moderate to high potential for liquefaction could experience damage or failure as a result of liquefaction. Therefore, mitigation is required to minimize impacts under this issue.

The implementation of MM **GEO-1** would reduce the potential impacts from liquefaction and landslide hazards through a design level geotechnical investigation with implementation of specific design recommendations.

Ultimately, through the implementation of mitigation that would ensure that CBP facilities are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations, liquefaction-related impacts would be less than significant.

a(iv). Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (iv) Landslides?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-177 4-179, FPEIR)

Facts: Landslides and mudflow hazards exist throughout the Chino Basin on steep hillsides and in creek and streambed areas. Given that the locations of many of the proposed CBP facilities are presently unknown, it is possible that future CBP facilities could be located within an area with a high potential for landslide. CBP facilities located in areas that are highly susceptible to landslide could experience damage or failure as a result of liquefaction. Therefore, mitigation is required to minimize impacts under this issue.

The implementation of MM **GEO-1** would reduce the potential impacts from liquefaction and landslide hazards through a design level geotechnical investigation with implementation of specific design recommendations.

Ultimately, through the implementation of mitigation that would ensure that CBP facilities are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations, landslide-related impacts would be less than significant.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-179 to 4-181, FPEIR)

Facts: Construction activities for proposed CBP facilities such as excavation and grading could result in soil erosion during rain or high wind events. Development of the proposed CBP facilities would result in construction activities that would need to comply with South Coast Air Quality Management District (SCAQMD) Rule 403 for dust control that would ensure the prevention and/or management of wind erosion and subsequent topsoil loss. Compliance with SCAQMD Rule 403 would ensure that construction activities that generate wind-induced soil erosion are below significance thresholds.

For CBP projects that would disturb less than an acre, no Storm Water Pollution Prevention Plan (SWPPP) would be required. However, in order to prevent erosion associated with runoff from construction sites for each proposed project, the implementing agency will abide by best management practices (BMPs) to ensure that the discharge of storm runoff from construction sites does not cause erosion downstream to the discharge point. The implementation of BMPs will be enforced through mitigation. Additionally, for CBP projects that are less than one acre in size, compliance with minimum BMPs, as specified by the San Bernardino County MS4

Permit (SARWQCB, 2016), shall include erosion and sediment control BMPs for the construction site. Adherence to these conditions and to mitigation identified would ensure that potential soil erosion and loss of topsoil impacts would be minimized to less than significant.

The implementation of MM **GEO-2** would ensure that the proposed facilities associated with the CBP that are less than one acre in size would not exacerbate conditions related to erosion associated with runoff from construction sites through the implementation of BMPs.

For CBP projects that would disturb an acre or more, a SWPPP—in accordance with the requirements of the statewide Construction General Permit (CGP)—would be required. The SWPPP would identify BMPs to control erosion, sedimentation, and hazardous materials potentially released from construction sites into surface waters. Compliance with the CGP, required SWPPP, and identified BMPs would ensure soil erosion and loss of topsoil impacts would be reduced to a level of less than significant.

Ultimately, through the implementation of mitigation that would ensure that BMPs are implemented for projects that would occupy less than one acre, and through compliance with the CGP, required SWPPP, and identified BMPs, the potential for the CBP to result in substantial soil erosion or the loss of topsoil would be less than significant.

- c. **Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-181 to 4-183, FPEIR)

Facts: Subsidence is the shrinking of earth material caused by natural or artificial removal of underlying support. This process occurs in poor, unconsolidated soils and poorly compacted fills. Seismically induced groundshaking, both local and regional, and heavy rainfall are naturally induced causes of subsidence. The substantial lowering of groundwater may also result in subsidence. As identified in the CBP PEIR, a portion of the Chino Basin has experienced land subsidence related to aquifer extractions. The proposed project includes a robust discussion of subsidence within the Chino Basin under Hydrology and Water Quality (Subchapter 4.11 of the CBP DPEIR), and includes mitigation to address and minimize potential for new land subsidence from CBP implementation (MM **HYD-3** and **HYD-4**). Given that the locations of many of the proposed CBP facilities are presently unknown, it is possible that any of the future CBP facilities could be located within a site with unstable soils, which could cause the facilities to experience damage or failure as a result; furthermore, groundwater pumping facilities, such as wells, could cause aquifer system compaction and land subsidence, which is known to occur within the Chino Basin. Additionally, subsidence and collapse could damage the proposed facilities and affect the safety of on-site or visiting employees. As such, mitigation is required to minimize impacts under this issue.

The implementation of MM **GEO-1** would reduce the potential impacts related to unstable soils through a design level geotechnical investigation with implementation of specific design recommendations for future CBP projects.

Ultimately, through the implementation of mitigation that would ensure that CBP facilities are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations, the potential for CBP facilities to be significantly impacted through being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in onsite or offsite landslide, lateral spreading, subsidence, liquefaction or collapse would be less than significant.

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

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-183 to 4-184, FPEIR)

Facts: When expansive soils swell, the change in volume can exert significant pressures on loads that are placed on them, such as loads resulting from structure foundations or underground utilities, and can result in structural distress and/or damage. Most of the Chino Basin is comprised of old alluvial fans and valley deposits, which vary in consistency. The specific soil properties of a site can vary on a small scale, and may include undetermined areas that exhibit expansive properties. Given that the location of many future CBP facilities are unknown, there is a potential that such facilities could be installed within a site containing expansive soils. As such, mitigation is required to minimize impacts under this issue.

The implementation of MM **GEO-1** would reduce the potential impacts related to expansive soils through a design level geotechnical investigation with implementation of specific design recommendations for future CBP projects.

Ultimately, through the implementation of mitigation that would ensure that CBP facilities are analyzed thoroughly through a site-specific geotechnical report with specific design recommendations, the potential for CBP facilities to experience a significant adverse effect from being located on expansive soil, as defined in Table 18 1-B of the Uniform Building Code (1994), creating substantial risks to life or property would be less than significant.

- e. **Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?**

Finding: No Impact (pg. 4-184 to 4-185, FPEIR)

Facts: Implementation of proposed CBP facilities would not require the use of septic systems. The majority of facilities would be upgrades to existing infrastructure, wells, pipelines, and other water conveyance facilities that do not require septic systems. There is no planned use of on-site septic systems for the proposed project facilities. Therefore, no impact would occur related to soil suitability for septic systems.

- f. **Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-185 to 4-187, FPEIR)

Facts: Previous investigations in the region have identified the presence of significant paleontological resources where construction activities extend into or below the older alluvial sediment boundary. Since the proposed project is at the programmatic level, specific locations for the many CBP facilities have not been have yet to be determined. As such, impacts to specific paleontological resources are speculative. Previously unknown and unrecorded paleontological resources may be unearthed during excavation and grading activities for individual projects, which could result in significant impacts. Therefore, mitigation will be implemented to address the potential for impacting paleontological resources.

The implementation of MM **GEO-3** would require a site-specific study to identify potentially significant paleontological resources, which would minimize potential impacts to paleontological resources.

Ultimately, through the implementation of mitigation that would require a site-specific study to identify potentially significant paleontological resources, the CBP will have a less than significant impact to unique paleontological resources or unique geologic features.

Mitigation Measures

IEUA has determined that, because the Chino Basin contains substantial geological and soils-related constraints, the proposed project could experience potentially significant impact as identified in identified in Subchapter 4.8 of the FPEIR. Mitigation measures to reduce these impacts to below a level of potential significance are provided below.

- GEO-1:** *Prior to construction of each improvement, a design-level geotechnical investigation, including collection of site-specific subsurface data if appropriate, shall be completed. The geotechnical evaluation shall identify all potential seismic hazards including fault rupture, and characterize the soil profiles, including liquefaction potential, expansive soil potential, subsidence, and landslide potential. The geotechnical investigation shall recommend site specific design criteria to mitigate for seismic and non-seismic hazards, such as special foundations and structural setbacks, and these recommendations shall be incorporated into the design of individual proposed projects. If the project specific geotechnical study cannot mitigate potential seismic related impacts, then the facility shall be relocated. If relocation is not possible a second tier CEQA evaluation shall be completed.*
- GEO-2:** *For each well development or other CBP project that is less than one acre in size requiring ground disturbing activities such as grading, IEUA shall identify and implement best management practices (BMPs, such as hay bales, wattles, detention basins, silt fences, coir rolls, etc.) to ensure that the discharge of the storm runoff from the construction site does not cause erosion downstream of the discharge point. If any substantial erosion or sedimentation occurs as a result of discharging storm water from a project construction site, any erosion or sedimentation damage shall be restored to pre-discharge conditions.*
- GEO-3:** *For project-level development involving ground disturbance, a qualified paleontologist shall be retained to determine the necessity of conducting a study of the project area(s) based on the potential sensitivity of the project site for paleontological resources. If deemed necessary, the paleontologist shall conduct a paleontological resources inventory designed to identify potentially significant resources. The paleontological resources inventory would consist of: a paleontological resource records search to be conducted at the San Bernardino County Museum and/or other appropriate facilities; a field survey or monitoring where deemed appropriate by the paleontologist; and recordation of all identified paleontological resources. Treatment of any discovered*

paleontological resources shall follow the Phasing and corresponding actions identified under MM CUL-2.

IEUA finds that implementation of the above measures would minimize geology and soils impacts to a less than significant level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant adverse impact due to onsite or offsite geotechnical hazards with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable impacts due to geotechnical hazards to structures and facilities required to support the proposed project. Refer to the Hydrology and Water Quality discussion for additional measures that address subsidence.

8. Greenhouse Gas Emissions: Impacts under Greenhouse Gas Emissions, checklist question “a” is significant and cannot be mitigated below significance levels. The discussion of this specific issue under Greenhouse Gas Emissions is located below in Section F of this document. The checklist questions under Greenhouse Gas Emissions that can be mitigated to a level of less than significant are as follows:

b. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Finding: Less Than Significant Impact (pg. 4-218 to 4-219, FPEIR)

Facts: The 2017 Scoping Plan focuses primarily on reducing GHG emissions that result from mobile sources, land use development, and stationary industrial sources. The CBP would not involve a considerable increase in new vehicle trips or land use changes that would result in an increase in vehicle trips, such as urban sprawl, and it does not include new stationary industrial sources of GHG emissions. The 2017 Scoping Plan also recognizes that about two percent of the total energy consumption in California is related to water conveyance. By augmenting local water supplies, the CBP would offset energy demands associated with imported water supplies in furtherance of this goal of the 2017 Scoping Plan. Therefore, the CBP would not conflict with the 2017 Scoping Plan.

The IEUA CCAP sets GHG emission reduction goals for IEUA operation. By nature, the CBP directly supports the CCAP goals to maximize recycled water production and storage and maintain the health of the groundwater aquifer as well as the associated objectives to expand recycled water infrastructure and enhance groundwater replenishment capabilities within the Chino Basin. Operation of the CBP would result in a net reduction in GHG emissions over the 25-year term of the proposed water transfer agreements. The CBP also includes components that intentionally lower the power demand on the electrical grid, such as the potential inclusion of in-conduit hydropower facilities at certain locations of the potable water distribution system where energy can be produced in conjunction with reducing system pressure. Furthermore, during call years, the CBP would offset imported water from the SWP, which would save energy and preclude SWP-related GHG emissions. The CBP would also incorporate the use of available existing IEUA operated renewable energy sources, if possible. Therefore, the CBP would also support the CCAP objective to strive for carbon neutrality through implementation of renewable power generation and beneficial use of resources. Accordingly, the CBP would not conflict with the CCAP, and thus, the CBP would have a less than

significant potential to conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

Additionally, impacts related to GHG emissions are, by definition, cumulative impacts because they affect the worldwide accumulation of GHGs in the atmosphere. Because the effects of climate change are currently occurring, the cumulative worldwide and statewide effects of GHG emissions are significant. The CBP would be consistent with many of the goals of applicable State and local plans and programs, which are designed to reduce the cumulative impact of GHG emissions. Therefore, the contribution of the CBP to cumulative impacts related to consistency with applicable plan, policy or regulation adopted for the purpose of reducing the GHG emissions would not be cumulatively considerable.

9. Hazards and Hazardous Materials

- a. **Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-234 to 4-238, FPEIR)

Facts: Installation of CBP facilities can require delivery of hazardous materials (such as petroleum products) to support their installation. Long-term operation of some CBP facilities can require small quantities of hazardous materials, but typically only minimal quantities to keep equipment operating safely and efficiently. The anticipated construction activities required to develop CBP facilities will temporarily require the transport, use, and disposal of hazardous materials including gasoline, diesel fuel, hydraulic fluids, paint, and other similarly related materials. Operational activities could require the modest quantities of hazardous materials, such as chemicals like chlorine (commonly in the form of sodium hypochlorite) to treat recycled water or potable water sources prior to distribution. The FPEIR identified several measures that would ensure that the use and generation of hazardous substances in support of CBP projects does not pose a significant hazard to workers, adjacent land uses and the environment.

Several mitigation measures were identified to minimize hazards and hazardous materials impacts including those that would: ensure that applicable CBP facilities Hazardous Material's Business Plan (HMBP) incorporate best management practices designed to minimize the potential for accidental release of such chemicals; ensure that applicable CBP facilities HMBP identify the equipment and response capabilities required to provide immediate containment, control and collection of any released material (**HAZ-1 & HAZ-2**); ensure sensitive receptors will not be exposed to significant health threat by modeling the pathways of release and implementing specific measures that would minimize potential exposure to acutely hazardous materials (**HAZ-3**); ensure hazardous materials are disposed of and delivered to licensed facilities (**HAZ-4**); and, ensure the establishment of and adherence to specific thresholds of acceptable clean-up of hazardous materials (**HAZ-5**).

Ultimately, through the implementation of substantive mitigation measures to minimize the potential for the CBP to create a significant hazard to the public or the

environment through the routine transport, use, or disposal of hazardous materials, the CBP would have a less than significant impact under this issue.

- b. **Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-238 to 4-241, FPEIR)

Facts: Both during construction and at specific facilities, such as water treatment facilities, a potential exists for accidental release of hazardous materials. Accidental releases of hazardous materials during construction or operations are readily controlled to a less than significant level of hazard through control or remediation of the material accidentally released. Because the construction equipment can contain enough petroleum products to damage the environment or expose people to hazardous emissions, the Agency requires compliance with Best Management Practices to manage clean-up of potential spills of hazardous materials during construction. This includes the Cal/OSHA regulations provide for the proper labeling, storage, and handling of hazardous materials to reduce the potential harmful health effects that could result from worker exposure to hazardous materials. IEUA would be required to comply with all relevant and applicable federal, state and local laws and regulations that pertain to the accidental release of hazardous materials during construction of proposed facilities—such as Health and Safety Code, Section 2550 et seq.—which can reduce potential impacts to the public or the environment regarding accidental release of hazardous materials to less than significant impact. A contingency mitigation measure is provided to ensure accidental releases and any related contamination do not significantly affect the environment at facility locations (MM **HAZ-6**).

Operation of the proposed facilities could include the storage and use of chemicals. Any storage tanks would be designed in accordance with the applicable hazardous materials storage regulations for long-term use summarized in the Regulatory Framework. The delivery and disposal of chemicals to and from water and wastewater treatment facility sites would occur in full accordance with all applicable federal, state, and local regulations. Compliance with all applicable federal, state and local regulations regarding the handling, storage, transportation, and disposal of hazardous materials, and preparation and implementation of the HMBP would reduce potential impacts to the public, employees, or the environment related to the transport, use, or disposal of hazardous materials to a less than significant impact.

Mitigation measure **HAZ-8** was identified to minimize releases and to ensure remediation of an accidental spill or discharge of hazardous material in compliance with state and local regulations. Furthermore, an HMBP must be prepared per MMs **HAZ-1** and **HAZ-2** and implemented for the proposed facility upgrades as required by the County of San Bernardino CUPA. The HMBP would minimize hazards to human health and the environment from fires, explosions, or an accidental release of hazardous materials into air, soil, surface water, or groundwater.

Ultimately, through the implementation of mitigation to minimize the potential for the CBP to create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of

hazardous materials into the environment, the CBP would have a less than significant impact under this issue.

- c. **Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-241 to 4-244, FPEIR)

Facts: Due to the potentially extensive nature of facilities associated with implementing the CBP, it is possible that construction of proposed facilities would occur within one-quarter mile of a school. Construction activities would use limited quantities of hazardous materials, such as gasoline and diesel fuel. IEUA is required to comply with all relevant and applicable federal, State and local laws and regulations that pertain to the release of hazardous materials during construction of proposed facilities; this and compliance with all applicable federal, State, and local regulations and MMs **HAZ-1** through **HAZ-6** would reduce potential impacts to the public or the environment regarding hazardous waste discharges or emissions within one-quarter mile of a school during construction. Impacts would be less than significant with implementation of mitigation.

Operation of proposed CBP facilities may also occur within one quarter mile of a school. As stated above under issue “b,” the facilities proposed as part of the CBP may handle hazardous materials to serve water treatment operations. The established handling protocols would ensure that no significant operational impacts would occur as a result of CBP facility operations.

- d. **Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-244 to 4-247, FPEIR)

Facts: During construction of individual CBP facilities, it is possible that contaminated soil and/or groundwater could be encountered during excavation, thereby posing a health threat to construction workers, the public, and the environment. Within the Chino Basin the contaminated locations can be divided into two categories. First, there are known surface contaminated sites of which there are more than 100 locations and which are generally limited in area. Second, there are larger legacy contamination sites that have caused extensive groundwater contamination plumes, such as the GE Flatiron plume. Therefore, mitigation will be implemented to prevent future site-specific conflicts or impacts between CBP facilities and such sites.

The implementation of MMs **HAZ-7** and **HAZ-8** would require site-specific studies to identify known hazardous materials risks or the potential for risk related to hazardous materials. These studies would identify recommendations and cleanup measures to reduce risk to the public and the environment from development on hazardous materials sites. Implementation of MMs **HAZ-7** and **HAZ-8** would reduce potential impacts to construction workers and the public from exposure to unknown affected soils.

The groundwater Basin itself has a potential to experience impacts from surficial or groundwater hazards within the Basin, these impacts are assessed on a continuous

basis as a result of ongoing monitoring and remediation efforts. Ultimately, the groundwater quality impacts from implementing the CBP is an issue of paramount importance within the Basin, and infrastructure projects such as the CBP within the Basin must ensure that movement of the contamination plumes is contained to minimize contamination of groundwater at wells located in proximity, but outside these plumes. The analysis contained in Subchapter 4.11, Hydrology and Water Quality, determined that the proposed CBP would not result in significant movement of the groundwater plumes within the Basin. However, MM **HYD-7** addresses the plan of response by Watermaster and the IEUA should the Basin conditions come to vary from the projections that have been modeled as part of the CBP planning. If Watermaster determines that the CBP operations may result in significant impacts to the movement of the plumes, Watermaster will require that the IEUA implement mitigation (enforced through MM **HYD-7**) to reduce their impacts to less than significant levels. Therefore, impacts to the public or the environment related to hazardous materials sites would be less than significant.

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

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-247 to 4-250, FPEIR)

Facts: The following three airports are located within the Chino Basin boundaries: Chino Airport, LA/Ontario International Airport, and Cable Airport in Upland. There are no private airstrips located within the Chino Basin. Most proposed facility locations have not yet been determined, and therefore, have the potential to be within an airport land use plan, which in turn could result in a safety hazard to airport flight patterns, light, or navigation resulting in a significant impact. If a location within a safety zone is required compliance with mitigation can reduce potential environmental impacts to a less than significant level.

The implementation of MM **HAZ-9** would ensure compliance with the appropriate airport land use plan and coordination with the appropriate airport management agencies to ensure safety for people residing or working within the project area. Implementation of MM **HAZ-9** would reduce potential impacts from development within an airport safety zone to a less than significant impact.

- f. **Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-250 to 4-252, FPEIR)

Facts: Major evacuation routes are located within the Chino Basin along major interstates, freeways and major north-south and east-west roads. The proposed project activities and facilities have no potential to permanently impact emergency evacuation plans or emergency response plans over the long-term. In the short-term, construction activities related to pipeline and other infrastructure system improvements located within existing road rights-of-way have a potential to interfere with such plans. Mitigation measures **TRAN-1** and **WF-1** would be required to minimize impacts related to emergency access during construction. Operation of the proposed facilities would not impair or physically interfere with an adopted

emergency response plan or emergency evacuation plan. Maintenance activities would require minimal trips and would not significantly impact the surrounding roadways.

The implementation of MMs **TRAN-1** and **WF-1**, identified under Subchapters 4.18 and 4.21, respectively, would require the preparation of a Transportation Management Plan with comprehensive strategies to reduce potential disruption to emergency evacuation or an emergency response plan. Therefore, potential significant impacts to emergency access and evacuation would be reduced to a less than significant level.

- g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-252 to 4-254, FPEIR)

Facts: The highly urbanized portion of the Chino Basin has been designated by CAL FIRE as outside of the very high FHSZ. This is shown on the attached wildland FHSZ maps. Almost all “high” or “severe” wildland FHSZs are located on the edges of the Chino Basin, or adjacent to isolated hills (Jurupa Hills) that interrupt the slope of the Chino Basin alluvial fan. The proposed CBP facilities would generally not expose people or structures to a significant risk of loss, injury or death involving wildland fires. The use of spark-producing construction machinery within a fire risk area could create hazardous fire conditions and expose people or structures to wildfire risks. If CBP facilities must be installed within high or severe fire hazard areas, a potential exists to cause a significant wildfire hazard; therefore, MM **WF-2** is required to address this circumstance and reduce the impact to a less than significant level.

During operation, the proposed facilities would distribute recycled, imported, and treated water throughout the project area, and these facilities would not be constructed of flammable materials or involve any spark-producing activities. However, many of the ancillary facilities will be supplied and operate on electricity. Therefore, MM **WF-2** must be implemented to minimize fire hazards at proposed CBP facilities in high and very high fire severity zones.

The implementation of MM **WF-2** would require the preparation of a fire management plan/fuel modification plan for CBP infrastructure proposed within very high FHSZs, and it would identify comprehensive strategies to reduce fire potential during construction and over long-term operation. Therefore, potential significant impacts due to installation of proposed CBP infrastructure would be reduced to less than significant level with implementation of MM **WF-2**.

Mitigation Measures

IEUA has determined that the proposed project could create significant health hazards or exposure to such hazards from construction and occupancy of the future CBP facilities. Mitigation measures to reduce this impact to below a level of potential significance are provided below.

- HAZ-1:** *For CBP facilities that handle hazardous materials or generate hazardous waste, the Hazardous Materials Business Plan prepared and submitted to the Certified Unified Program Agency shall incorporate best management practices designed to minimize the potential for accidental release of such chemicals and shall meet the standards required by California law for Hazardous Materials*

Business Plans. *The facility managers shall implement these measures to reduce the potential for accidental releases of hazardous materials or wastes. The Hazardous Materials Business Plan shall be approved prior to operation of the given facility.*

- HAZ-2:** *The Hazardous Materials Business Plan shall assess the potential accidental release scenarios and identify the equipment and response capabilities required to provide immediate containment, control, and collection of any released hazardous material. Prior to issuance of the certificate of occupancy, each facility shall ensure that necessary equipment has been installed and training of personnel has occurred to obtain sufficient resources to control and prevent the spread of any accidentally released hazardous or toxic materials.*
- HAZ-3:** *Prior to occupancy of any site for which storage of any acutely hazardous material will be required, such as chlorine gas, modeling of pathways of release and potential exposure of the public to any released hazardous material shall be completed and specific measures, such as secondary containment, shall be implemented to ensure that sensitive receptors will not be exposed to significant health threats based on the toxic substance involved.*
- HAZ-4:** *All hazardous materials during both operation and construction of CBP facilities shall be delivered to a licensed treatment, disposal, or recycling facility and be disposed of in accordance with State and federal law.*
- HAZ-5:** *Before determining that an area contaminated as a result of an accidental release during project operation or construction is fully remediated, specific thresholds of acceptable clean-up shall be established and sufficient samples shall be taken and tested within the contaminated area to verify that these clean-up thresholds have been met in compliance with State and federal law.*
- HAZ-6:** *All accidental spills or discharge of hazardous material during construction activities shall be reported to the Certified Unified Program Agency and shall be remediated in compliance with applicable federal, State, and local regulations regarding cleanup and disposal of the contaminant released. The contaminated waste shall be collected and disposed of at a licensed disposal or treatment facility. This measure shall be incorporated into the Stormwater Pollution Prevention Plan (SWPPP) prepared for each future facility developed under the CBP. Prior to accepting the site as remediated, the area contaminated shall be tested to verify that any residual concentrations meet the standard for future residential or public use of the site.*
- HAZ-7:** *Prior to final site selection for future CBP facilities, IEUA shall obtain a Phase I Environmental Site Assessment (ESA) for the selected site. If a site contains contamination, the agency shall either avoid the site by selecting an alternative location or shall remove any contamination at the site (remediate) to a level of concentration that eliminates hazard to employees working at the site and that will not conflict with the installation and future operation of the facility. For sites located on agricultural land, this can include soil contaminated with unacceptable concentrations of pesticides or herbicides that shall be remediated through removal or blending to reduce concentrations below thresholds of significance established for the particular pesticide or herbicide in compliance with State and federal law.*
- HAZ-8:** *Should an unknown contaminated site be encountered during construction of CBP facilities, all work in the immediate area shall cease; the type of contamination and its extent shall be determined; and the local Certified Unified Program Agency or other regulatory agencies (such as the DTSC or Regional Board) shall be notified. Based on investigations of the contamination, the site may be closed and avoided or the contaminant(s) shall be remediated to a threshold acceptable to the Certified Unified Program Agency or other regulatory agency threshold and any contaminated soil or other material shall be delivered to an authorized treatment or disposal site.*
- HAZ-9:** *Prior to finalizing site selection of a CBP facility within an airport safety zone, input from the affected airport management entity shall be solicited. For projects within airport safety zones, facility design shall follow the guidelines of the appropriate airport land use compatibility plan. If a potential conflict with an airport land use compatibility plan is identified, IEUA shall relocate the facility outside the area of conflict, or if the site is deemed essential, IEUA shall propose an alternative design that reduces any conflict to a less than significant level of conflict. As an example, a pump station or reservoir could be installed below ground instead of above ground.*

HYD-7: *Watermaster shall periodically review current and projected Basin conditions and shall compare this information to the projected Basin conditions assumed in the evaluation of the CBP Storage and Recovery Program application process, compare the projected CBP operations to actual operations. Watermaster shall then make findings regarding the efficacy of the mitigation program and requirements required herein and by the CBP storage agreement. Based on Watermaster's review and subsequent findings, where applicable, Watermaster shall require changes and/or modifications in the CBP storage agreement that will adequately mitigate MPI and related adverse impacts including but not limited to pumping sustainability, net recharge and safe yield, subsidence, hydraulic control, and groundwater quality.*

TRAN-1 *Prepare and Implement Construction Transportation Management Plan*
A construction Transportation Management Plan (TMP) shall be developed and implemented by IEUA in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:

Construction Traffic Routes and Staging Locations: *The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.*

Damage Repair: *The TMP shall include the following requirements to minimize damage to the existing roadway network:*

- *A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water conveyance pipelines.*
- *The roadway network along the proposed water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.*
- *Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and IEUA or its contractors shall repair all damage.*

Coordination with Emergency Services: *The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public rights-of-way if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.*

Coordination with Active Transportation Facilities: *The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.*

Coordination with SBCTA: *If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with SBCTA and Metrolink.*

Coordination with Caltrans: *If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.*

Coordination with Nearby Construction Sites: *The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:*

- *All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures*

- *All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips*
- *IEUA, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.*

Transportation Control and Safety: *The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.*

Plan Approval: *The TMP shall be submitted to SBCTA and the respective city community development departments for review and approval.*

WF-1: *Prior to initiating construction of proposed facilities within public rights-of-way (ROW), IEUA shall prepare and implement a Traffic Control Plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. IEUA shall ensure that the Traffic Control Plan and other construction activities are consistent with the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.*

WF-2: *Prior to construction of facilities located in areas designated as High or Very High Fire Hazard Severity Zones (FHSZs) by CAL FIRE, fire hazard reduction measures shall be incorporated into a fire management plan/fuel modification plan for the proposed facility, and shall be implemented during construction and over the long-term for protection of the site. These measures shall address all staging areas, welding areas, or areas slated for development that are planned to use spark-producing equipment. These areas shall be cleared of dried vegetation or other material that could ignite. Any construction equipment that can include a spark arrestor shall be equipped with a spark arrestor in good working order. During the construction of the project facilities, all vehicles and crews working at the project site shall have access to functional fire extinguishers and related fire prevention equipment (such as emergency sand bags, etc.) at all times. In addition, construction crews shall have a spotter during welding activities to look out for potentially dangerous situations, including accidental sparks. This plan shall be reviewed by the IEUA and provided to CAL FIRE for review and comment, where appropriate, and approved prior to construction within high and very high FHSZs and implemented once approved. The fire management plan shall also include sufficient defensible space or other measures at a facility site located in a high or very high FHSZ to minimize fire exposure and damage to a level acceptable to the IEUA over the long-term.*

IEUA finds that implementation of the above measures would minimize hazards and hazardous materials impacts to a less than significant level. The above measures can be implemented without causing additional adverse environmental impacts. Though the CBP would have a potential to result in some adverse hazard or hazardous material impacts as a result of implementing the project, specific mitigation measures have been identified to reduce potential project specific and cumulative (direct and indirect) effects to a less than significant impact level for hazards and hazardous material issues. Thus, the project is not forecast to cause any unavoidable significant adverse hazards or hazardous material impacts.

8. Hydrology and Water Quality

- a.** **Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?**

Finding: **Less Than Significant With Mitigation Incorporated (pg. 4-279 to 4-282, 4-289 to 4-294, FPEIR)**

Facts: Some of the source water for the CBP is anticipated to be recycled water that is currently discharged to the Santa Ana River or its tributaries. The CBP discharge scenario reduces wastewater discharges to the Santa Ana River by about 16,000 AFY compared to the baseline discharge scenario throughout the program period (the 25-year period of 2029 through 2053). An additional 1,000 AFY is necessary to facilitate the CBP, which is assumed to come from reduced demand of wastewater for direct use.

The results indicated that the diversions of wastewater for the CBP will, in most years, result in higher TDS concentrations in the SAR at below Prado Dam, potentially causing a violation of the Reach 3 TDS objective. The significance of the CBP's projected increase of the Reach 3 TDS concentration of about 32 mg/l depends on the background TDS conditions in Reach 3 of the SAR. The Santa Ana Watershed Project Authority's annual monitoring data indicates that the Reach 3 TDS was violated in three of the past four reported years (2017, 2018, and 2020; the 2021 report is expected in mid-2022). Prior studies have shown that the IEUA's wastewater discharges dilute the higher-TDS base flow in Reach 3. As of this writing, there have been no actions or changes to the wasteload allocations to address these exceedances. Furthermore, the predictive scenarios in the 2017 Wasteload Allocation Model indicate that violations of the Reach 3 TDS objective are not expected to occur under the "maximum likely" wastewater discharge conditions but would occur under the "most likely" and "minimum expected" wastewater discharge conditions. None of these scenarios include the CBP. Given the recent and projected exceedances of the Reach 3 TDS objective without the CBP, it is unlikely that the CBP will be the sole cause of an exceedance of the Reach 3 TDS objective. IEUA will continue to ensure that it meets its future discharge requirements and wasteload allocations when conducting the CBP.

Based on the assumptions incorporated into the CBP diversion scenarios (e.g., expected value hydrology, upstream wastewater discharges), the reductions in SAR discharge at below Prado Dam will not cause a violation of the base flow obligation at Prado. Thus, the proposed project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface quality.

The impacts of the CBP on water quality are projected to be less than significant. However, MM **HYD-7** addresses the plan of response by the Watermaster and the IEUA should the Basin conditions come to vary from the projections that have been modeled as part of the CBP planning. This measure would enable the Watermaster to modify previously agreed upon mitigation measures to address actual Basin conditions and apply these measures to the CBP allowing for flexibility in how the Watermaster approaches minimizing the groundwater issues outlined herein to below significance levels. Furthermore, as part of the Watermaster's review of the IEUA's Storage and Recovery Program application for the CBP, the effects of the CBP operations on the movement of major contaminant plumes in the Chino Basin will be re-assessed. If the Watermaster determines that the CBP operations may result in significant impacts to the movement of the plumes, the Watermaster will require the IEUA to implement mitigation (enforced through MM **HYD-7**) to reduce their impacts to less than significant levels.

- b. **Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such the project may impede sustainable groundwater management of the basin?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-196 to 4-201, FPEIR)

Facts: The groundwater level impacts are spatially varying, and they are embedded in the impact assessment for new land subsidence and pumping sustainability.

The CBP scenarios analyzed are projected to cause changes in storage and net recharge throughout the program period. The early call scenarios are projected to cause an increase in net recharge, and the late call scenarios are projected to cause a decrease in net recharge. As mentioned earlier, one way to mitigate the induced reduction in net recharge due to the late call scenarios is to reduce the takes by the amount of reduced net recharge. Not addressing the induced reduction in net recharge due to the late call scenarios will reduce the Safe Yield allocated to the Appropriative Pool parties, cause overdraft, or both, and will increase the risk of pumping sustainability challenges.

No CBP scenarios are projected to affect the direction or speed of the VOC plumes in the Chino Basin. The modeled travel times of the injected water in the CBP are projected to meet the Title 22 requirements for the recharge of treated wastewater.

The Watermaster will periodically review current and projected Basin conditions, compare this information to the projected Basin conditions assumed in the evaluation of the IEUA's Storage and Recovery Program application for the CBP, and compare the projected CBP operations to actual CBP operations. The Watermaster will then make findings regarding the efficacy of the mitigation program and requirements included herein and by the CBP storage agreements. Based on the Watermaster's review and subsequent findings, where applicable, the Watermaster will then require changes and/or modifications in the CBP storage agreements that would adequately mitigate MPI and related adverse impacts.

Based on this information, the CBP would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge and will not impede sustainable management of the Basin. Impacts would be less than significant following implementation of MMs **HYD-1** through **HYD-7**.

Pumping Sustainability

MMs **HYD-1** and **HYD-2** address impacts of the CBP related to pumping sustainability in the Chino Basin; these measures would ensure that Watermaster gathers the appropriate data to (1) determine whether the CBP operations would result in loss of pumping sustainability, and (2) respond with appropriate mitigation to minimize the potential loss of pumping sustainability that may occur from CBP operations. These measures would enable the IEUA and Watermaster to prevent adverse impacts related to pumping sustainability that may result from implementation the CBP.

Subsidence

MMs **HYD-3** and **HYD-4** address potential new subsidence within the Chino Basin; these measures would ensure that the Watermaster gathers the appropriate data to

respond (1) determine whether the CBP operations would result in new subsidence, and (2) respond with appropriate mitigation to minimize the potential for new subsidence that may occur from the CBP operations. These measures would enable the IEUA and Watermaster to prevent adverse impacts related to new subsidence that may result from implementation of the CBP.

Net Recharge and Safe Yield

MMs **HYD-5** and **HYD-6** address potential reduction in net recharge and impacts to Safe Yield within the Chino Basin due to the CBP; these measures would ensure that the Watermaster gathers the appropriate data to (1) determine whether the CBP operations would result in potential reduction in net recharge and impacts to Safe Yield, and (2) respond with appropriate mitigation to minimize the potential for a reduction in net recharge and for impacts to Safe Yield that may occur from the CBP operations. These measures would enable the IEUA and Watermaster to prevent adverse impacts related to potential reduction in net recharge and impacts to Safe Yield that may result from implementation of the CBP.

Hydraulic Control

The projected impacts of the CBP on Hydraulic Control are projected to be less than significant. However, MM **HYD-7** addresses the plan of response by Watermaster and the IEUA should the Basin conditions come to vary from the projections that have been modeled as part of the CBP planning. This measure would enable the Watermaster to modify previously agreed upon mitigation measures to address actual Basin conditions and apply these measures to the CBP allowing for flexibility in how the Watermaster approaches minimizing the groundwater issues outlined herein to below significance levels. Furthermore, as part of the Watermaster's review of the IEUA's Storage and Recovery Program application for the CBP, the effects of the CBP operations on the state of Hydraulic Control will be re-assessed. If Watermaster determines that the CBP operations may result in significant impacts to Hydraulic Control, the Watermaster will require that the IEUA implement mitigation (enforced through MM **HYD-7**) to reduce their impacts to less than significant levels.

Water Quality

The impacts of the CBP on water quality are projected to be less than significant. However, MM **HYD-7** addresses the plan of response by the Watermaster and the IEUA should the Basin conditions come to vary from the projections that have been modeled as part of the CBP planning. This measure would enable the Watermaster to modify previously agreed upon mitigation measures to address actual Basin conditions and apply these measures to the CBP allowing for flexibility in how the Watermaster approaches minimizing the groundwater issues outlined herein to below significance levels. Furthermore, as part of the Watermaster's review of the IEUA's Storage and Recovery Program application for the CBP, the effects of the CBP operations on the movement of major contaminant plumes in the Chino Basin will be re-assessed. If the Watermaster determines that the CBP operations may result in significant impacts to the movement of the plumes, the Watermaster will require the IEUA to implement mitigation (enforced through MM **HYD-7**) to reduce their impacts to less than significant levels.

General Impacts to Groundwater from CBP Implementation

As previously stated, MM **HYD-7** addresses the plan of response by the Watermaster and the IEUA should the Basin conditions come to vary from the

projections that have been modeled as part of the CBP planning. This measure would enable the Watermaster to modify previously agreed upon mitigation measures to address actual Basin conditions and apply these measures to the CBP. This allows for flexibility in how the Watermaster approaches minimizing the groundwater issues outlined herein to below significance levels.

The PEIR acknowledges that monitoring is not mitigation in and of itself, but it is essential to the Watermaster's mitigation process because it identifies the potential for a potential significant impact (MPI) that could evolve. Data indicating that a significant impact may be evolving will allow the Watermaster to initiate any of the mitigation measures outlined above that can reduce or eliminate the potential impact identified through monitoring through adaptive management. Based on this information, the project does not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

- c(i). **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) result in substantial erosion or siltation onsite or offsite?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-295 to 4-299, FPEIR)

Facts: The majority of the proposed facilities would not alter the course of a stream or river; though the installation of some monitoring devices would be placed within surface water, these devices would not substantially impact the course of a stream or river due to their small size. The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels. The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation is required.

MM **HYD-8** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects.

During project design, overland flows and drainage at each CBP project site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the Riverside and San Bernardino County MS4 Permits. As required by MM **HYD-9**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increase in erosion or sedimentation would occur. Impacts would be less than significant with mitigation.

MM **HYD-10** would require CBP projects at existing well sites to remain within disturbed areas wherever feasible to minimize the potential for further ground disturbance at these sites, which may result in substantial siltation or erosion. MM **HYD-11** would require all disturbed areas that are not covered in hardscape or

vegetation would be revegetated or landscaped at future CBP facility sites to minimize the potential for erosion on- or off-site to an insignificant level.

The mitigation measures addressed above are required to address potential impacts related to onsite drainage at future CBP facilities. Ultimately, with implementation of these mitigation measures, the CBP would have a less than significant potential to result in substantial erosion or siltation onsite or offsite.

- c(ii). **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-299 to 4-302, FPEIR)

Facts: The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns. Compliance with the CGP, SWPPP, County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels. The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation is required to address the increased potential for flooding on- or off-site.

MM **HYD-8** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would control urban runoff and thereby reduce potential on- and off-site flooding.

During project design, overland flows and drainage at each CBP project site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the Riverside and San Bernardino County MS4 Permits. As required by MM **HYD-9**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential on- or off-site flooding would occur. Impacts would be less than significant with mitigation.

MM **HYD-10** would require CBP projects at existing well sites to remain within disturbed areas wherever feasible to minimize the potential for further ground disturbance at these sites, which may result in on- or off-site flooding. MM **HYD-11** would require all disturbed areas that are not covered in hardscape or vegetation would be revegetated or landscaped at future CBP facility sites to minimize the potential for on- or off-site flooding to an insignificant level.

The mitigation measures addressed above are required to address potential impacts related to onsite drainage at future CBP facilities. Ultimately, with implementation of these mitigation measures, the CBP would have a less than significant potential to substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite.

- c(iii). **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-302 to 4-304, FPEIR)

Facts: The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns, which could result in excess runoff. Compliance with the CGP, SWPPP, County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels.

The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for CBP facilities to create or contribute runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

MM **HYD-8** would require implementation of BMPs for projects of less than one acre in size that would be comparable to the requirements of the CGP and SWPPP, which are required for larger projects. This measure would control urban runoff and thereby reduce potential for substantial polluted runoff.

During project design, overland flows and drainage at each CBP project site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the Riverside and San Bernardino County MS4 Permits. As required by MM **HYD-9**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial contribution of runoff to area drainage systems would occur. Impacts would be less than significant with mitigation.

MM **HYD-12** is provided to ensure that brine generated by water treatment systems would be disposed of in a manner that would minimize the potential for release of polluted runoff.

The mitigation measures addressed above are required to address potential impacts related to onsite drainage at future CBP facilities. Ultimately, with implementation of these mitigation measures, the CBP would have a less than significant potential to create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.

- c(iv). **Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (iv) impede or redirect flood flows?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-304 to 4-307, FPEIR)

Facts: The construction of proposed facilities would require activities that would temporarily alter each project site's existing ground surface and drainage patterns, which could result in impeding or redirecting flood flows. Compliance with the CGP, SWPPP, County MS4 Permits, and BMPs enforced through mitigation provided below would minimize all construction impacts to less than significant levels.

The presence of all new facilities at each project site could change permeable and impermeable surfaces and alter the direction and volume of overland flows. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for CBP facilities to impede or redirect flood flows. Furthermore, given that the Chino Basin contains areas that are located within flood hazard zones, the development of several facilities in a given area may, when combined, result in a substantial potential to impede or redirect flows; as such, mitigation is required to minimize impacts thereof.

During project design, overland flows and drainage at each CBP project site would be assessed and drainage facilities would be designed such that no net increase in runoff would occur, in accordance with the Riverside and San Bernardino County MS4 Permits. As required by MM **HYD-9**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure no increase in offsite discharges would occur and no substantial increased potential for impeding or redirecting flood flows would occur. Impacts would be less than significant with mitigation.

The Chino Basin contains several areas in the 100-year floodplain, particularly given the creeks, channels, and Santa Ana River that are within or along the boundaries of the Chino Basin. As such, MM **HYD-13** would ensure that future CBP projects located within a floodplain would be further evaluated to determine their potential to impede or redirect flood flows.

The mitigation measures addressed above are required to address potential impacts related to onsite drainage at future CBP facilities. Ultimately, with implementation of these mitigation measures, the CBP would have a less than significant potential to impede or redirect flows.

d. Would the project In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-307 to 4-310, FPEIR)

Facts: The presence of all new facilities at each project site could create a new risk for pollutants within a given site to be released as a result of inundation. As such, mitigation to address implementation of a drainage management plan or otherwise retain runoff onsite for each project is required to reduce potential for CBP facilities to risk release of pollutants from inundation. Furthermore, given that the Chino Basin contains areas that are located within flood hazard zones, the development of several facilities in a given area may, when combined, result in a substantial potential to release pollutants as a result of inundation; as such, mitigation is required to minimize impacts thereof.

As required by MM **HYD-9**, either surface runoff shall be collected and retained or a grading and drainage plan would be developed during project design and implemented to ensure that pollutants are managed on site and the potential for risk of release thereof due to inundation is minimized. Impacts would be less than significant with mitigation.

MM **HYD-12** is provided to ensure that brine generated by water treatment systems would be disposed of in a manner that would minimize the potential to release pollutants as a result of inundation. The Chino Basin contains several areas in the 100-year floodplain, particularly given the creeks, channels, and Santa Ana River that are within or along the boundaries of the Chino Basin. As such, MM **HYD-13** would ensure that future CBP projects located within a floodplain would be further evaluated to determine their potential to result in significant impacts related to flood inundation.

The mitigation measures addressed above are required to address potential impacts related to flooding and pollutant release at future CBP facilities. Ultimately, with implementation of these mitigation measures, the CBP would have a less than significant potential to risk release of pollutants due to project inundation.

- e. **Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-310 to 4-311, FPEIR)

Facts: The Watermaster and the IEUA are co-permittees for the Chino Basin maximum-benefit SNMP incorporated in the Basin Plan. The maximum-benefit SNMP was developed pursuant to the OBMP to enable the recharge and reuse of recycled water in the Basin. It defines the management actions that the Watermaster and IEUA must take to manage total dissolved solids (TDS) and nitrate concentrations in Chino Basin groundwater and in the IEUA's recycled water and the TDS and nitrate concentration limitations for recycled water reuse activities. The CBP will be operated such that there is no conflict with or obstruction of the Basin Plan. The Watermaster administers the Chino Basin Judgment to ensure the sustainable management of the Chino Basin. By implementing the mitigation actions that Watermaster may require to conduct the CBP, which are enforceable via MMs **HYD-1** through **HYD-7**, the IEUA will ensure that the CBP will not conflict with or obstruct implementation of the Chino Basin Judgment.

These measures would require the Watermaster to continue monitoring efforts to manage the Chino Basin, and to respond to the data gathered through these monitoring efforts with mitigation that would protect MPI and other constraints from occurring to the Chino Basin. As such, with implementation of the above mitigation, the Watermaster would be able to respond to any adverse changes in the Basin with mitigation that would minimize impacts to the Basin. Therefore, implementation of the CBP would have a less than significant potential to conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

Mitigation Measures

The IEUA has determined that the proposed project may adversely impact the hydrology of the Chino Basin and water quality during construction and operation. Mitigation to reduce this impact to below a level of potential significance is provided below.

- HYD-1:** *Watermaster shall review the IEUA's Storage and Recovery Program application for the CBP and estimate the surface and ground water systems' response (estimate the potential for new pumping sustainability challenges). Watermaster shall then prepare a report that describes the response and potential Material Physical Injury (MPI) to the Chino Basin and shall develop mitigation requirements pursuant to MM HYD-2 to mitigate MPI caused by the CBP. The IEUA shall develop mitigation measures pursuant to these requirements established by the Watermaster; these measures shall be incorporated into its Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures shall be incorporated into the CBP storage agreement.*
- HYD-2:** *To mitigate MPI caused by the IEUA's proposed Storage and Recovery Program application (as described above under HYD-1), the data gathered through Watermaster's comprehensive groundwater-level monitoring shall be used to identify potential impacts on pumping sustainability and to develop mitigation requirements to mitigate for these impacts. Potential mitigation includes, but is not limited to: (1) modifying the PUT operations and/or TAKE cycles to minimize impacts to pumping sustainability, (2) strategically increasing supplemental water recharge to mitigate loss of pumping sustainability, (3) modifying a party's affected well (lowering pump bowls), (4) providing an alternate supply to the affected party to ensure it can meet its demands, (5) a combination of (1) through (4), and (6) the implementation of a monitoring program to verify the effectiveness of the mitigation actions.*
- HYD-3:** *Watermaster shall review the IEUA's Storage and Recovery Program application for the CBP and estimate the surface and ground water systems' response (estimate the potential for new land subsidence). Watermaster shall then prepare a report that describes the response and potential MPI to the Chino Basin and shall develop mitigation requirements to mitigate MPI caused by the proposed CBP. The IEUA shall develop mitigation measures pursuant to these requirements pursuant to MM HYD-4 established by the Watermaster; these measures shall be incorporated into its Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures will be incorporated into the CBP storage agreement.*
- HYD-4:** *To mitigate the potential for new land subsidence caused by the IEUA's proposed Storage and Recovery Program application (as described above under HYD-3), the data gathered through Watermaster's comprehensive groundwater-level and ground-level monitoring shall be used to identify the potential for new land subsidence and to develop mitigation requirements to mitigate for these impacts. Potential mitigation includes, but is not limited to: (1) modifying the PUT operations and/or TAKE cycles to ensure the CBP does not contribute to the lowering of groundwater-levels below the new land subsidence metric, (2) providing an alternate supply to MZ-1 producers to maintain groundwater-levels above the new land subsidence metric, to the extent that the CBP affects them, (3) a combination of (1) and (2) above, and (4) the implementation of a monitoring program to verify the effectiveness of the mitigation actions.*
- HYD-5:** *Watermaster shall estimate the reduction in net recharge and Safe Yield for the CBP and deduct it from water stored in the CBP storage account, which will compensate for its impact on net recharge and Safe Yield. Watermaster shall review these impacts and develop mitigation requirements for the CBP. The IEUA shall develop mitigation measures pursuant to the requirements suggested in MM HYD-6 and established by Watermaster; these measures shall be incorporated into the IEUA's Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures shall be incorporated into the CBP storage agreement.*
- HYD-6:** *To mitigate reduction in net recharge and Safe Yield caused by the CBP (as described above under HYD-5), the Watermaster's comprehensive monitoring and modeling that estimates net recharge of the Chino Basin shall be used to identify potential and actual losses of net recharge and to develop mitigation requirements to mitigate impacts thereof. Potential mitigation includes, but is not limited to: (1) modifying the PUT operations and/or TAKE cycles to minimize reductions in net recharge, (2) deducting the reduction in net recharge from the IEUA's Storage and Recovery account, (3) recharge additional water to mitigate reductions in net recharge, (4) construct facilities in the southern part of the Basin to eliminate the reduction of net recharge due the CBP, (5) a combination of (1) through*

(4), and (6) the implementation of a monitoring program to verify the effectiveness of the mitigation actions.

- HYD-7:** *Watermaster shall periodically review current and projected Basin conditions and shall compare this information to the projected Basin conditions assumed in the evaluation of the CBP Storage and Recovery Program application process, compare the projected CBP operations to actual operations. The Watermaster shall then make findings regarding the efficacy of the mitigation program and requirements required herein and by the CBP storage agreement. Based on Watermaster's review and subsequent findings, where applicable, Watermaster shall require changes and/or modifications in the CBP storage agreement that will adequately mitigate MPI and related adverse impacts including but not limited to pumping sustainability, net recharge and safe yield, subsidence, hydraulic control, and groundwater quality.*
- HYD-8:** *Prior to the commencement of construction of any CBP project that will disturb less than one acre (i.e., that is not subject to the California Construction Stormwater General Permit), IEUA shall require implementation of and construction contractor(s) shall select best management practices (BMPs) to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each CBP facility, and to control urban runoff after each CBP facility is constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:*
- The use of silt fences or coir rolls;*
 - The use of temporary stormwater desilting or retention basins;*
 - The use of water bars to reduce the velocity of stormwater runoff;*
 - The use of wheel washers on construction equipment leaving the site;*
 - The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
 - The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
 - Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*
- HYD-9:** *Prior to commencement of construction of project facilities, IEUA shall be required to either:*
- (1) Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the Watermaster and/or Implementing Agency shall:*
 - (2) Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, best management practices, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*
- HYD-10:** *To minimize potential ground disturbances associated with installation and maintenance of wellhead treatment at existing wells, the equipment and treatment facilities shall be installed within or along existing disturbed easements or rights-of-way or otherwise disturbed areas, including access roads and pipeline or existing utility easements, whenever feasible.*
- HYD-11:** *For long-term mitigation of site disturbances at CBP facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.*

HYD-12: *All new and expanded water treatment facilities associated with the CBP shall ensure that any brine generated from the water treatment process that cannot be otherwise treated on-site is disposed of in accordance with state and local regulations—such as through disposal to a brine line (Non-Reclaimable Wastewater System, Etiwanda Wastewater Line, and Inland Empire Brine Line, etc.)—to prevent brine from being discharged into the local stormwater collection system.*

HYD-13: *IEUA shall verify that any given CBP facility (excepting those located at existing facilities [wells, water treatment plants, etc.] and pipelines and turnouts located belowground) is located outside of the 100-year floodplain by utilizing the FEMA FIRM panels for the selected area prior to project implementation. If a given project is located outside of the 100 year floodplain, then no subsequent CEQA documentation specific to floodplains are required. However, if a project is located within the 100-year floodplain either (1) a new location outside of the 100-year floodplain shall be selected, or (2) a second tier CEQA evaluation shall be completed that would address the given project's location within the 100-year floodplain.*

IEUA finds that implementation of the above measures would minimize hydrology and water quality impacts to a less than significant level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future CBP development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant adverse impact due to the actions proposed as part of the CBP, or to the water quality of the Chino Basin with implementation of mitigation provided above, the CBP is not forecast to contribute to cumulatively considerable hydrology and water quality impacts.

9. Land Use / Planning

a. Would the project physically divide an established community?

Finding: No Impact (pg. 4-350 to 4-352, FPEIR)

Facts: The project does not propose any action that could physically divide an established community. The physical division of an established community generally refers to the construction of features such as an interstate highway, railroad tracks, or permanent removal of a means of access, such as a local road or bridge that would impact mobility within an existing community or between a community and outlying area.

The development of the AWPf at RP-4 would occur within developed sites already dedicated to wastewater treatment facilities. There are no features of the treatment facility upgrades that would create a barrier or physically divide an established community. Aboveground facilities would be integrated into the existing urban/industrial character surrounding a treatment plant. As such, there would be no impact. However, the exact locations of the proposed wellhead treatment facilities have not yet been determined, but there are no features of these treatment facilities that would create a barrier or physically divide an established community. No impacts are anticipated.

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-352 to 4-354, FPEIR)

Facts: Because the precise location for future wells is presently unknown, CBP facilities may be developed across other designated land uses. Per Government Code

Section 53091, building ordinances of local cities or counties do not apply to the location or construction of facilities for the projection, generation, storage, treatment, or transmission of water or wastewater. Therefore, any project facilities that conflict with local General Plan land use designations would not be subject to a conditional use permit or general plan amendment. The IEUA would determine the most suitable locations to place facilities, taking into consideration surrounding land uses. The IEUA would coordinate directly with local agencies with jurisdiction to ensure compatibility with existing adjacent land uses. Future CBP facilities may result in land use incompatibilities with adjacent uses; therefore, mitigation is required to ensure incompatibilities are minimized.

MM **LU-1** would ensure that the facilities associated with the CBP are developed in appropriate areas, and conform with the surrounding land uses or are developed to minimize conflicts with adjacent land uses. This measure will minimize impacts below significance thresholds. For these reasons, the proposed project would result in a less than significant impact related to potential conflicts with land use plans, policies, or regulations.

Mitigation Measures

The IEUA has determined that implementation of the proposed project may result in land use conflicts. Mitigation to reduce this impact to below a level of potential significance is provided below.

LU-1: *Following selection of sites for future CBP-related facilities, each site and associated facility shall be evaluated for potential incompatibility with adjacent existing or proposed land uses. Where future facility operations can create significant incompatibilities (lighting, noise, use of hazardous materials, traffic, etc.) with adjacent uses, an alternative site shall be selected, or subsequent CEQA documentation shall be prepared that identifies the specific project design features or mitigation measures that will be utilized to reduce potential incompatible activities or effects to below significance thresholds established in the general plan for the jurisdiction where the facility will be located.*

IEUA finds that implementation of the above measure would reduce potential land use conflicts. The above measure can be implemented without causing additional adverse environmental impacts. The above measure will be integrated into the future development activities without additional impacts on the environment. Since the proposed project, as analyzed above, will not directly or indirectly cause significant land use conflicts with implementation of mitigation, the proposed project is not forecast to contribute cumulatively to land use conflicts.

12. Mineral Resources

- a. **Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-359 to 4-360, FPEIR)

Facts: Much of the Chino Basin has been urbanized, resulting in very few areas containing mineral resources that are not already utilized for mining activities. However, these mineral deposits are endangered by the same urbanization that enhances their value. The only significant mineral resources that occur within or near the project area are limestone, sand and gravel, crushed rock and rip rap. The location of these resources is primarily in the Jurupa and Pedley Hills, and also near the Santa Ana

River. As such, there is a nominal potential for future CBP facilities to be located within a site containing mineral resources, which could result in the loss of available mineral resources. Thus, mitigation is required in order to minimize potential impacts thereof.

The implementation of MM **MR-1** would ensure that the proposed facilities associated with the CBP would not result in significant loss of mineral resources through either relocation, or compensation for development proposed to be located within an area containing significant mineral resources.

Through compliance with the above mitigation measure, the CBP would have a less than significant potential to result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

- b. **Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-359 to 4-360, FPEIR)

Facts: The only significant mineral resources that occur within or near the project area are limestone, sand and gravel, crushed rock and rip rap. The location of these resources is primarily in the Jurupa and Pedley Hills, and also near the Santa Ana River. At the project specific level, the facilities associated with the CBP may have a very small impact on mineral resources. Some CBP facilities may be large enough to interfere with locally important mineral resources recovery sites, should these facilities be located within such sites. As such, mitigation is required to minimize potential impacts below significance thresholds.

Implementation of MM **MR-1** is sufficient to reduce the potential for impacts to mineral resources to a less than significant level through either relocation, or compensation for development proposed to be located within an area containing significant mineral resources.

Therefore, the installation and operation of CBP facilities has little potential to have a direct adverse impact on mineral resources, unless the parcel(s) selected for such facilities are within an active mining area or are designated for recovery of mineral resources. Implementation of MM **MR-1** is sufficient to reduce the potential for impacts to mineral resources to a less than significant level.

Mitigation Measures

There are—as described in Subchapter 4.13 of the FPEIR—limited mineral resources that occur in the northern portion of the Chino Basin. There is a nominal potential for future CBP facilities to be installed within a mineral resource zone. As such, mitigation has been identified to minimize mineral resource impacts.

MR-1: *IEUA shall locate each facility proposed under the CBP outside of sites designated for the extraction of or as containing significant mineral resources (such as, located within MRZ-2 zones) or otherwise identified by the local jurisdiction as containing important mineral resources (such as, designated by the local general plan as being located within a mineral extraction related land use). Where it is not feasible to locate such facilities outside of sites designated for mineral resources, subsequent*

CEQA documentation shall be prepared to identify specific measures to mitigate the loss of mineral resources.

IEUA finds that, with implementation of this mitigation measure, the project-related mineral resource impacts would be reduced to a level of insignificance, and as such, the proposed project will not cause unavoidable significant mineral resource impacts.

13. Noise

- a. **Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-392 to 4-402, FPEIR)

Facts: Construction noise attenuates rapidly with distance, especially in urban environments with intervening structures and noise sources, and construction noise generated at one CBP construction site would generally not affect the same receivers as construction noise generated at another CBP construction site if the construction sites are located more than 200 feet apart from each other. Although multiple individual projects under the CBP may be constructed simultaneously, each project under construction would not be located in such close proximity to other projects under construction. Thus, it is unlikely that the combined effects of individual projects under all project categories would result in greater construction noise impacts than those evaluated for each project category. If residential land uses are located within 100 feet of individual construction sites or if commercial land uses are located within 50 feet of individual construction sites, then individual CBP development projects could result in a potentially significant daytime construction noise impact. Therefore, implementation of MMs **NOI-1** through **NOI-3** would be required, which would reduce the impact to a less than significant level. Additionally, construction of individual projects under the CBP would also temporarily generate additional vehicle trips in the Chino Basin associated with construction workers traveling to and from construction sites, material deliveries, concrete trucks, water trucks, and soil material import/export. These additional traffic volumes would be dispersed throughout the Chino Basin on local and regional roadways in proximity to each well site. The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under the CBP would increase off-site traffic noise levels by 3 dBA. Therefore, construction traffic noise impacts would be less than significant.

Similarly, residential land uses are located within 225 feet of individual construction sites or if commercial land uses are located within 50 feet of individual construction sites where nighttime well drilling activities would occur, then individual projects under the CBP could result in a potentially significant nighttime construction noise impact. Therefore, implementation of MMs **NOI-1** through **NOI-3** would be required, which would reduce the impact to a less than significant level. No additional combined nighttime construction noise impacts would occur.

Operational noise levels associated with extraction wells with aboveground pumps may exceed the operational noise thresholds for sensitive land uses established by the local jurisdiction. As a result, implementation of Mitigation Measure **NOI-4** would be required for implementation of future CBP facilities, which would reduce impacts

to a less than significant level. Additionally, combined operational noise levels associated with individual projects under all project categories may exceed the operational noise thresholds for sensitive land uses established by the local jurisdiction. As a result, implementation of MM **NOI-4** would be required for all CBP projects with noise-generating components (i.e., extraction wells, pump stations, and wellhead treatment facilities) located within 1,000 feet of each other, which would reduce impacts to a less than significant level.

The limited number of trips would not have the potential to double traffic volumes even on low-volume local roadways. Thus, it is unlikely that individual projects implemented under the CBP would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required. Additionally, it is unlikely that the combined effects of individual projects under all project categories would have the potential to double traffic volumes even on low-volume local roadways. As a result, it is unlikely that the CBP would increase off-site traffic noise levels by 3 dBA. Therefore, off-site traffic noise impacts would be less than significant, and no mitigation is required.

Overall, MMs **NOI-1** through **NOI-4**, which would ensure that construction noise studies are conducted for specific CBP projects; ensure that construction noise and vibration reduction measures are implemented where identified in the site specific noise study, and where project-level construction noise cannot be reduced below significance thresholds, IEUA shall seek a variance from the local noise ordinance prior to initiating construction; ensure operational noise studies are conducted for specific CBP project sites with operational noise reduction measures implemented, where applicable, and ensure that where operational noise cannot be reduced to below significance thresholds at a specific site, an alternative location is selected or subsequent CEQA documentation shall be performed, would minimize the potential for the CBP to result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of a project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-402 to 4-406, FPEIR)

Facts: At this time, individual projects that may be implemented under Project Category 1 do not have sufficient detail to allow project-level analysis of vibration impacts during construction. However, if historic sites, structures, or vibration-sensitive land uses are located within the minimum distances for drill rigs shown in Table 4.14 25, then individual projects under the CBP could result in a potentially significant daytime construction vibration impact. In addition, if nighttime well drilling occurs within 55 feet of land uses where people sleep, then individual projects under the CBP could also result in a potentially significant nighttime construction vibration impact. Therefore, implementation of MMs **NOI-5** through **NOI-7** would be required, which would reduce impacts to a less than significant level. These measures would ensure that vibration generating equipment operate outside of the minimum distances from sensitive receivers; ensure that minimal-vibration-producing equipment is used near historic structures; and, where construction must occur outside of the specified buffer distance intended to minimize construction related vibration, mitigation is

implemented, where vibration levels cannot be reduced to below significance thresholds, an alternative location is selected or subsequent CEQA documentation shall be performed.

Vibration generated at one CBP construction site would generally not affect the same receivers as vibration generated at another CBP construction site if the construction sites are located more than 120 feet apart from each other. Although multiple individual projects under the CBP may be constructed simultaneously, each project under construction would not be located in such close proximity to other projects under construction. Thus, it is unlikely that the combined effects of individual projects under all project categories would result in greater construction vibration impacts than those evaluated above for each project category. No additional construction vibration impacts would occur as a result of the combined project categories.

Operational activities associated with individual projects implemented under the CBP would not include sources of vibration, such as heavy machinery. Components such as injection, extraction, and monitoring wells, pump stations, water treatment facilities, pipelines, turnouts, and reservoirs, do not generate substantial vibration. Therefore, no operational vibration impact would occur, and no mitigation is required.

- c. **Would the project result in, for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?**

Finding: Less Than Significant Impact (pg. 4-406 to 4-408, FPEIR)

Facts: Public use airports and private air strips are located within and near the Chino Basin, including the Ontario International Airport, San Bernardino International Airport, Riverside Municipal Airport, Corona Municipal Airport, Chino Airport, Cable Airport, Flabob Airport, and Brackett Field Airport. Of the known locations in which CBP facilities will be located, there are a few that will be installed within a two-mile radius of the nearest airport. At these locations, construction contractors would be required to comply with California Occupational Safety and Health Administration regulations related to worker exposure to noise. Section 5096 of these regulations sets duration-based noise exposure limits for construction workers that require provision of personal protective equipment should exposure exceed the specified limits. The requisite adherence to these regulations would reduce construction worker exposure to high noise levels such that proposed CBP construction activities would not expose employees to excessive noise levels. Therefore, construction workers would not be exposed to excessive noise levels from aircraft noise.

Some individual projects implemented under the proposed CBP may be located within two miles of a public use airport or private airstrip. However, none of the proposed CBP projects involve operation of noise-sensitive receivers, such as residences or schools, that would be exposed to excessive airport noise in the Chino Basin. Furthermore, most projects proposed under the CBP would be unmanned and would require infrequent maintenance visits that likely would not require extended exposure to aircraft noise if projects were located near airports or airstrips. IEUA would be required to comply with California Occupational Safety and Health Administration regulations related to worker exposure to noise. These regulations would reduce employee exposure to high noise levels such that operational activities

would not expose employees to excessive noise levels. Therefore, operational impacts related to aircraft noise would be less than significant, and no mitigation is required.

Mitigation Measures

The IEUA has determined that the proposed project may cause significant short- and long- term noise impacts, as well as short-term vibration impacts, and may cause significant impacts to workers at future CBP sites from airport noise. The Chino Basin contains extensive areas with noise sensitive land uses. Due to these substantial noise constraints and the installation of future noise-producing CBP facilities in locations where such noise sensitive uses may exist, a potential for significant noise impacts from implementation of the CBP. However, several mitigation measures were identified to minimize noise impacts as outlined below:

NOI-1: *The following construction noise control practices shall be implemented at all CBP construction sites:*

- *Construction staging and activities shall be located in areas as far as practicable from sensitive receivers or in areas where receivers can be shielded from construction noise.*
- *Whenever practicable, construction activities shall be scheduled so as to avoid operating several pieces of equipment simultaneously.*
- *All heavy-duty stationary construction equipment shall be placed so that emitted noise is directed away from the nearest sensitive receivers.*
- *IEUA shall provide a non-automated telephone number for local residents to call to submit complaints associated with construction noise during all phases of construction. IEUA shall maintain a log of complaints and shall address complaints to minimize noise issues for neighbors.*

NOI-2: *Project-level construction noise studies shall be conducted for the following project activities that would exceed the screening criteria for a less than significant impact:*

- *All projects under Project Category 1, if the center of the construction site would be located within 225 feet of residential land uses and/or within 50 feet of commercial land uses*
- *All projects under Project Category 2, if the center of the construction site would be located within 100 feet of residential and/or commercial land uses*
- *Wellhead treatment projects under Project Category 4, if the center of the construction site would be located within 100 feet of residential land uses and/or within 50 feet of commercial land uses*

Such noise studies shall identify the existing ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during construction of individual projects, compare estimated noise levels to the daytime and/or nighttime construction noise criteria in the FTA (2018) Transit Noise and Vibration Impact Assessment Manual, outline measures that may be used to reduce noise levels, and determine the amount of noise reduction that would occur with implementation of these measures. If the individual project would be constructed concurrently with development projects located within a 0.5-mile radius of the individual project location, the noise study shall also consider the cumulative impact of construction noise on sensitive receivers. If the project-level noise study concludes that noise reduction measures are required, Mitigation Measure NOI-3 shall be implemented.

NOI-3: *If the results of the project-level construction noise study prepared under Mitigation Measure NOI-2 determine noise reduction measures are required, noise reduction measures shall be implemented to reduce noise levels to at or below the daytime and/or nighttime construction noise criteria in the FTA (2018) Transit Noise and Vibration Impact Assessment Manual. Construction noise reduction measures may include, but would not be limited to, the use of mufflers, sound blankets/barriers, and/or enclosures; scheduling construction activities to minimize simultaneous operation of noise-producing equipment; and/or temporary accommodations for affected residents. If applicable, construction noise reduction measures shall be implemented to reduce cumulative noise levels to local jurisdiction or FTA (2018) construction noise criteria. If project-level construction noise cannot be reduced to at or below the local jurisdiction acceptable noise levels or daytime and/or nighttime*

construction noise criteria in the FTA (2018) Transit Noise and Vibration Impact Assessment Manual, IEUA shall seek a variance from the local noise ordinance prior to initiating construction.

- NOI-4:** *Prior to the commencement of construction activities for individual projects with noise-generating components (i.e., extraction wells, pump stations, and wellhead treatment facilities) where sensitive receivers are located within 1,000 feet of the individual project sites, project-level operational noise studies shall be conducted. Such noise studies shall identify the ambient noise levels, characterize the nearest sensitive receivers, estimate the noise levels receivers will experience during operation of individual projects during the operational period, and compare estimated noise levels to the noise level standards of the applicable jurisdiction. If one or more other individual CBP projects with noise-generating components are proposed to be located within 1,000 feet of the individual project under evaluation, the operational noise study shall also evaluate the combined operational noise levels generated by all CBP projects within 1,000 feet of the individual project site. The operational noise study shall also outline measures that shall be implemented to reduce noise levels below the local jurisdiction's noise standards and demonstrate how implementation of these noise reduction measures would reduce noise levels below the applicable standards. Noise reduction measures may include, but would not be limited to, alternative site design, alternative orientation of noise sources, alternative equipment selection, use of sound enclosures, and construction of berms and/or barriers. Noise reduction measures shall be implemented to reduce noise levels to the noise level standards of the applicable jurisdiction. If project-level operational noise cannot be reduced to at or below the local jurisdiction acceptable noise levels, IEUA shall either (1) select an alternative site location that avoids exceeding the noise level standards of the applicable jurisdiction at the nearest sensitive receptor, or (2) undergo subsequent CEQA documentation to assess potential site-specific noise impacts from locating a future facility in close proximity to sensitive receptors.*
- NOI-5:** *Whenever practicable, vibration-generating equipment including bull dozers, loaded trucks, drill rigs, vibratory rollers, and jackhammers shall operate outside the minimum distances specified in Table 4.14-25 of the draft PEIR for historic sites, other structures, and vibration-sensitive receivers during CBP construction activities. Furthermore, whenever practicable, vibration-generating equipment including bull dozers, loaded trucks, drill rigs, vibratory rollers, and jackhammers shall not be operated concurrently with vibration-generating equipment associated with cumulative development projects located within 600 feet of CBP construction sites.*

(copied here to accompany this measure)

Table 4.14-25

VIBRATION LEVEL CONTOURS DURING CONSTRUCTION ACTIVITIES

Equipment	Minimum Distance to Receiving Land Use for a Less Than Significant Impact (feet)			
	Historic Sites ¹	All Other Structures ²	Daytime Vibration-Sensitive Land Uses ³	Nighttime Vibration-Sensitive Land Uses ⁴
Large Bull Dozer	20	15	10	55
Small Bull Dozer	5	5	5	5
Loaded Truck	20	10	10	35
Drill Rig ⁵	20	15	15	55
Vibratory Roller	40	30	25	110
Jackhammer	10	5	5	25

- NOI-6:** *Whenever practicable at CBP construction sites within 120 feet of historic sites, other structures, and vibration-sensitive receivers during CBP construction activities, non-vibratory rollers and small bull dozers shall be utilized instead of vibratory rollers and large bull dozers.*
- NOI-7:** *If operation of construction equipment outside the specified buffer distances in Table 4.14-25 of the draft PEIR (copied and provided under NOI-5) is not practicable, a detailed study of vibration impacts shall be conducted prior to the commencement of construction for that project. Such vibration studies shall characterize the nearest historic sites, structures, and/or sensitive receivers; estimate the vibration levels receivers will experience during construction of individual projects; compare estimated vibration levels to applicable FTA (2018) Transit Noise and Vibration Impact Assessment*

Manual and Caltrans (2020) Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-20-365.01.01); standards for vibration impacts related to structural damage and human annoyance; outline any measures that may be used to reduce vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Vibration reduction measures may include, but would not be limited to, the use of non-vibratory equipment, vibration monitoring, repair of structural damage, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, and/or temporary relocation of affected residents. Construction vibration reduction measures shall be implemented to reduce vibration levels to FTA (2018) and Caltrans (2020) construction vibration thresholds. If project-level construction vibration cannot be reduced to at or below the FTA (2018) and Caltrans (2020) construction vibration thresholds, IEUA shall either (1) select an alternative site location that avoids exceeding the FTA (2018) and Caltrans (2020) construction vibration thresholds at the nearest historic sites, structures, and/or sensitive receivers, or (2) undergo subsequent CEQA documentation to assess potential site-specific vibration impacts from locating a future facility in close proximity to historic sites, structures, and/or sensitive receivers.

If the individual project would be constructed concurrently with cumulative development projects located within a 600-foot radius of the individual project construction site, the vibration study shall also consider the cumulative impact of combined vibration levels at the nearest sensitive receivers by estimating the combined vibration levels receivers will experience during construction of individual projects and cumulative development; compare estimated vibration levels to applicable standards for vibration impacts related to structural damage and human annoyance identified by Caltrans (2020) and the FTA (2018); identify whether the individual project's contribution to any identified cumulative impact would be cumulatively considerable; outline any measures that may be used to reduce the project's contribution to combined vibration levels; and determine the amount of vibration reduction that would occur with implementation of these measures. Such measures may include, but are not limited to, the use of non-vibratory equipment, vibration monitoring, repair of structural damage, the installation of wave barriers, maximization of the distance between vibratory equipment and receivers, restriction of vibration-generating activities to daytime hours, and/or temporary relocation of affected residents. Construction vibration reduction measures shall be implemented to reduce cumulative vibration levels to Caltrans and FTA construction vibration thresholds. If cumulative construction vibration cannot be reduced to at or below the FTA (2018) and Caltrans (2020) construction vibration thresholds, IEUA shall either (1) select alternative site locations that avoid exceeding the FTA (2018) and Caltrans (2020) construction vibration thresholds at the nearest historic sites, structures, and/or sensitive receivers, or (2) undergo subsequent CEQA documentation to assess potential site-specific vibration impacts from locating a future facility in close proximity to historic sites, structures, and/or sensitive receivers.

The IEUA finds that implementation of the above measures would reduce potential construction noise impacts to a less than significant impact level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant construction noise impacts with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable noise during construction activities.

14. Population and Housing

- a. Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Finding: Less Than Significant Impact (pg. 4-415 to 4-416, FPEIR)

Facts: Construction of the proposed infrastructure would require temporary employment. It is reasonable to assume that the majority of the construction employment opportunities would be filled by workers living within the Chino Basin area or in close

proximity. Operation and maintenance of the majority of the proposed infrastructure would be anticipated to be provided primarily by existing IEUA employees within the Chino Basin area, although the AWPf is anticipated to require 8 new operations and maintenance staff. However, the number of new employees required would be minimal and the majority of employees are expected to be drawn from existing population within the Chino Basin. Therefore, the potential increase in new residents within the Chino Basin would be nominal.

Implementation of the proposed project would increase the resiliency and sustainability of regional water resources management within the Chino Basin area; however, it is not forecast to change land uses or otherwise create activities that could increase population or employment beyond that which is anticipated in the local jurisdictions' General Plans. Ultimately, the CBP and its implementation are one step removed from actual development and provisions of adequate water supplies in support of building-out each jurisdictions' general plan. Water does not serve as a constraint to growth and by planning and expanding water system infrastructure to meet this future demand, water purveyors are growth accommodating, not growth inducing. Thus, the CBP does not remove any existing constraint on future development, because Chino Basin water purveyors have alternative means to meet future water demands. Therefore, the implementation of the proposed project would result in less than significant impacts related to inducement of population growth.

b. Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-416 to 4-418, FPEIR)

Facts: The proposed project is not anticipated to result in displacement of housing or persons; however, given that the locations of the many of the CBP facilities are presently unknown, it is remotely possible that the development of specific facilities could adversely impact existing housing, though many of the CBP facilities will be located within existing sites utilized for water and wastewater infrastructure. Implementation of mitigation is required to ensure that the CBP's potential to displace housing or persons is fully mitigated.

MM **POP-1** would ensure that the facilities associated with the CBP that must be located on parcels containing housing would be minimized through the provision of short- and long-term housing of comparable quality, thereby minimizing impacts below significance thresholds.

Ultimately, through the implementation of mitigation, the CBP is not forecast to cause a significant displacement of existing housing or persons.

Mitigation Measures

The IEUA has determined that the proposed project may displace persons or housing, which could result in a significant impact. A mitigation measure to reduce this impact to below a level of potential significance is provided below.

POP-1: *If future CBP facilities must be located on parcels occupied by existing housing and displaces that housing as a result, IEUA will assist with a relocation plan in conformance with Section 7260 et seq.*

of the California Government Code (“California Relocation Assistance Law” or the “Act”) to ensure that short- and long-term housing of comparable quality and value are made available to the occupant(s) prior to initiating construction of the facility.

The IEUA finds that implementation of the above measure would reduce potential for a substantial number of people to be displaced to a less than significant impact level. The above measure can be implemented without causing additional adverse environmental impacts. The above measure will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause substantial displacement of people or housing with implementation of mitigation, the CBP is not forecast to contribute to cumulatively considerable changes in population or housing during construction or operational activities.

13. Public Services

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

Finding: Less Than Significant Impact (pg. 4-435 to 4-436, FPEIR)

Facts: The proposed CBP does not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of new jobs that would result in new residents of the Chino Basin area. Operational activities associated with the proposed CBP facilities could require fire department service in the unlikely event of a hazardous materials emergency or accident/medical emergency at a given site. Although proposed CBP facilities may result in an additional demand on fire protection services, the implementation of the HMBP and/or continuation of adopted safety standards in addition to continuation of IEUA developed safety standards and operational procedures for safe transport and use of its operational and maintenance materials that are potentially hazardous, which comply with all federal, State, and local regulations, thereby minimizing the potential for the need for fire protection services. Any CBP project requiring structures will be required to meet building codes, including those related to fire protection, such as adequate fire flow. The indirect increase in population and the use of hazardous materials associated with project development would result in a nominal increase in fire protection services. As a result, no new fire protection facilities or altered facilities would be required. Impacts related to fire protection services would be less than significant.

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

Finding: Less Than Significant With Mitigation Incorporated (pg. 258-259, FPEIR)

Facts: The development of CBP facilities will not cause a significant demand for police protection services. Implementation of the proposed project is not forecast to change land uses or otherwise create activities that could increase demand for additional

police protection services beyond that which is anticipated in the local jurisdictions' General Plans. The Chino Basin area is currently served by police departments and agencies under authority of the various jurisdictions that comprise the Chino Basin. Overall levels of police service would be increased based upon the future population growth and related commercial and industrial growth within the Chino Basin. Operational activities associated with the proposed project could require police department service in the unlikely event of an emergency or trespass at a given project site. However, it is anticipated that all sites containing facilities associated with the proposed project would be fenced in and contain security lighting, which would minimize the future need for police protection from trespass. Though a significant demand for police protection services is not anticipated, mitigation is proposed to address trespass issues.

Implementation of MM **PS-1** would minimize the potential for trespass that could exacerbate police protection services. With implementation of this mitigation measure, the project-related police protection impacts would be reduced to a less than significant impact level.

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

Finding: Less Than Significant Impact (pg. 4-437, FPEIR)

Facts: The development of CBP facilities will not cause a significant demand for schools. Implementation of the proposed project would increase the resiliency and sustainability of regional water resources management within the Chino Basin area. However, implementation of the proposed project is not forecast to change existing land uses or increase either the number of residential units located within the Chino Basin area or the number of students generated from the Chino Basin area beyond that anticipated in the local jurisdictions' General Plans. Operation of the proposed project is not forecast to require more than 15 additional permanent employees which would result in a nominal increase in demand for school services. School Districts in the Chino Basin area have adopted classroom loading standards (number of students per classroom) and collect development impact fees per square foot of residential, commercial, and industrial development. Because the proposed project is not forecast to change land uses, increase housing, or create activities that can increase demand for additional school capacity beyond that anticipated in the local jurisdictions' General Plans, and because there are adopted standards and development fees are collected for new development, impacts related to demand for school services would be less than significant.

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

Finding: Less Than Significant With Mitigation Incorporated (pg.4-437 to 4-440, FPEIR)

Facts: The nominal potential increase in potential new residents within the Chino Basin may contribute to a minimal increased demand for parks. Nonetheless, because the proposed project would not substantially increase the population within the Chino Basin area, the proposed project would not substantially increase use of existing parks.

There is a potential that a proposed CBP facility could be located within existing parks or facilities designated for such uses. Construction and staging areas may result in the temporary closure of parks or portions of parks. However, several parks in the Chino Basin area would be available for use. This increased use of other parks would be temporary, during construction only. Once construction is completed, parks would return to serve their original purpose, with only slightly less parkland area available for use. In addition to potential development of CBP facilities within existing parks, there is a potential for wells or other CBP facilities to be developed within a vacant site designated for park use, which would effectively minimize available designated parkland within the Chino Basin. As such, mitigation is required to ensure that, for CBP facilities located within vacant land designated for park uses, or CBP facilities larger than one acre in size within existing park facilities, additional parkland is developed to supplement the loss of this parkland or recreation facility.

Implementation of MM **PS-2** above would minimize the potential for loss of park or recreational facilities as a result of CBP projects located within facilities designated for such uses. With implementation of this mitigation measure, the project-related parks and recreation impacts would be reduced to a less than significant impact level.

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

Finding: Less Than Significant Impact (pg. 4-440, FPEIR)

Facts: The development of the CBP will not cause a significant demand for or increase in library services. The proposed project would not include construction of housing that would result in any direct increase in demand for library or other public services. Operation of the proposed project is not forecast to require more than 15 additional permanent employees. However, new employees are anticipated to come primarily from within the Chino Basin area; therefore, the project would result in only a nominal increase in demand for libraries and other public services. Implementation of the proposed project would increase the resiliency and sustainability of regional water resources management within the Chino Basin area. However, the project is not forecast to change land uses or otherwise create activities that can increase demand for library services beyond that which is anticipated in the local jurisdictions' General Plans. Libraries are currently provided by the counties and other local agencies under authority of the various jurisdictions that comprise the Chino Basin. Local agencies would increase overall levels of library service based upon the future population within their jurisdiction. The project would not substantially increase demand for library or other public services and impacts would be less than significant.

Mitigation Measures

The IEUA has determined that the proposed project has little potential to impact public facilities. However, the following mitigation measures to reduce or remove any potential impact to police services, and to parks and recreation facilities to below a level of potential significance are provided below.

PS-1: *CBP facilities shall be fenced or otherwise have access controlled to prevent illegal trespass to attractive nuisances, such as construction sites.*

PS-2: *CBP facilities proposed to be located within vacant parkland or CBP facilities proposed to be located within existing park or recreation facilities that would require more than one acre of disturbance shall be either (1) relocated to avoid significant impacts to parkland or (2) shall provide supplemental parkland within the corresponding jurisdiction equal or greater to the amount of parkland or recreation facilities lost as a result of implementation of the CBP facility.*

The IEUA finds that, with implementation of these mitigation measures, project-related police protection and park/recreation impacts would be reduced to a less than significant impact level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project, as analyzed above, will not directly or indirectly cause a significant adverse impact to any public services with the implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable public services.

14. Recreation

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

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-449 to 4-450, FPEIR)

Facts: The nominal potential increase in potential new residents within the Chino Basin may contribute to a minimal increased demand for parks and recreation facilities. However, because the proposed project would not substantially increase the population within the Chino Basin area, the proposed project would not substantially increase use of existing neighborhood or regional parks or other recreational facilities.

The development of CBP facilities may be located within parks or facilities designated for parks and/or recreation use. Construction and staging areas within parks and/or recreation facilities at which CBP facilities may be installed may result in the temporary closure of such facilities or portions of such facilities. However, several park and recreation facilities in the Chino Basin area would be available for use. This increased use of other park and recreation facilities would be temporary, during construction only. Once construction is completed, park and recreation facilities would return to serve their original purpose, with only slightly less land area available for such uses. In addition to CBP facility development within existing park and recreation facilities, there is a potential for CBP facilities to be developed within a vacant site designated for park use, which would effectively minimize available designated parkland within the Chino Basin. As such, mitigation is required to ensure that, for CBP facilities located within vacant land designated for park and/or recreation facility use, or for CBP facilities larger than one acre in size within existing

park and/or recreation facilities, additional parkland is developed to supplement the loss of this parkland or recreation facility.

The significance determination was less than significant with the implementation of MM **PS-2** above, as this measure would minimize the potential for loss of park or recreational facilities as a result of CBP projects located within facilities designated for such uses. As such, impacts are less than significant.

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

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-450, FPEIR)

Facts: The development of CBP facilities will not involve the construction or expansion of recreational facilities. There is a potential that a proposed CBP facility could be located within parks or facilities designated for such use. Depending on the area required for the given CBP facility, an individual project could result in the removal of all or a portion of a park or recreational facility. The removal of a facility could require the construction of new park or recreational facilities elsewhere to accommodate for the loss of the existing recreational facility. As such, mitigation is required to ensure that, should loss of recreation or park facilities occur, replacement occurs resulting in impacts to recreational facilities being minimized.

Implementation of MM **PS-2** above would minimize the potential for loss of park or recreational facilities as a result of CBP projects located within facilities designated for such uses. As such, impacts are less than significant. Implementation of MM **REC-1** would ensure that, should construction of recreation or park facilities be required as a part of the CBP, subsequent CEQA documentation will be prepared to ensure that impacts are appropriately assessed and avoided or mitigated. With implementation of this mitigation measure, the project-related recreation impacts would be reduced to a less than significant impact level.

Mitigation Measures

The IEUA has determined that the proposed project has a potential to impact recreation facilities through the increase the use of existing neighborhood and regional parks or other recreational facilities and may require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. However, several mitigation measures were identified to minimize impacts to recreation/parks including those that would: minimize the potential for loss of park or recreational facilities as a result of CBP projects located within facilities designated for such uses; and, ensure that, should construction of recreation or park facilities be required as a part of the CBP, subsequent CEQA documentation will be prepared to ensure that impacts are appropriately assessed and avoided or mitigated, as demonstrated through the following mitigation measures:

MM **PS-2** under Public Services, above, is required to minimize impacts under recreation.

REC-1: *IEUA shall prepare subsequent CEQA documentation for any Parks or Recreation facilities required to be developed as part of implementation of mitigation measure PS 2—i.e., in the event a CBP Facility would be result in loss of parkland or recreation facilities.*

The IEUA finds that, with implementation of these mitigation measures, project-related recreation impacts would be reduced to a less than significant impact level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause substantial adverse recreation impacts with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable recreation impacts.

17. Transportation

- a. **Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-460 to 4-466, FPEIR)

Facts: The implementation of improvements proposed by the CBP could result in a conflict with the circulation system. Impacts during construction would vary based on the component being installed as well as the configuration of the circulation system surrounding each of the impacted rights-of-way (development footprint), such as the proximity of intersections and whether the right-of-way is a main thoroughfare. In addition, construction equipment and materials may be staged temporarily within the public right-of-way near construction areas, which may in turn impact transit stops, bicycle, and/or pedestrian facilities. Furthermore, construction activities associated with the water conveyance pipelines could also result in accidental damage to the existing roadway network, including pavement, curbs, gutters, sidewalks, and drainage structures. As a result, construction-related transportation circulation system impacts could be potentially significant. Implementation of MM **TRAN-1**, which includes development and implementation of a Construction Transportation Management Plan, would be required to reduce impacts to a less than significant level.

Project operations would not directly or indirectly induce population growth that could generate additional roadway, transit, bicycle, or pedestrian trips that could affect the circulation system, nor would the proposed project result in a substantial addition of employees related to the proposed facilities operation. As such, project operation would not conflict with adopted SCAG RTP/SCS, San Bernardino County Long Range Transit Plan, and general plans policies, plans, or programs regarding roadways, transit, bicycle, or pedestrian facilities, because the proposed project is a water utility project rather than a land use project that could affect regional land use and transportation patterns, transit use, or local transportation policy implementation. Additionally, the proposed project would not result in other long-term circulation effects such as vehicle queue exceeding available storage, transit services or facilities disruption, or a hazardous condition that currently does not exist for pedestrians and bicyclists. Therefore, operational transportation circulation system impacts would be less than significant.

- b. **Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?**

Finding: Less Than Significant Impact (pg. 4-466 to 4-467, FPEIR)

Facts: A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. Construction vehicles on local roadways would be temporarily

increased during project construction due to the presence of construction vehicles and equipment. Increases in VMT from construction would be short-term, minimal, and temporary. As such, VMT standards, which are intended to monitor and address long-term transportation system impacts resulting from future development, do not apply to temporary impacts associated with construction activities.

The proposed project would not cause substantial long-term/ongoing transportation effects, because proposed project facilities, once constructed, would only require maintenance activities similar to those that occur under existing conditions and the increase in employees due to the implementation of the proposed project is forecast to result in less than an estimated 15 new employees. The Governor's Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA (2018) states, "Projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant VMT impact." The proposed project would generate less than 110 trips per day, which is the recommended screening threshold. Therefore, the proposed project would not result in a substantial addition of VMT per service population or induce additional roadway vehicle travel by increasing physical roadway capacity or adding new roadways to the network. Therefore, no construction or operational impact associated with VMT per CEQA Guidelines Section 15064.3 would occur.

- c. **Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous inter- sections) or incompatible uses (e.g., farm equipment)?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-467 to 4-468, FPEIR)

Facts: During construction, the proposed project could temporarily change the built configuration of intersections and roadways within the project area. Implementation of existing regulations and policies for road closures and lane detours within the cities of Chino Hills, Chino, Montclair, Upland, Ontario, Rancho Cucamonga, Fontana, Eastvale, and Rialto, and San Bernardino County or along Caltrans facilities would reduce the potential for project construction to increase hazards in the project area. However, although construction of the CBP facilities could temporarily increase the type of vehicles (i.e., trucks) that could be incompatible with predominantly automobile vehicles on local roadways, the change to the mix of vehicles would stop when project construction is completed. The potential conflicts between construction trucks and automobiles on local roadways are considered a less than significant impact through implementation of MM **TRAN-1**.

The proposed project would not include alterations to existing roadway alignments or intersections in the project area, and therefore, would not include sharp curves or unsafe designs that would increase transportation-related hazards. The proposed facilities may include new driveway access points; however, design of such driveways would be required to comply with local codes and standards for ingress and egress for the cities of Chino Hills, Chino, Montclair, Upland, Ontario, Rancho Cucamonga, Fontana, Eastvale, and Rialto, and San Bernardino County. As such, the proposed project would not create a hazardous condition that currently does not exist for motorists, transit riders, pedestrians, or bicyclists nor would it include incompatible uses for the project area. Therefore, no operational impacts related to transportation hazards would occur.

The implementation of MM **TRAN-1** would reduce the project's contribution to potential construction traffic hazard impacts to less than significant. The above measure would reduce traffic hazards by requiring all construction activities to be conducted in accordance with an approved construction TMP. As a result, implementation of MM **TRAN-1** would reduce construction transportation circulation system impacts to a less-than-significant level.

d. Would the project result in inadequate emergency access?

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-468 to 4-470, FPEIR)

Facts: Project construction activities would have temporary effects on roadway vehicle flow and lane configurations at specific intersections and roadways due to potential lane and/or road closures, which would potentially impact emergency access and response times in the project area. Construction activities could also temporarily block access to some roadways and driveways that are currently used by emergency response vehicles or in emergency evacuations. Therefore, construction impacts related to emergency access would be potentially significant. Implementation of MMs **TRAN-1** and **WF-1**, which require implementation of transportation control measures and coordination with emergency response providers to minimize impacts to emergency access in the project area due to lane and/or road closures during project construction, would be required to reduce impacts to a less than significant level.

Operation of the proposed project would not block roadways or driveways, and emergency access to the proposed facilities, such as the advanced water purification facility, would be provided in accordance with applicable regulations, such as the California Fire Code, and submitted for review to the applicable local agency(ies). As such, the proposed project would provide at least two separate apparatus access roads for proposed facilities requiring regular employee presence with the fire apparatus access roads having a minimum width of 20 feet and a minimum turning radii of 25 feet inside and 45 feet outside. Therefore, operational impacts related to emergency access would be less than significant.

Mitigation Measures

The IEUA has determined that the proposed project may adversely impact the local circulation system during construction. Mitigation measures to reduce this impact to below a level of potential significance are provided below.

TRAN-1: Prepare and Implement Construction Transportation Management Plan

A construction Transportation Management Plan (TMP) shall be developed and implemented by IEUA in coordination with the respective jurisdictions, SBCTA, and/or other relevant parties during construction of the proposed project. The TMP shall conform to Caltrans' Transportation Management Plan Guidelines and shall include but is not limited to:

Construction Traffic Routes and Staging Locations: *The TMP shall identify construction staging site locations and potential road closures, alternate routes for detours, and planned truck routes for construction-related vehicle trips, including but not limited to haul trucks, material delivery trucks, and equipment delivery trucks. It shall also identify alternative safe routes and policies to maintain safety along bicycle and pedestrian routes during construction. Construction vehicle routes shall avoid local residential streets and avoid peak morning and evening commute hours to the maximum extent practicable. Staging locations, alternate detour routes, and construction vehicle routes shall*

avoid other active construction projects within 0.25 mile of the project construction sites to the maximum extent practicable.

Damage Repair: *The TMP shall include the following requirements to minimize damage to the existing roadway network:*

- *A list of precautionary measures to protect the existing roadway network, including but not limited to pavements, curbs, gutters, sidewalks, and drainage structures, shall be outlined. The construction contractor(s) shall be required to implement these measures throughout the duration of construction of the water conveyance pipelines.*
- *The roadway network along the proposed water distribution alignment(s) shall be surveyed prior to the start of project construction activities, and existing roadway conditions shall be summarized in a brief report.*
- *Any damage to the roadway network that occurs as a result of project construction activities shall be noted, and IEUA or its contractors shall repair all damage.*

Coordination with Emergency Services: *The TMP shall include requirements to notify local emergency response providers, including relevant police and sheriff departments, ambulance services, and paramedic services at least one week prior to the start of work within public rights-of-way if lane and/or road closures are required. To the extent practicable, the duration of disruptions/closures to roadways and critical access points for emergency services shall be minimized.*

Coordination with Active Transportation Facilities: *The TMP shall require coordination with owners/operators of any affected active transportation facilities to minimize the duration of disruptions/closures to bike paths, pedestrian trails, and adjacent access points.*

Coordination with SBCTA: *If the proposed project affects access to existing transit stops, the TMP shall also include temporary, alternative transit stops and directional signage, as determined in coordination with SBCTA and Metrolink.*

Coordination with Caltrans: *If the proposed project requires lane and/or road closures of State highways or State highway ramps, the TMP shall require coordination with Caltrans to ensure the TMP conforms with Caltrans' Transportation Management Plan Guidelines.*

Coordination with Nearby Construction Sites: *The TMP shall identify all active construction projects within 0.25 mile of project construction sites and require coordination with the applicants and/or contractors of these projects during all phases of construction regarding the following:*

- *All temporary lane and/or roadway closures shall be coordinated to limit overlap of roadway closures*
- *All major deliveries and haul truck trips shall be coordinated to limit the occurrence of simultaneous deliveries and haul truck trips*
- *IEUA, its contractor(s), or its representative(s) shall meet on a regular basis with the applicant(s), contractor(s) or their representative(s) of active construction projects within 0.25 mile of the project construction sites during construction to address any outstanding issues related to construction vehicles.*

Transportation Control and Safety: *The TMP shall provide for roadway vehicle control measures including flag persons, warning signs, lights, barricades, cones, and/or detour routes to provide safe passage of vehicular, bicycle, and pedestrian circulation and access by emergency responders.*

Plan Approval: *The TMP shall be submitted to SBCTA and the respective city community development departments for review and approval.*

WF-1: *Prior to initiating construction of proposed facilities within public rights-of-way (ROW), IEUA shall prepare and implement a Traffic Control Plan that contains comprehensive strategies for maintaining emergency access during construction. Strategies shall include, but are not limited to, maintaining steel trench plates at the construction sites to restore access across open trenches, flag persons and related assets to manage the flow of traffic, and identification of alternate routing around construction zones, where necessary. In addition, police, fire, and other emergency service providers (local agencies, Caltrans, and other service providers) shall be notified of the timing, location, and duration of the construction activities and the location of detours and lane closures. IEUA shall ensure that the Traffic Control Plan and other construction activities are consistent with*

the San Bernardino County Operational Area Emergency Response Plan, and are reviewed and approved by the local agency with authority over construction within the public ROW.

The IEUA finds that implementation of the above measures would reduce potential adverse impacts to circulation and emergency access during construction and operation of the proposed roadway extension to a less than significant level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant circulation system impacts or significant conflicts with emergency access or evacuations with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable transportation system impacts.

18. Tribal Cultural Resources

- a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

or

- b. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-475 to 4-479, FPEIR)

Facts: The Gabrieleño Band of Mission Indians - Kizh Nation, Morongo Band of Mission Indians, and San Manuel Band of Mission Indians were contacted by IEUA under AB 52. The San Manuel Band of Mission Indians requested participation with the CBP CEQA process, and future projects implemented under the CBP during the AB 52 consultation period. The Gabrieleño Band of Mission Indians - Kizh Nation contacted IEUA outside of the consultation window on November 1, 2021, during the public comment period after the CBP DPEIR was published on October 28, 2021. IEUA, in a good faith partnership with the Gabrieleño Band of Mission Indians - Kizh Nation, elected to move forward with honoring the Gabrieleño Band of Mission Indians - Kizh Nation's request for its inclusion in the tribal consultation process due to the potential for encountering tribal cultural resources within the project area.

The San Manuel Band of Mission Indians expressed the following concerns: accidental exposure of subsurface cultural resources and proper management of such resources; concerns over exposure of human remains and proper management; and presence of Native American monitors during future ground disturbing activities. Through incorporation of mitigation measures provided below, IEUA concludes that the requests of the tribe will be met under the CBP umbrella.

The CBP DPEIR Tribal Cultural Resources Subchapter (4.19) provided three mitigation measures intended to be implemented as a hierarchy that would parallel the level of interest the San Manuel Band of Mission Indians would be anticipated to express given the extent of ground disturbance that exists at a given future CBP site. Given that IEUA now has two tribes interested in consulting on future CBP projects to determine whether significant tribal cultural resources are anticipated to exist at a given CBP site, IEUA modified the existing mitigation measures to ensure that the concerns expressed by both tribes are adequately addressed and impacts to tribal cultural resources would be fully mitigated.

As indicated above, the mitigation measures have been developed to implement as a hierarchy, with MM **TCR-1** being the first level of mitigation implementation for projects that would be located within existing disturbed facilities; MM **TCR-2** being the second level requiring notification of the San Manuel Band of Mission Indians and Gabrieleño Band of Mission Indians - Kizh Nation to determine whether the tribes would like to consult, and also stipulates the procedures to follow should more than one tribe request to consult, including creation of a mutually agreeable Treatment Plan should both tribes request to consult on a project; and MM **TCR-3** being the third level to be implemented requiring archaeological monitoring and testing, treatment of cultural resources, and inadvertent discoveries of human remains and/or funerary objects when the San Manuel Band of Mission Indians are the only tribe to request consultation on a given CBP project, and retention of a Native American Monitor prior to commencement of ground disturbing activities, unanticipated discovery of human remains and associated funerary objects, and procedures for burials and funerary remains when the Gabrieleño Band of Mission Indians - Kizh Nation are the only tribe to request consultation on a given CBP project. Thus, with implementation of mitigation to protect tribal cultural resources, the project would not cause significant unavoidable adverse impacts to tribal cultural resources.

Mitigation Measures

IEUA has determined that the proposed project could have a potentially significant impact on unknown subsurface tribal cultural resources. Mitigation measures to reduce the impact to below a level of potential significance are provided below.

TCR-1: *Where a future discretionary project requiring additional CEQA review occurs within an existing facility that has been totally disturbed due to it undergoing past engineered site preparation (such as a well site, water treatment facility, or wastewater treatment plant site), IEUA shall notify the San Manuel Band of Mission Indians and Gabrieleño Band of Mission Indians – Kizh Nation, but will point out that the project falls under the CBP evaluation and that the site is fully developed. No further cultural resources or TCR investigation will be conducted unless a Tribe identifies specific TCR resources/values at such site(s).*

TCR-2: *Where a future discretionary project requiring additional CEQA review occurs at an undisturbed site, IEUA shall notify the San Manuel Band of Mission Indians (SMBMI) and Gabrieleño Band of Mission Indians – Kizh Nation to provide the Tribes with an opportunity to consult on the project.*

If the AB 52 consultation results in a request to consult from one or more Tribe, and this request results in more than one Tribe requesting field monitoring or archaeological monitoring and testing, then IEUA, in partnership with qualified historical/archeological professional and/or in partnership with the State Historic Preservation Office Tribal Liaison (reachable at tribalaffairs@parks.ca.gov), shall work with the Tribes to determine which entity is more culturally affiliated with the specific CBP site, and thus which entity will monitor the site, as only a single Tribe's monitor(s) shall be

funded in the monitoring effort. Each of the Tribes shall be informed in the case of inadvertent discovery, and shall be contacted, and provided information regarding the nature of the find, so as to enable Tribal input in regards to significance and treatment. IEUA and Agency partners shall consult with the Tribes in a collaborative manner in order to create a Treatment Plan that is agreeable to both of the Tribes, or in the event that the discovery clearly pertains to one specific Tribe, IEUA shall collaborate with that Tribe to create a Treatment Plan that is agreeable to the specific Tribe. The Treatment Plan ultimately agreed upon shall be enforced as mitigation applicable to the specific project for which it is created. The Treatment Plan shall include enforceable mitigation measures that shall include components, such as: archaeological monitoring, actions that shall be taken should tribal cultural resources be discovered, treatment of resources should they be discovered, preservation actions for discovered resources, procedures for funerary objects and human remains, etc.

Where SMBMI is the only Tribe that expresses an interest in consulting on a future CBP project the provisions of CUL-2 through CUL-4, as well as TCR-3 PART A shall then be followed through.

Where the Gabrieleño Band of Mission Indians – Kizh Nation is the only Tribe that expresses an interest in consulting on a project, the provisions of TCR-3 PART B shall then be followed through.

TCR-3: PART A

Following the provisions of TRC-2, above, if the San Manuel Band of Mission Indians (SMBMI) are the only tribe that requests to consult on a given CBP project, the terms of the Mitigation Measures provided by the Tribe shall be applied to the project, where applicable, and as follows:

SM-CUL-1

Archaeological Monitoring and Testing

At least one archaeologist with at least 3 years of regional experience in archaeology and a Tribal monitor representing the San Manuel Band of Mission Indians shall conduct subsurface archaeological testing on the project site via the employ of a number of subsurface investigative methods, including shovel test probes, remote sensing, and/or deep testing via controlled units or trenching of appropriate landscapes, with a sample size of at least 25% of the area of concern dug and dry-sifted through 1/8-inch mesh screens, prior to any ground-disturbing activity. A Testing Plan shall be created by the archaeologist and submitted to the SMBMI and IEUA for review at least 10 business days prior to implementation, so as to provide time to review/modify the Plan, if needed. The Plan shall outline the protocol of presence/absence testing and contain a Treatment Plan detailing that 1) no collection of artifacts or excavation of features shall occur during testing, and 2) all discovered resources shall be properly recorded and reburied in situ.

If the results of testing, as approved by SMBMI, are positive, then SMBMI and IEUA shall, in good faith, consult concerning appropriate treatment of the finding(s), guidance for which is outlined in SM-TCR-1.

If the results of testing, as approved by SMBMI, are negative, then SMBMI will conclude consultation unless any discoveries are made during project implementation. Any and all discoveries made during project implementation shall be subject to the Treatment Plan outlined within the Testing Plan developed as described above and the guidelines contained in SM-TCR-1.

If resources are identified during testing as described above, an archaeological monitor and a Tribal monitor from SMBMI with at least 3 years of regional experience in archaeology shall be present for all ground-disturbing activities that occur within the proposed project area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). A sufficient number of monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeologist and submitted to the IEUA for dissemination to the SMBMI. Once all parties review and approve the plan, it shall be adopted by the IEUA – the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

SM-TCR-1**Treatment of Cultural Resources**

If a pre-contact cultural resource is discovered during archaeological presence/absence testing, the discovery shall be properly recorded and then reburied in situ. A research design shall be developed by the archaeologist that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from the San Manuel Band of Mission Indians Cultural Resources Department (SMBMI), the archaeologist, and the IEUA shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the archaeological significance of the resource, its potential as a Tribal Cultural Resource (TCR), avoidance (or other appropriate treatment) of the discovered resource, and the potential need for construction monitoring during project implementation. Should any significant resource and/or TCR not be a candidate for avoidance or preservation in place, and the removal of the resource(s) is necessary to mitigate impacts, the research design shall include a comprehensive discussion of sampling strategies, resource processing, analysis, and reporting protocols/obligations. Removal of any cultural resource(s) shall be conducted with the presence of a Tribal monitor representing the Tribe, unless otherwise decided by SMBMI. All plans for analysis shall be reviewed and approved by IEUA and SMBMI prior to implementation, and all removed material shall be temporarily curated on-site. It is the preference of SMBMI that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by SMBMI and the IEUA, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to IEUA, CHRIS, and SMBMI. All reburials are subject to a reburial agreement that shall be developed between the landowner and SMBMI outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts (vis a vis project plans, conservation/preservation easements, etc.).

Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with SMBMI to identify an American Association of Museums-accredited facility within the County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the Lead Agency/Developing Agency to pay for those fees.

All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the IEUA and SMBMI for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS Information Center, the IEUA, and SMBMI.

SM-TCR-2**Inadvertent Discoveries of Human Remains/Funerary Objects**

In the event that any human remains are discovered within the project area, ground disturbing activities shall be suspended 100 feet around the resource(s) and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed. The on-site lead/foreman shall then immediately notify SMBMI and the IEUA. The IEUA shall then immediately contact the County Coroner regarding the discovery. If the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, the Coroner shall ensure that notification is provided to the NAHC within twenty-four (24) hours of the determination, as required by California Health and Safety Code § 7050.5 (c). The NAHC-identified Most Likely Descendant (MLD), shall be allowed, under California Public Resources Code § 5097.98 (a), to (1) inspect the site of the discovery and (2) make determinations as to how the human remains and funerary objects shall be treated and disposed of with appropriate dignity. The MLD, and IEUA to discuss in good faith what constitutes "appropriate dignity" as that term is used in the applicable statutes. The MLD

shall complete its inspection and make recommendations within forty-eight (48) hours of the site visit, as required by California Public Resources Code § 5097.98.

Reburial of human remains and/or funerary objects (those artifacts associated with any human remains or funerary rites) shall be accomplished in compliance with the California Public Resources Code § 5097.98 (a) and (b). The MLD in consultation with the landowner, shall make the final discretionary determination regarding the appropriate disposition and treatment of human remains and funerary objects. All parties are aware that the MLD may wish to rebury the human remains and associated funerary objects on or near the site of their discovery, in an area that shall not be subject to future subsurface disturbances. The IEUA should accommodate on-site reburial in a location mutually agreed upon by the Parties.

It is understood by all Parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act. The Coroner, parties, and IEUA, will be asked to withhold public disclosure information related to such reburial, pursuant to the specific exemption set forth in California Government Code § 6254 (r).

PART B

Following the provisions of TRC-2, above, if the Gabrieleño Band of Mission Indians – Kizh Nation are the only tribe that requests to consult on a given CBP project, the terms of the Mitigation Measures provided by the Tribe shall be applied to the project, where applicable, and as follows:

G-TCR-1: Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities

- A. The IEUA shall retain a Native American Monitor from or approved by the Gabrieleño Band of Mission Indians - Kizh Nation. The monitor shall be retained pursuant to the provisions in CBP MMs TRC-1 and TRC-2 above. The Native American Monitor shall be retained for the applicable CBP project site during ground disturbing activity. "Ground-disturbing activity" shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.*
- B. A copy of the executed monitoring agreement shall be submitted to IEUA prior to the earlier of the commencement of any ground-disturbing activity, or the issuance of any permit necessary to commence a ground-disturbing activity.*
- C. The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the IEUA upon written request to the Tribe.*
- D. On-site tribal monitoring shall conclude upon the latter of the following (1) written confirmation to the Kizh from a designated point of contact for the IEUA that all ground-disturbing activities and phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the IEUA that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact Kizh TCRs.*
- E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the including for educational, cultural and/or historic purposes.*

G-TCR-2: Unanticipated Discovery of Human Remains and Associated Funerary Objects

- A. Native American human remains are defined in Public Resources Code Section 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness.*

Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute.

- B. If Native American human remains and/or grave goods are discovered or recognized on the project site, then all construction activities shall immediately cease. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.*
- C. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2).*
- D. Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f).)*
- E. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.*
- F. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.*

G-TCR-3: Procedures for Burials and Funerary Remains:

- A. As the Most Likely Descendant (MLD), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient times, as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains.*
- B. If the discovery of human remains includes four or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.*
- C. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. Cremations will either be removed in bulk or by means as necessary to ensure complete recovery of all sacred materials.*
- D. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.*
- E. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the*

project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects.

Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

IEUA finds that implementation of the above measures would reduce potential impacts to unknown subsurface tribal cultural resources to a less than significant impact level. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant adverse tribal cultural resource impact with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable tribal cultural resource impacts required to support the proposed project.

19. Utilities and Service Systems: Impacts under Utilities and Service Systems, checklist question "a" are significant and cannot be mitigated below significance level. The discussion of this specific issue under Utilities and Service Systems is located below in Section F of this document. The checklist questions under Utilities and Service Systems that can be mitigated to a level of less than significant are as follows:

- b) **Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-507 to 4-512, FPEIR)

Facts: Implementation of the CBP requires mitigation to ensure adequate management of the Chino Basin as the individual CBP facilities are developed. This includes mitigation that addresses pumping sustainability, hydraulic control, and reduction in net recharge, which could, without mitigation, result in variability in available supply to Chino Basin stakeholders.

The Watermaster will review IEUA's Storage and Recovery Program application and gathers the appropriate data to (1) determine whether future CBP projects would result in loss of pumping sustainability, result in potential reduction in net recharge and impacts to Safe Yield, and/or result in new subsidence, and (2) respond with appropriate mitigation to minimize the potential adverse hydrological impacts that may occur from a project. Additionally, IEUA will adhere to the plan of response prepared by the Watermaster should the Basin conditions vary from the projections that have been modeled as part of the CBP (and all supporting documentation). The mitigation provided above under Subchapter 4.11, Hydrology and Water Quality, question (b), would enable the Watermaster to maintain sustainable management of

the Basin, and thereby maintain sufficient water supply allocated to the Parties for the foreseeable future.

Ultimately, the project would have a less than significant potential to have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years, once mitigation is implemented. Mitigation measures **HYD-1, HYD-2, HYD-3, HYD-4, HYD-5, HYD-6, and HYD-7** are required to minimize impacts related to pumping sustainability, net recharge and safe yield, hydraulic control, and overall basin management. With the implementation of mitigation that would ensure sustainable management of the Basin, impacts under this issue would be less than significant.

- c) **Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-512 to 4-515, FPEIR)

Facts: Wastewater generated during construction of the proposed CBP facilities would be minimal, consisting of portable toilet waste generated by construction workers and therefore would not substantially impact wastewater treatment capacity. All conveyance systems, wells, and ancillary facilities would not generate wastewater during their operation.

The proposed AWPf at RP-4 would constitute another form of treatment to IEUA and other agency recycled water. As with the AWPf, wellhead treatment facilities could create a new sources of brine waste generated by water treatment that would require treatment by the applicable wastewater treatment provider. Brine from the AWPf at RP-4 would be conveyed through a 1,400-foot 8-inch HDPE brine line using residual pressure from the RO system. The new brine line would exit the southeast side of the AWPf and connect to existing manhole EINL- 008 on the NRWS pipeline, located on Etiwanda Avenue between Wells Street and 6th Street. It has been verified that the existing NRWS infrastructure would be able to accommodate the brine stream at the point of connection and downstream. The AWPf would contribute an additional anticipated 1,027,300 gpd to the NRWS. The NRWS capacity is 4.6 MGD leaving more than three quarters of the system's capacity available for use by other entities in the region should brine disposal be required.

Additionally, a new 6,800-foot 8-inch HDPE brine line is anticipated to connect to the IEBL, with a possibility for jack and bore to be required in order to install this section of pipeline. It has been verified that the existing IEBL infrastructure would be able to accommodate the brine stream at the point of connection and downstream. The three wellhead-treatment system(s) would contribute an additional anticipated 4,900 gpd per facility to the IEUA. The NRWS capacity is 1.9 MGD leaving a vast majority of the system's capacity available for use by other entities in the region should brine disposal be required.

Should the IEUA require greater capacity of the brine disposal facilities than is presently available, it would not be possible to determine whether these facilities would require OCSD (or another agency responsible for treating brine waste) to

expand the capacity of its treatment plant to accommodate the additional brine waste generated by the CBP facilities. As such, MM **UTIL-4**, which requires subsequent CEQA documentation to be prepared for certain projects, is required to minimize potential impacts to a level of insignificance. Implementation of MM **UTIL-4** is sufficient to reduce the potential for impacts related to capacity of area wastewater treatment plants to below significance thresholds, as it would ensure that subsequent CEQA documentation is required where the overall CBP would require greater brine conveyance capacity than area brine disposal facilities can accommodate.

- d) **Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 4-515 to 4-517 FPEIR)

Facts: The development of CBP facilities is not anticipated to result in generation of solid waste in excess of the capacities of local infrastructure. Each of the CBP facilities would include the preparation of a construction and demolition solid waste management plan as required by San Bernardino County or Riverside County for all new construction projects. Information provided in this waste management plan would include how the waste would be managed, hauler identification, and anticipated material wastes. Each plan would demonstrate a minimum of 50 percent diversion of construction building materials and demolition debris from landfills through reuse or recycling, which is required by AB 939.

Implementation of mitigation measure **UTIL-5** will ensure that construction and demolition materials that are salvageable are recycled, and thereby diverted from the local landfill, which will minimize the potential for CBP projects to generate waste in excess of local landfill capacities. Similarly, MM **UTIL-6** will ensure that soils that would generally be exported from a given construction site are salvaged where possible for recycling and ultimately reuse, thereby diverting this waste stream from the local landfill. This too will minimize the potential for CBP projects to generate waste in excess of local landfill capacities.

Ultimately, with the implementation of these mitigation measures, the CBP would have a less than significant potential to generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

- e) **Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

Finding: Less Than Significant With Mitigation Incorporated (pg. 296, FPEIR)

Facts: Implementation of proposed CBP facilities would comply with all applicable city, county, and State construction and demolition requirements during construction of the proposed facilities. All excavated soil would be hauled offsite by truck to an appropriately permitted solid waste facility. The daily amount of soil to be disposed per day would not exceed the maximum permitted throughput for each waste type (i.e., non-hazardous and hazardous). Any hazardous materials collected on a given CBP project site during either construction or operation will be transported and disposed of by a permitted and licensed hazardous materials service provider. CBP projects would be required, through the implementation of MM **UTIL-5** to recycle

construction and demolition materials beyond the mandated 50 percent diversion required by AB 939. Furthermore, MM **UTIL-6** would require further diversion through the recycling of soils where possible for future CBP projects. The proposed development of wells would comply all federal, State, and local statutes related to solid waste disposal. Therefore, the proposed CBP would result in less than significant construction impacts with the implementation of mitigation.

The cities and/or county in which a given project would be located are required to comply with the California Integrated Waste Management Act of 1989, requiring diversion of solid waste from landfills through reuse and recycling. Facilities proposed as part of the CBP would be required to recycle as part of the projects' operational activities. Additionally, any hazardous materials collected on the project site during either construction or operation of future development within the CBP would be transported and disposed of by a permitted and licensed hazardous materials service provider. This is a mandatory requirement; compliance does not require mitigation. As such, the proposed CBP facilities would comply with federal, State, and local management and reduction statutes and regulations related to solid waste. Impacts are less than significant.

Mitigation Measures

IEUA has determined that the proposed project could have a potentially significant impact on utilities and service systems checklist items "b," "c," "d," and "e." Mitigation measures to reduce the impact to below a level of potential significance are provided below.

- UTIL-1:** ***Implementation of a Drainage Plan to Reduce Downstream Flows.** Prior to issuance of permits for construction of project facilities, IEUA shall prepare a drainage plan that includes design features to reduce stormwater peak concentration flows exiting the above ground facility sites (consistent with MS4 requirements) so that the capacities of the existing downstream drainage facilities are not exceeded. These design features could include bio-retention, sand infiltration, return of stormwater for treatment within the treatment plant, and/or detention facilities*
- UTIL-2:** ***For future CBP projects that do not have access to electrical or natural gas connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet electricity and/or natural gas needs at a future CBP facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.***
- UTIL-3:** ***For future CBP projects that do not have access to telecommunication connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet telecommunication needs at a future CBP facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.***
- UTIL-4:** ***Should the agencies operating the brine disposal systems (Orange County Sanitation District [OCSD] and Los Angeles County Sanitation District [LACSD]) determine that the capacity requested on behalf of CBP operations is greater than that which can be accommodated with existing treatment capacities, subsequent CEQA documentation addressing the required facility expansions shall be prepared. I.e., should the CBP require access to greater capacity from an existing brine disposal system (including the IEBL, the NRWS, or the Etiwanda Wastewater Line [EWL]) beyond that which can be accommodated by existing facilities—excluding pipeline connections required to connect CBP facilities to these brine disposal systems (such as the 8,200 LF proposed to be installed as part of the CBP)—subsequent CEQA documentation shall be prepared.***
- UTIL-5:** ***The contract with demolition and construction contractors for a given CBP project shall include the requirement that all materials that can feasibly be recycled shall be salvaged and recycled. This***

includes but is not limited to wood, metals, concrete, road base and asphalt. The contractors for a given CBP project shall submit a recycling plan to IEUA for review and approval prior to issuance of permits for the construction of demolition/construction activities.

- UTIL-6:** *The contract with demolition and construction contractors for a given CBP project shall include the requirement that all soils that are planned to be exported from the site that can be recycled shall be recycled for re-use; alternatively, soils shall be reused on site to balance soil import/export.*
- HYD-1:** *Watermaster shall review the IEUA's Storage and Recovery Program application for the CBP and estimate the surface and ground water systems' response (estimate the potential for new pumping sustainability challenges). Watermaster shall then prepare a report that describes the response and potential Material Physical Injury (MPI) to the Chino Basin and shall develop mitigation requirements pursuant to MM HYD-2 to mitigate MPI caused by the CBP. The IEUA shall develop mitigation measures pursuant to these requirements established by the Watermaster; these measures shall be incorporated into its Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures shall be incorporated into the CBP storage agreement.*
- HYD-2:** *To mitigate MPI caused by the IEUA's proposed Storage and Recovery Program application (as described above under HYD-1), the data gathered through Watermaster's comprehensive groundwater-level monitoring shall be used to identify potential impacts on pumping sustainability and to develop mitigation requirements to mitigate for these impacts. Potential mitigation includes, but is not limited to: (1) modifying the PUT operations and/or TAKE cycles to minimize impacts to pumping sustainability, (2) strategically increasing supplemental water recharge to mitigate loss of pumping sustainability, (3) modifying a party's affected well (lowering pump bowls), (4) providing an alternate supply to the affected party to ensure it can meet its demands, (5) a combination of (1) through (4), and (6) the implementation of a monitoring program to verify the effectiveness of the mitigation actions.*
- HYD-5:** *Watermaster shall estimate the reduction in net recharge and Safe Yield for the CBP and deduct it from water stored in the CBP storage account, which will compensate for its impact on net recharge and Safe Yield. Watermaster shall review these impacts and develop mitigation requirements for the CBP. The IEUA shall develop mitigation measures pursuant to the requirements suggested in MM HYD-6 and established by Watermaster; these measures shall be incorporated into the IEUA's Storage and Recovery Program application. Upon approval by Watermaster, these mitigation measures shall be incorporated into the CBP storage agreement.*
- HYD-6:** *To mitigate reduction in net recharge and Safe Yield caused by the CBP (as described above under HYD-5), the Watermaster's comprehensive monitoring and modeling that estimates net recharge of the Chino Basin shall be used to identify potential and actual losses of net recharge and to develop mitigation requirements to mitigate impacts thereof. Potential mitigation includes, but is not limited to: (1) modifying the PUT operations and/or TAKE cycles to minimize reductions in net recharge, (2) deducting the reduction in net recharge from the IEUA's Storage and Recovery account, (3) recharge additional water to mitigate reductions in net recharge, (4) construct facilities in the southern part of the Basin to eliminate the reduction of net recharge due the CBP, (5) a combination of (1) through (4), and (6) the implementation of a monitoring program to verify the effectiveness of the mitigation actions.*
- HYD-7:** *Watermaster shall periodically review current and projected Basin conditions and shall compare this information to the projected Basin conditions assumed in the evaluation of the CBP Storage and Recovery Program application process, compare the projected CBP operations to actual operations. The Watermaster shall then make findings regarding the efficacy of the mitigation program and requirements required herein and by the CBP storage agreement. Based on Watermaster's review and subsequent findings, where applicable, Watermaster shall require changes and/or modifications in the CBP storage agreement that will adequately mitigate MPI and related adverse impacts including but not limited to pumping sustainability, net recharge and safe yield, subsidence, hydraulic control, and groundwater quality.*
- HYD-8:** *Prior to the commencement of construction of any CBP project that will disturb less than one acre (i.e., that is not subject to the California Construction Stormwater General Permit), IEUA shall require implementation of and construction contractor(s) shall select best management practices (BMPs) to achieve a reduction in pollutants from stormwater discharge to the maximum extent practicable during the construction of each CBP facility, and to control urban runoff after each CBP facility is*

constructed and is in operation. Examples of BMP(s) that would achieve a reduction in pollutants include, but are not limited to:

- *The use of silt fences or coir rolls;*
- *The use of temporary stormwater desilting or retention basins;*
- *The use of water bars to reduce the velocity of stormwater runoff;*
- *The use of wheel washers on construction equipment leaving the site;*
- *The washing of silt from public roads at the access point to the site to prevent the tracking of silt and other pollutants from the site onto public roads;*
- *The storage of excavated material shall be kept to the minimum necessary to efficiently perform the construction activities required. Excavated or stockpiled material shall not be stored in water courses or other areas subject to the flow of surface water; and*
- *Where feasible, stockpiled material shall be covered with waterproof material during rain events to control erosion of soil from the stockpiles.*

HYD-9: *Prior to commencement of construction of project facilities, IEUA shall be required to either:*

- (1) *Prepare a No Net Discharge Report demonstrating that within each facility surface runoff shall be collected and retained (for use onsite) or detained and percolated into the ground on the site such that site development results in no net increase in offsite stormwater flows. Detainment shall be achieved through Low Impact Development techniques whenever feasible, and shall include techniques that remove the majority of urban storm runoff pollutants, such as petroleum products and sediment. The purpose of this measure is to remove the onsite contribution to cumulative urban storm runoff and ensure the discharge from the sites is treated to reduce contributions of urban pollutants to downstream flows and to groundwater; or, where it is not feasible to eliminate stormwater flows off of a site or where otherwise appropriate, the Watermaster and/or Implementing Agency shall:*
- (2) *Prepare a grading and drainage plan that identifies anticipated changes in flow that would occur on site and minimizes any potential increases in discharge, erosion, or sedimentation potential in accordance with applicable regulations and requirements for the County and/or the City in which the facility would be located. In addition, all new drainage facilities shall be designed in accordance with standards and regulations. The plan shall identify and implement retention basins, best management practices, and other measures to ensure that potential increases in storm water flows and erosion would be minimized, in accordance with local requirements.*

HYD-10: *To minimize potential ground disturbances associated with installation and maintenance of wellhead treatment at existing wells, the equipment and treatment facilities shall be installed within or along existing disturbed easements or rights-of-way or otherwise disturbed areas, including access roads and pipeline or existing utility easements, whenever feasible.*

HYD-11: *For long-term mitigation of site disturbances at CBP facility locations, all areas not covered by structures shall be covered with hardscape (concrete, asphalt, gravel, etc.), native vegetation and/or man-made landscape areas (for example, grass). Revegetated or landscaped areas shall provide sufficient cover to ensure that, after a two-year period, erosion will not occur from concentrated flows (rills, gully, etc.) and sediment transport will be minimal as part of sheet flows.*

The following measures are also required to minimize impacts under utilities and service systems, though these measures (**HYD-1, HYD-2, HYD-5, HYD-6, HYD-7, HYD-8, HYD-9, HYD-10, and HYD-11**) are also provided under their respective section above.

IEUA finds that implementation of the above measures would reduce potential impacts to water supply, provision of wastewater, and solid waste under utilities and service systems. The above measures can be implemented without causing additional adverse environmental impacts. The above measures will be integrated into the future development activities without additional impacts on the environment. Since the proposed project as analyzed above will not directly or indirectly cause significant adverse water supply, provision of wastewater, or solid waste impacts under utilities and service systems with implementation of mitigation, the proposed project is not forecast to contribute to cumulatively considerable water supply, provision of wastewater, or solid waste impacts related to implementation of the CBP.

Based upon the findings presented in the FPEIR, the above-described environmental issues have been determined by the IEUA to be: (1) adequately addressed in the FPEIR; and (2) impacted to a degree deemed by the IEUA to be less than significant with implementation of the mitigation measures identified above (where required) and summarized in the Mitigation Monitoring and Reporting Program. No substantial evidence was subsequently presented to or identified by the IEUA which further modified or otherwise altered IEUA's less-than-significant impact determinations for each of these environmental issues. Where mitigation has been required, these changes or alterations have been required in, or incorporated into the project, and they mitigate or avoid the significant environmental effects thereof as identified in the FPEIR. These changes or alterations are within the responsibility and jurisdiction of the IEUA or other responsible agencies and such changes have been adopted the IEUA. The IEUA Board further finds that no additional mitigation measures or project changes are required to reduce the potential impacts discussed above to a less than significant level.

This concludes the summary of environmental impacts that were identified in the FPEIR and the Initial Study as non-significant impacts with mitigation measures related to implementation of the proposed project.

F. SIGNIFICANT UNAVOIDABLE EFFECTS OF THE PROJECT

The IEUA Board finds that despite the incorporation of extensive changes and alterations into the proposed project, approving and implementing the CBP will allow impacts under three issue categories to remain unavoidably significant because these impacts cannot be assured of mitigation to a less than significant level. These unavoidable significant adverse environmental impacts are related to biological resources, greenhouse gas emissions, and utilities and service systems. The impacts and the measures identified to minimize them to the extent feasible are summarized below. Thus, the potential for significant effects to occur for these issues would continue to exist regardless of whether or not the project implements the project changes and mitigation measures mandated by the IEUA Board in the FPEIR.

The potential impact to the above impact categories—Biological Resources, Greenhouse Gas Emissions, and Utilities and Service Systems—were concluded to be significant based on the whole record which demonstrated that these impacts could not be reduced below thresholds of significance by the proposed project changes to the proposed project (alternatives, mitigation measures or design changes) and still achieve project objectives. This finding is based on a mix of diversion of water from the SAR that may result in potentially significant impacts to biological resources, and cumulative construction activities over the next 25 years generating substantive construction-related greenhouse gas emissions. To the extent that future proposed project development generates the emissions forecast from construction and operational activities and to the extent that the CBP would divert water from the SAR, resulting in potentially significant cumulative modifications to suitable habitat for the Santa Ana sucker, approval of the CBP contributes to the significant impacts as described in detail below. Thus, despite the incorporation of changes to the CBP, biological resources, greenhouse gas emissions, and utilities and service systems impacts cannot be fully mitigated to a level of less than significant.

Pursuant to Section 21081(a) of the Public Resources Code and Section 15091(a)(3) of the CEQA Guidelines, the IEUA finds that, for each of the following significant effects, specific economic, legal, social, technological, or other considerations, including considerations for the provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or

alternatives identified in the FPEIR. These findings are explained below and are supported by substantial evidence in the record of proceedings.

4. Biological Resources: Only checklist items “(a),” “(b),” and “(d)” are discussed below as these are the only impact categories that are significant and unavoidable.

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

Finding: Unavoidable Significant Impact (pg. 4-96 to 4-99, and 4-103 through 4-109, FPEIR)

Facts: Potential impacts on jurisdictional waters, special-status plant communities, protected trees, special-status plant, and wildlife species (including critical habitat) will be analyzed for each facility as site locations are selected and specific designs are established. Once a particular facility area of potential effect (APE) is established, the following steps will be taken during a detailed second-tier evaluation to assure resource impacts are quantified, and site-specific measures are selected from the mitigation measures identified below:

- Where none of the biological resource impacts discussed under **2(a) Conclusion**, below, will occur, no further biological resource impact analysis would be necessary;
- Where potentially significant impacts may occur, but specific mitigation outlined under **BIO-1, -2, -6, -9, -25, -26** and **BIO-11** through **BIO-23**, can reduce such impacts to a less than significant level, future documentation may rely upon the procedures outlined in CEQA Guidelines Sections 15162 and 15168 to determine the required level of CEQA documentation for future infrastructure projects. Future CBP site-specific projects shall be required to perform these analyses at the time individual CBP Infrastructure improvements are considered for funding and implementation.

The following steps shall occur to determine the level of significance at a given CBP site:

- Each biological resource will be evaluated for its presence or absence, and for the presence of habitat that could support the resource or provide habitat for the resource. Suitable habitat was determined based on background review and identification of species-specific life-history requirements.
- Potential impacts on special-status wildlife species will be determined using a habitat-based approach where the presence of the species was assumed in suitable habitat. Habitats in the project footprint and vicinity were determined through a combination of background review, habitat mapping during field surveys, and aerial photograph interpretation.
- Potential impacts on designated critical habitat will be based on the location of the critical habitat relative to the project footprint and the presence of primary constituent elements (PCEs) associated with the critical habitat designation.

In determining the potential direct and indirect impacts associated with construction and operation impacts on biological resources, a number of assumptions and limitations are identified:

- Construction and operation impacts will be considered temporary if they can be fully restored to pre-disturbance conditions following construction. Temporary impacts would include construction staging areas, construction laydown areas, relocation of underground utilities, and other work space that would not be occupied by permanent above-ground facilities during project operation.
- Impacts will be considered permanent when they have lasting effects beyond the project construction period, or cannot be fully restored following construction. Permanent impacts would include new right-of-way for new or expanded facility or water conveyance systems, road crossings, electrical substations, maintenance and operations facilities, and monitoring stations.
- Certain jurisdictional waters types (wetlands) are especially sensitive to disturbance; therefore, impacts on these features will be considered permanent where these features cannot be restored to their pre-project condition due to the permanent loss by new infrastructure.

Finally, IEUA's operational water diversions have a potential to contribute to a cumulatively adverse impact on biological resources both in the Upper Santa Ana River channel and Prado Basin. Based on implementing avoidance and mitigation measures in accordance with the mitigation outlined in the SAR HCP DEIR (MMs **BIO-1** through **BIO-7** from the Upper SAR HCP DEIR), the impacts to 21 of the identified covered species can be reduced to a less than cumulatively considerable adverse impact or even beneficial impacts. However, according to the SAR HCP DEIR, the cumulative operational diversions from the SAR may contribute to a significant adverse impact on the Santa Ana sucker. As discussed above, this impact is not unequivocal; it is based on insufficient data to ensure that all of the proposed avoidance and mitigation measures are effective, particularly translocation, which "may not achieve their intended result." IEUA concurs with the cumulative impact findings of the SAR HCP DEIR.

The mitigation strategy includes avoidance of impacts on biological resources to the extent possible through requiring the following: preconstruction surveys and field verification of sensitive resources and mitigation to provide compensation for sensitive habitat lost (**BIO-1**); preparation of a Biological Resources Management Plan (BRMP) that would develop parameters with site-specific mitigation measures to minimize impacts to sensitive biological resources (**BIO-2**); conduct a preconstruction burrowing owl survey at CBP sites that are not fully developed (**BIO-6**); require facility design and maintenance activity to be planned to protect habitat, which would minimize the potential for CBP facilities to significantly modify sensitive habitat (**BIO-9**); require the establishment of buffer zones adjacent to sensitive biological resources to minimize any potential impacts thereof (**BIO-11**); revegetate areas disturbed by construction of CBP facilities to ensure that construction impacts to sensitive biological resources are minimized and to prevent invasive species from adversely impacting native biological resources (**BIO-12**); clean construction equipment to minimize introduction of non-native species that might adversely impact native biological resources on a given site (**BIO-13**); require contractor education and environmental training to ensure that personnel are informed of the protocols required to minimize impacts to biological resources at a given site (**BIO-14**); require that a biological monitor be present during construction where impacts to Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs to minimize impacts thereof (**BIO-15**); require that all trash is disposed of in closed containers to minimize the potential to attract or adversely impact

sensitive biological species (**BIO-16**); restrict use of rodenticides and herbicides to prevent impacts to sensitive biological species (**BIO-17**); installation of wildlife exclusion fencing at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas to restrict special-status species from entering the construction area (**BIO-18**); require that equipment staging areas are delineated and enforced during construction at each site (**BIO-19**); restriction of plastic mono-filament netting or similar material to prevent potential harm to wildlife (**BIO-20**); access roads will be clearly delineated to minimize potential for impacts to habitat located outside of these delineated areas (**BIO-21**); to prevent use of trenches and other similar features by wildlife, all excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day (**BIO-22**); and, require preparation and implementation of weed control plans to ensure the measures taken to prevent the spread of weeds do not adversely impact sensitive biological resources, and conversely this plan shall ensure that invasive species do not adversely impact sensitive biological resources (**BIO-23**); support Prado Basin Habitat Sustainability Monitoring Program (**BIO-25**); and, install xeric landscaping to minimize water demand within individual CBP facilities. MMs **BIO-1** through **BIO-7** from the Upper SAR HCP DEIR would provide additional support to protect the 22 covered species under the HCP, thus further minimizing the project's potential cumulative impacts to all covered species except the Santa Ana sucker.

Ultimately, the program's contribution is considered cumulatively considerable, and would result in a significant or cumulatively considerable adverse impact. Furthermore, though substantial mitigation is provided to minimize impacts under most circumstances for future CBP facilities, no feasible mitigation exists to completely avoid the potential for the CBP to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service. Thus, the proposed project is forecast to cause significant unavoidable adverse impacts to biological resources, specifically under this issue.

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

Finding: Unavoidable Significant Impact (pg. 4-99 to 4-100, and 4-103 through 4-109, FPEIR)

Facts: Critical habitat has been designated for several species adjacent to, directly overlapping, or in the general vicinity of the CBP area, with significant concentration along the Santa Ana River corridor. The primary mitigation for potential impacts to critical habitat will be avoidance. Where avoidance is not feasible, MMs **BIO-1** and **BIO-7** will be implemented to minimize impacts to the maximum extent feasible. It is rare that critical habitat extends directly within the property owned by IEUA because these areas have already been converted to urban development. Mitigation is required to address potential impacts to riparian habitat or other sensitive natural communities, furthermore, the future CBP facilities will be required to prepare site-specific subsequent environmental documentation to minimize impacts to riparian habitat or other sensitive natural communities through acquisition of regulatory permits where applicable. Direct construction impacts on critical habitat or covered

species can be mitigated to a less than significant level through the SAR HCP implementation. The one exception regarding operational impacts is the potential for impacts to the Santa Ana sucker (SAS).

As stated above under Biological Resources issue “a”, the mitigation strategy includes avoidance of impacts on sensitive habitat to the extent possible through requiring the following: preconstruction surveys and field verification of sensitive resources and mitigation to provide compensation for sensitive habitat lost (**BIO-1**); preparation of a Biological Resources Management Plan (BRMP) that would develop parameters with site-specific mitigation measures to minimize impacts to sensitive biological resources (**BIO-2**); obtainment of regulatory permits and implementing subsequent mitigation that would minimize impacts related to discharge of fill or streambed alteration of jurisdictional areas (**BIO-3**); require jurisdictional water preconstruction surveys to determine the potential impacts thereof, which will inform the mitigative actions required to minimize impacts to jurisdictional waters/areas (**BIO-4**); protect migratory birds through conducting grubbing, brushing or tree removal outside of nesting season or coordinating with the California Department of Fish and Wildlife (CDFW) (**BIO-5**); conduct a preconstruction burrowing owl survey at CBP sites that are not fully developed (**BIO-6**); and, verify consistency with or obtain take authorization through applicable habitat conservation plans (HCPs) or multiple species habitat conservation plans (MSHCPs) within a given site (**BIO-7**). MMs **BIO-1** through **BIO-7** from the Upper SAR HCP DEIR would provide additional support to protect the 22 covered species and critical habitat under the HCP, thus further minimizing the project’s potential cumulative impacts to all covered species to a level of less than significant, excluding the potentially significant cumulative impacts to the SAS.

As the CBP would result in diversion of water from the SAR, it would contribute to cumulative loss of critical habitat for the SAS. As this is cumulative contribution, and the diversion from the SAR is critical to implementing the CBP, impacts to SAS may not be fully mitigable, and an unavoidable significant adverse biological resource impact may occur. Therefore, where the mitigation strategies proposed as part of the SAR HCP to protect this species cannot be achieved, the residual cumulative impact to critical habitat is determined to be unavoidable, and therefore, cumulatively significant.

- d. **Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Finding: Unavoidable Significant Impact (pg. 4-64 to 4-65, 4-68 to 4-70, and 4-73 to 4-75, FPEIR)

Facts: The proposed CBP will be developed within the Chino Basin, which contains many areas that could serve to enable movement of native resident or migratory fish or wildlife species, or serve established native resident or migratory wildlife movement corridors, or serve as native wildlife nursery sites. As such, future CBP Infrastructure proposals will be required to perform subsequent environmental analyses at the time individual infrastructure improvements are considered for funding. Mitigation is required to minimize impacts under this issue to a less than significant level on a project specific basis.

The mitigation strategy includes avoidance of impacts on biological resources to the extent possible through requiring the following: preconstruction surveys and field verification of sensitive resources and mitigation to provide compensation for sensitive habitat lost (**BIO-1**); preparation of a Biological Resources Management Plan (BRMP) that would develop parameters with site-specific mitigation measures to minimize impacts to sensitive biological resources (**BIO-2**); protect migratory birds through conducting grubbing, brushing or tree removal outside of nesting season or coordinating with the California Department of Fish and Wildlife (CDFW) (**BIO-5**); conduct a preconstruction burrowing owl survey at CBP sites that are not fully developed (**BIO-6**); and, verify consistency with or obtain take authorization through applicable habitat conservation plans (HCPs) or multiple species habitat conservation plans (MSHCPs) within a given site (**BIO-7**); Place primary emphasis on the preservation of large, unbroken blocks of natural open space and wildlife habitat area, and protect the integrity of habitat linkages (**BIO-8**); require facility design and maintenance activity to be planned to protect habitat, which would minimize the potential for CBP facilities to significantly modify sensitive habitat (**BIO-9**); require the establishment of buffer zones adjacent to sensitive biological resources to minimize any potential impacts thereof (**BIO-11**); revegetate areas disturbed by construction of CBP facilities to ensure that construction impacts to sensitive biological resources are minimized and to prevent invasive species from adversely impacting native biological resources (**BIO-12**); clean construction equipment to minimize introduction of non-native species that might adversely impact native biological resources on a given site (**BIO-13**); require contractor education and environmental training to ensure that personnel are informed of the protocols required to minimize impacts to biological resources at a given site (**BIO-14**); require that a biological monitor be present during construction where impacts to Riparian, Riverine, Wetland, Endangered Species or Endangered Species Critical habitat occurs to minimize impacts thereof (**BIO-15**); require that all trash is disposed of in closed containers to minimize the potential to attract or adversely impact sensitive biological species (**BIO-16**); restrict use of rodenticides and herbicides to prevent impacts to sensitive biological species (**BIO-17**); installation of wildlife exclusion fencing at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and Environmentally Restricted Areas to restrict special-status species from entering the construction area (**BIO-18**); require that equipment staging areas are delineated and enforced during construction at each site (**BIO-19**); restriction of plastic mono-filament netting or similar material to prevent potential harm to wildlife (**BIO-20**); access roads will be clearly delineated to minimize potential for impacts to habitat located outside of these delineated areas (**BIO-21**); to prevent use of trenches and other similar features by wildlife, all excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day (**BIO-22**); and, required preparation and implementation of weed control plan to ensure the measures taken to prevent the spread of weeds do not adversely impact sensitive biological resources, and conversely this plan shall ensure that invasive species do not adversely impact sensitive biological resources (**BIO-23**). MMs **BIO-1** through **BIO-7** from the Upper SAR HCP DEIR would provide additional support to protect the 22 covered species under the HCP to a level of less than significant, excluding the potentially significant cumulative impacts to the Santa Ana sucker.

Ultimately, the program's contribution is considered cumulatively considerable, and could result in a significant or cumulatively considerable adverse impact. While

Furthermore, the above mitigation measures would minimize the potential for the CBP to interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites for all species except the Santa Ana sucker. The proposed CBP project operations may result in a reduction in surface flows in the Santa Ana River and into Prado Basin. In addition, Low Impact Development ordinances, local policies, and municipal storm water detention regulations will encourage water conservation and flow detention, resulting in a cumulative reduction in surface flows reaching Prado Basin. These cumulative flow reductions may result in reduced acreage of healthy riparian forest that supports sensitive species such as least Bell's vireo as well as aquatic species such as the SAS and Southern California arroyo chub. To mitigate the effects of the cumulative diversions on habitat values and conservation objectives, the SAR HCP has determined that potential impacts of water management agencies in the Upper Santa Ana River Watershed that cumulative impacts to covered species and supporting habitat can be mitigated by implementing the HCP, except for the SAS. This impact is not unequivocal; it is based on insufficient data to ensure that all of the proposed avoidance and mitigation measures are effective, particularly translocation, which "may not achieve their intended result." As such, the project would contribute cumulatively considerable impacts to the SAS.

Mitigation Measures

The IEUA has determined that the proposed project could have a potentially significant impact on sensitive biological resources. Substantial mitigation is provided to minimize impacts such that, a future CBP facility would not be developed in an area containing significant biological resources that cannot be avoided. However, it has been determined that even with the implementation of substantial mitigation measures to avoid contributing to cumulatively considerable impacts to covered species and supporting habitat, which can be mitigated by implementing the HCP, impacts to one species cannot be completely avoided. Thus, the proposed project is forecast to cause significant unavoidable adverse impact to biological resources, specifically implementation of the CBP will contribute cumulatively to potential significant impacts to the Santa Ana Sucker due to the reduction in cumulative flows to the Santa Ana River. No feasible mitigation exists to ensure complete avoidance of potential cumulative impacts to the Santa Ana sucker. Below are the substantive mitigation measures addressed under Biological Resources:

BIO-1: *All future CBP Infrastructure projects shall be required to consult with a qualified professional to determine the need for site-specific biological surveys. Where a site has been determined to require a site-specific survey by a qualified professional, in any case in which a future CBP Infrastructure project will affect undeveloped land, or in which IEUA seeks State Funding, site surveys shall be conducted in accordance with appropriate standards by a qualified biologist/ecologist, except where such surveys have already been conducted (i.e., at RP-4). If sensitive species are identified as a result of the survey for which mitigation/compensation must be provided in accordance with regulatory requirements, the CNDDB will be notified and the following subsequent mitigation actions will be taken:*

- a. *The project proponent shall provide compensation for sensitive habitat acreage lost by acquiring and protecting in perpetuity (through property or mitigation bank credit acquisition) habitat for the sensitive species at a ratio of not less than 1:1 for habitat lost. The property acquisition shall include the presence of at least one animal or plant per animal or plant lost at the development site to compensate for the loss of individual sensitive species.*
- b. *The final mitigation may differ from the above values based on negotiations between the project proponent and USFWS and CDFW for any incidental take permits for listed species. IEUA shall retain a copy of the incidental take permit as verification that the mitigation of*

significant biological resource impacts at a project site with sensitive biological resources has been accomplished.

- c. *Preconstruction botanical surveys for special-status plant communities and special-status plant species will be conducted in areas that were not previously surveyed because of access or timing issues or project design changes; pre-construction surveys for special-status plant communities and special-status plant species will be conducted before the start of ground-disturbing activities during the appropriate blooming period(s) for the species. If special-status plants or plant communities are identified, the following hierarchy of actions shall be taken: a) find an alternative site; b) avoid the plants and maintain them onsite after completing the project; or c) provide compensatory mitigation offsite.*

BIO-2: *Biological Resources Management Plan (BRMP): During final design and prior to issuance of construction permits, a BRMP will be prepared to assemble the biological resources mitigation measures for each specific infrastructure improvement in the future. The BRMP will include terms and conditions from applicable permits and agreements and make provisions for monitoring assignments, scheduling, and responsibility. The BRMP will also discuss habitat replacement and revegetation, protection during ground-disturbing activities, performance (growth) standards, maintenance criteria, and monitoring requirements for temporary and permanent native plant community impacts. The parameters of the BRMP will be formed with the mitigation measures from subsequent CEQA documentation, including terms and conditions as applicable from the USFWS, USACE, SWRCB/RWQCB, and CDFW.*

BIO-3: *Prior to discharge of fill or streambed alteration of state or federal water jurisdictional areas, IEUA shall obtain regulatory permits from the U.S. Army Corps of Engineers, local Regional Water Quality Control Board and the California Department of Fish and Wildlife as required. Any future project that must discharge fill into a channel or otherwise alter a streambed shall be minimized to the extent feasible, and any discharge of fill not avoidable shall be mitigated through compensatory mitigation. Mitigation can be provided by restoration of temporary impacts, enhancement of existing resources, or purchasing into any authorized mitigation bank or in-lieu fee program; by selecting a site of comparable acreage near the site and enhancing it with a native riparian habitat or invasive species removal in accordance with a habitat mitigation plan approved by regulatory agencies; or by acquiring sufficient compensatory habitat to meet regulatory agency requirements. Typically, regulatory agencies require mitigation for jurisdictional waters without any riparian or wetland habitat to be mitigated at a 1:1 ratio. For loss of any riparian or other wetland areas, the mitigation ratio will begin at 2:1 and the ratio will rise based on the type of habitat, habitat quality, and presence of sensitive or listed plants or animals in the affected area. A Habitat Mitigation and Monitoring Proposal shall be prepared and reviewed and approved by the appropriate regulatory agencies. IEUA will also obtain permits from the regulatory agencies (U.S. Army Corps of Engineers, Regional Water Quality Control Board, CDFW and any other applicable regulatory agency with jurisdiction over the proposed facility improvement) if any impacts to jurisdictional areas will occur. These agencies can impose greater mitigation requirements in their permits, but IEUA will utilize the ratios outlined above as the minimum required to offset or compensate for impacts to jurisdictional waters, riparian areas or other wetlands.*

BIO-4: *Jurisdictional Water Preconstruction Surveys: A federal and state jurisdictional water preconstruction survey will be conducted at least three months before the start of ground-disturbing activities to identify and map all jurisdictional waters in the project footprint and up to a 250-foot buffer around the project footprint, subject to legal property access restrictions. The purpose of this survey is to confirm the extent of jurisdictional waters within the project footprint and adjacent up to 250-foot buffer. If possible, surveys would be performed during the spring, when plant species are in bloom and hydrological indicators are most readily identifiable. These results would then be used to calculate impact acreages and determine the amount of compensatory mitigation required to offset the loss of wetland functions and values.*

BIO-5: *To avoid an illegal take of active bird nests, any grubbing, brushing or tree removal will be conducted outside of the State identified nesting season (nesting season is approximately from February 15 through September 1 of a given calendar year). Alternatively, a nesting bird survey that demonstrates that no bird nests will be disturbed during project construction can be conducted by a qualified biologist no more than 14 days prior to initiation of ground disturbance; construction may only commence once a qualified biologist has demonstrated that no nesting birds are present at a given site. IEUA shall coordinate with the CDFW to identify the appropriate nesting bird survey protocol. The results of the nesting bird survey will be documented in a report submitted by the avian biologist*

to IEUA. IEUA, in coordination with CDFW and USFWS (as appropriate), may designate nest buffers outside of which construction activities may be allowed to proceed.

- BIO-6:** All future CBP Infrastructure projects shall be required to consult with a qualified professional to determine the need for site-specific protocol burrowing owl surveys. Prior to commencement of construction activity where a site has been determined to require a protocol burrowing owl survey by a qualified professional, or in locations that are not fully developed, a protocol burrowing owl survey will be conducted using the 2012 survey protocol methodology identified in the "Staff Report on Burrowing Owl Mitigation, State of California, Natural Resources Agency, Department of Fish and Game, March 7, 2012", or the most recent CDFW survey protocol available. Protocol surveys shall be conducted by a qualified biologist to determine if any burrowing owl burrows are located within the potential area of impact. If occupied burrows may be impacted, an impact minimization plan shall be developed in coordination with CDFW and submitted to IEUA that will protect the burrow in place or provide for passive relocation to an alternate burrow within the vicinity but outside of the project footprint in accordance with current CDFW guidelines. Active nests must be avoided with a 250-foot buffer until all nestlings have fledged.
- BIO-7:** Prior to commencement of construction activity on a project facility within a MSHCP/HCP plan area, consistency with that plan, or take authorization through that plan, shall be obtained. Through avoidance, compensation or a comparable mitigation alternative, each project shall be shown to be consistent with a MSHCP/HCP.
- BIO-8:** During the design phase of future CBP Infrastructure projects, IEUA shall place primary emphasis on the preservation of large, unbroken blocks of natural open space and wildlife habitat area, and protect the integrity of habitat linkages. As part of this emphasis, IEUA shall facilitate programs for purchase of lands, clustering of development to increase the amount of preserved open space, and assurances that the construction of facilities or infrastructure improvements meet standards identical to the environmental protection policies applicable to the specific facilities improvement.
- BIO-9:** Require facility designs and maintenance activities to be planned to protect habitat values and to preserve significant, viable habitat areas and habitat connection in their natural conditions. A qualified biologist shall be retained to determine the scope of the following for a given project site:
- Within designated habitat areas of rare, threatened or endangered species, prohibit disturbance of protected biotic resources.
 - Within riparian areas and wetlands subject to state or federal regulations, riparian woodlands, oak and walnut woodland, and habitat linkages, require that the vegetative resources which contribute to habitat carrying capacity (vegetative diversity, faunal resting sites, foraging areas, and food sources) are preserved in place or replaced so as not to result in a measurable reduction in the reproductive capacity of sensitive biotic resources.
 - Within habitats of plants listed by the CNDDDB or CNPS as "special" or "of concern," require that new facilities do not result in a reduction in the number of these plants, if they are present.
- BIO-10:** Maximize the preservation of individual oak, sycamore and walnut trees within proposed CBP Infrastructure sites. Preservation is defined within this measure as follows: existing oak, sycamore and walnut trees within a given Project site shall be retained within the site to the maximum extent feasible except where their preservation would interfere with functional and reasonable project design. Where the preservation of individual trees is not possible, IEUA shall comply with the local jurisdiction's tree ordinance, municipal code, or other local regulations. If no tree ordinance exists within the local jurisdiction, and a project will remove healthy trees as defined by a qualified arborist, (1) IEUA shall replace all trees removed at a 1:1 ratio, and (2) the specific location selected for a well shall avoid rock outcroppings and other scenic resources as defined in CEQA Guidelines Appendix G. If this cannot be accomplished a second tier CEQA evaluation shall be completed.
- BIO-11:** Require the establishment of buffer zones adjacent to areas of biological resources as recommended and defined by the site biologist. Such buffer zones shall be of adequate width to protect biological resources from grading and construction activities, as well as from the long-term use of adjacent lands. Permitted land modification activities with preservation and buffer areas are to be limited to those that are consistent with the maintenance of the reproductive capacity of the identified resources. The land uses and design of project facilities adjacent to a vegetative preservation area, as well as activities within the designated buffer area are not to be permitted to disturb natural drainage patterns to the point that vegetative resources receive too much or too little water to permit their ongoing health. In addition, landscape adjacent to areas of preserved

biological resources shall be designed so as to avoid invasive species which could negatively impact the value of the preserved resource.

BIO-12: *As part of completion of the final site development, after ground disturbance has occurred within or adjacent to any natural area, the disturbed areas shall be revegetated using a plant mix of native plant species that are suitable for long term vegetation management at the specific site, which shall be implemented in cooperation with regulatory agencies and with oversight from a qualified biologist. The seeds mix shall be verified to contain the minimum amount of invasive plant species seeds reasonably available for the project area.*

BIO-13: *Clean Construction Equipment. During construction, equipment will be washed before entering the project footprint to reduce potential indirect impacts from inadvertent introduction of nonnative invasive plant species. Mud and plant materials will be removed from construction equipment when working in native plant communities, near special-status plant communities, or in areas where special-status plant species have been identified.*

BIO-14: *Contractor Education and Environmental Training.*

Personnel who work onsite will attend a Contractor Education and Environmental Training session conducted by a qualified biologist. The environmental training will cover general and specific biological information on the special-status plant species that may be present near the construction site, including the distribution of the resources, the recovery efforts, the legal status of the resources, and the penalties for violation of project permits and laws.

The Contractor Education and Environmental Training sessions will be given before the initiation of construction activities and repeated, as needed, when new personnel begin work within the project limits. Daily updates and synopsis of the training will be performed during the daily safety ("tailgate") meeting. All personnel who attend the training will be required to sign an attendance list stating that they have received the Contractor Education and Environmental Training, and such tracking sheets shall be maintained for inspection by IEUA.

BIO-15: *Biological Monitor to Be Present during Construction Activities in areas where impacts to Riparian, Riverine, Wetland, Endangered Species or Endangered Species critical habitat occurs. A biological monitor (or monitors) will be present onsite during construction activities that could result in direct or indirect impacts on sensitive biological resources (including listed species) and to oversee permit compliance and monitoring efforts for all special-status resources.*

A biological monitor (qualified biologist) is any person who has a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field and/or has demonstrated field experience in and knowledge about the identification and life history of the special-status species or jurisdictional waters that could be affected by project activities. The biological monitor(s) will be responsible for monitoring the construction contractor to ensure compliance with the Section 404 Individual Permit, Section 401 Water Quality Certification and the Lake and Streambed Alteration Agreement. Activities to ensure compliance would include performing construction-monitoring activities, including monitoring environmental fencing, identifying areas where special-status plant species are or may be present, and advising the Contractor of methods that may minimize or avoid impacts on these resources. Biological monitor(s) will be required to be present in all areas during ground disturbance activities and for all construction activities conducted within or adjacent to identified Environmentally Sensitive Areas, Wildlife Exclusion Fencing, and Non-Disturbance Zones as defined by the project biologist.

BIO-16: *Food and Trash: All food-related trash items (e.g., wrappers, cans, bottles, food scraps) will be disposed of in closed containers and removed at least once a week from the construction site.*

BIO-17: *Rodenticides and Herbicides: Use of rodenticides and herbicides in the project footprint will be restricted at the direction of the project biologist. This measure is necessary to prevent poisoning of special-status species and the potential reduction or depletion of the prey populations of special-status wildlife species. Where pesticides must be used, they must be used in full accordance with use instructions for the particular chemical and at the direction of the project biologist.*

BIO-18: *Wildlife Exclusion Fencing: Exclusion barriers (e.g., silt fences) will be installed at the edge of the construction footprint and along the outer perimeter of Environmentally Sensitive Areas and*

Environmentally Restricted Areas as defined by the project biologist prior to the commencement of construction activities to restrict special-status species from entering the construction area during construction. The design specifications of the exclusion fencing will be determined through consultation with the USFWS and/or CDFW, as appropriate. Clearance surveys will be conducted for special-status species after the exclusion fence is installed in compliance with USFWS and/or CDFW requirements. The project biologist shall determine the frequency in which clearance surveys will be conducted to determine the efficacy of the exclusion fencing.

- BIO-19:** *Equipment Staging Areas: Prior to the commencement of construction, the Project Proponent shall identify staging areas for construction equipment to be utilized during construction that will be located outside sensitive biological resources areas, including habitat for special-status species, jurisdictional waters, and wildlife movement corridors.*
- BIO-20:** *Plastic mono-filament netting (erosion-control matting) or similar material will not be used in erosion control materials to prevent potential harm to wildlife. Materials such as coconut coir matting or tackified hydroseeding compounds will be used as substitutes.*
- BIO-21:** *Vehicle Traffic: During ground-disturbing activities, project-related vehicle traffic will be restricted within the construction area to established roads, construction areas, and other designated areas to prevent avoidable impacts. Access routes will be clearly flagged, to ensure traffic outside of the designated areas will be prohibited.*
- BIO-22:** *Entrapment Prevention: All excavated, steep-sided holes or trenches more than 8 inches deep will be covered at the close of each working day with plywood or similar materials, or a minimum of one escape ramp constructed of earth fill for every 10 feet of trenching will be provided to prevent the entrapment of wildlife. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. All culverts or similar enclosed structures with a diameter of 4 inches or greater will be covered, screened, or stored more than 1 foot off the ground to prevent use by wildlife. Stored material will be cleared for common and special-status wildlife species before the pipe is subsequently used or moved.*
- BIO-23:** *Weed Control Plan: Prior to the commencement of construction, a Weed Control Plan will be developed for IEUA by the project biologist to minimize or avoid the spread of weeds during ground-disturbing activities. In the Weed Control Plan, the following topics will be addressed:*
- *A schedule for noxious weed surveys shall be addressed.*
 - *Weed control treatments shall be addressed and ultimately implemented by IEUA, including permitted herbicides, and manual and mechanical methods for application; herbicide application will be restricted in Environmentally Sensitive Areas (as defined by the project biologist).*
 - *The timing of the weed control treatment for each plant species shall be addressed.*
 - *Fire prevention measures shall be addressed.*

IEUA shall maintain records demonstrating implementation of the Weed Control Plan, and shall make those records available to inspection by regulatory agency upon request.

- BIO-24:** *Dewatering/Water Diversion Plan: If construction is planned to occur where there is open or flowing water, prior to the commencement of construction IEUA shall submit the Dewatering Plan prepared in coordination with the resource agencies (e.g., USACE, SWRCB/RWQCB, and CDFW, as appropriate). The Dewatering Plan shall identify how open or flowing water will be routed around construction areas, such as through the creation of cofferdams. If cofferdams are constructed, implementation of the following cofferdam or water diversion measures shall be implemented to avoid and lessen impacts on jurisdictional waters during construction:*
- *The cofferdams, filter fabric, and corrugated steel pipe are to be removed from the creek bed after completion of the project.*
 - *The timing of work within all channelized waters is to be coordinated with the regulatory agencies.*
 - *The cofferdam is to be placed upstream of the work area to direct base flows through an appropriately sized diversion pipe. The diversion pipe will extend through the Contractor's work area, where possible, and outlet through a sandbag dam at the downstream end.*
 - *Sediment-catch basins immediately below the construction site are to be constructed when performing in-channel construction to prevent silt- and sediment-laden water from entering the main stream flow. Accumulated sediments shall be periodically removed from the catch basins.*

BIO-25: *Permanent Water Diversion Projects: IEUA shall continue to support preparation of the annual Prado Basin Habitat Sustainability Monitoring Program. IEUA shall conduct a second-tier CEQA evaluation for a proposed water diversion project associated with the CBP. The potential impacts to Prado Basin and sensitive habitat (for example riparian, wetland, or critical habitat) from implementation of such diversion projects shall receive public review, including pertinent wildlife management agencies and interested parties.*

BIO-26: *Landscaping at Future CBP Infrastructure Sites: IEUA shall require that any landscaping at future CBP Infrastructure sites shall be landscaped with water-wise or xeric landscape plants (native plants where feasible) to minimize future water demand.*

Implementation of the project specific mitigation measures would minimize construction-related impacts to the greatest extent feasible, including the potential for invasive species occupancy caused by project-related disturbance of natural areas. However, under items “4(a),” “4(b),” and “4(d)” —which pertain to whether the project would (a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?, (b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?, and (d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? —the substantive mitigation measures provided cannot minimize impacts to these resources below significance levels.

The IEUA Board finds that with the implementation of the above measures, impacts to biological resources from future CBP project implementation would be reduced or controlled to the maximum extent feasible. Regardless, implementation of the CBP will contribute cumulatively to potential significant impacts to the Santa Ana sucker due to the reduction in cumulative flows to the Santa Ana River, and the diversion of water from the CBP is integral to implementation of the proposed project, thus, cumulative biological resource impacts remain potentially significant and unavoidable.

8. Greenhouse Gas Emissions: Only checklist item “(a),” is discussed below as this is the only impact category that is significant and unavoidable.

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Finding: Unavoidable Significant Impact (pg. 4-213 to 4-218, FPEIR)

Facts: For Construction, IEUA has chosen to incorporate the following GHG emission reduction measures identified by the CAPCOA in its 2010 report, *Quantifying Greenhouse Gas Mitigation Measures*, into CBP construction activities, as defined in Mitigation Measure (MM) **GHG-1**:²

- Use alternative fuels for construction equipment;
- Use electric and hybrid construction equipment;
- Limit construction equipment idling beyond regulation requirements;

² CAPCOA. 2010. “Quantifying Greenhouse Gas Mitigation Measures: A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures.” August. <https://www.aqmd.gov/docs/default-source/ceqa/handbook/mitigation-measures-and-control-efficiencies/quantifying-greenhouse-gas-mitigation-measures.pdf?sfvrsn=0> (accessed October 2021).

- Institute a heavy-duty off-road vehicle plan; and
- Implement a construction vehicle inventory tracking system.

However, since it is not known to what extent these measures will be sufficient to reduce construction emissions below the SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year, it is not possible to ensure that this significant construction-related impact would be avoided. As such, MM **GHG-1** shall be implemented to minimize construction-related impacts to the greatest extent feasible. As discussed previously, construction-related GHG emissions associated with the CBP is forecast to exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027), and therefore would potentially hinder the statewide GHG emission reduction target for 2030. As such, while MM **GHG-1** would minimize impacts to the greatest extent feasible, construction-related impacts from implementation of the proposed CBP would be potentially significant.

The annual GHG emissions of the CBP would depend on whether it is operating during a call year or a non-call year as well as the current renewable energy portfolio of SCE. The GHG emissions associated with CBP operation would result in a significant impact if the CBP would not meet its fair share of GHG reductions required on a statewide basis by 2030 or if it would fail to procure its electricity from carbon-neutral electricity sources by 2045. By procuring electricity from SCE, which is on-track to achieve 60 percent renewables by 2030, the CBP would not generate indirect GHG emissions associated with electricity consumption that exceed the statewide 2030 target.³ Furthermore, if IEUA were to use its own renewable energy facilities to partially or fully supply the electricity demand of CBP facilities, it would accelerate efforts toward achieving a carbon-neutral electricity supply. Therefore, operation of the CBP would meet its fair share of GHG reductions required to achieve the statewide 2030 GHG reduction target.

According to SB 100, the Renewables Portfolio Standard requires California to obtain 100 percent of its electricity from carbon-neutral sources by 2045. Although it is projected that SCE would have a 100 percent carbon-neutral power supply by 2045, it is speculative to determine with complete certainty whether this will be achieved in the future. Likewise, it is speculative to determine whether IEUA will achieve its goal of carbon neutrality for all its facilities in the next 15 years. Although the CBP would result in a net reduction in total GHG emissions over the 25-year term of the proposed water transfer agreements as compared to existing baseline conditions, the CBP's electricity consumption itself may not be carbon-neutral because GHG emissions may still be generated in both call and non-call years due to the use of electricity supplied from non-renewable energy resources by 2045. As a result of the uncertainty surrounding the future power mix and energy demands of the proposed CBP, the CBP would potentially fail to procure its electricity from carbon-neutral electricity sources by 2045. Therefore, the long-term, indirect impacts of the CBP's operational GHG emissions would be potentially significant in both call and non-call years. Implementation MM **GHG-2** would be required.

³ California Public Utilities Commission. 2020. "2020 California Renewables Portfolio Standard: Annual Report." November. https://www.cpuc.ca.gov/-/media/cpuc-website/files/uploadedfiles/cpuc_public_website/content/utilities_and_industries/energy_-_electricity_and_natural_gas/2020-rps-annual-report.pdf (accessed October 2021).

Mitigation Measures

The IEUA has determined that the proposed project could contribute potentially significant construction-related greenhouse gas emissions. With implementation of the recommended GHG mitigation measures identified below, GHG emissions could still exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027) and as a result of the uncertainty surrounding the future power mix and energy demands of the proposed CBP, the CBP would potentially fail to procure its electricity from carbon-neutral electricity sources by 2045.

GHG-1: *IEUA shall implement all feasible GHG reduction measures during construction. These may include, but should not be limited to, the following measures identified in the CAPCOA 2010 report, Quantifying Greenhouse Gas Mitigation Measures:*

- *Use alternative fuels for construction equipment*
- *Use electric and hybrid construction equipment*
- *Limit construction equipment idling beyond regulation requirements*
- *Institute a heavy-duty off-road vehicle plan*
- *Implement a construction vehicle inventory tracking system*

GHG-2: *IEUA shall implement all feasible GHG reduction measures during operations. These may include, but should not be limited to, the following measures identified in the CAPCOA 2010 report, Quantifying Greenhouse Gas Mitigation Measures:*

- *Exceed Title 24 Building energy efficiency standards*
- *Procure 100 percent renewable electricity from Southern California Edison, a community choice aggregation program, and/or other on-site and off-site renewable energy systems*
- *Utilize electric or hybrid vehicles and/or encourage operations and maintenance employees to carpool or otherwise commute using a method other than a single-occupancy fossil-fuel powered vehicle*

Implementation of mitigation that would ensure that IEUA implement all feasible GHG reduction measures during operation and construction is required, but does not reduce either construction- or operations-related emissions to a level of insignificance.

The IEUA Board finds that with the implementation of the above measures, impacts from greenhouse gas emissions generated by future CBP construction and operations would be reduced or controlled to the maximum extent feasible. Regardless, no feasible mitigation is available to minimize construction-related GHG emissions to below significance thresholds or ensure that electricity supporting CBP operations would be obtained from carbon-neutral electricity sources by 2045. Thus, exceedances of applicable SCAQMD regional thresholds are considered significant and unavoidable, and the construction and operation of the proposed project could create a potentially significant cumulative impact to global climate change.

19. Utilities and Service Systems: Only checklist item “(a)” is discussed below as this is the only impact category that is significant and unavoidable.

- a) **Would the project require or result in the relocation or construction of new or expanded water, electric power, or natural gas facilities, the construction or relocation of which could cause significant environmental effects?**

Finding: Unavoidable Significant Impact (pg. 4-500 to 4-507, FPEIR)

Facts: **Water and Wastewater:** The CBP includes the construction of water and wastewater facilities, which constitute the construction of new and expansion or modifications to existing water infrastructure facilities. The environmental effects

associated with the proposed project are documented throughout the FPEIR. As such, given that the proposed CBP is anticipated to result in significant impacts related to construction-related GHG emissions that would exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027), and therefore would potentially hinder the statewide GHG emission reduction target for 2030 that would result from the extension of water- and wastewater-related infrastructure. Such construction of the CBP has the potential to hinder statewide GHG emissions targets.

All mitigation measures identified throughout the FPEIR would otherwise reduce impacts related to the construction of water facilities under all remaining issues set forth in Appendix G of the CEQA Guidelines. Though MM **GHG-1** would reduce construction related GHG emissions to the greatest extent feasible, construction-related GHG emissions associated with the CBP would exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027), and therefore would potentially hinder the statewide GHG emission reduction target for 2030. Thus, the proposed CBP would result in significant and unavoidable impacts related to construction of new or expansion or modifications to existing water facilities.

Stormwater: Implementation of proposed CBP would result in the addition of impervious surfaces that would increase stormwater quantity. This increase could affect on-site drainage patterns as well as off-site drainage volume and require the construction and operation of new and/or expanded stormwater drainage facilities. Mitigation is required to minimize impacts related to the extension of stormwater infrastructure at future CBP facilities.

Implementation of MM **UTIL-1** is sufficient to reduce the potential for impacts related to construction of stormwater facilities through the requirement that the Watermaster or implementing agency prepare a drainage plan prior to construction with facilities that will be included in the project's final design.

Ultimately, through the implementation of MM **UTIL-1**, the CBP would have a less than significant impact related to construction of new or expansion or modifications to existing stormwater facilities.

Electric Power and Natural Gas: The proposed CBP would not cause or result in the need for additional energy producing facilities or energy delivery systems, which includes electricity and natural gas. Given that connection to the electrical power grid and connection to natural gas, where a connection to natural gas is required at future facilities, are minor components of the overall construction of CBP facilities and that the energy analysis concluded that impacts thereof would be less than significant, the provision of these facilities as part of the overall CBP would not cause a significant environmental effect.

However, there is a potential that specific CBP facilities may not have access to electricity or natural gas, and will require either extension of infrastructure or creation of new infrastructure to meet electricity and/or natural gas needs at a future CBP site. As such, mitigation will be required to examine the environmental impacts thereof.

Because it is not known where future CBP facilities will be installed, there may be locations in which energy and/or natural gas services are not available within the immediate vicinity of a given CBP site. As such, MM **UTIL-2** would ensure that a subsequent CEQA documentation is prepared for projects that require extension or development of such infrastructure, which will ensure that any impacts are appropriately assessed and mitigated. Ultimately, through the implementation of mitigation, the CBP would have a less than significant impact related to construction of new or expansion or modifications to existing energy and natural gas facilities.

Telecommunications: The types of facilities proposed as part of the CBP typically would not require extension of telecommunication services. However, given that the facilities proposed as part the CBP have not been designed, there is a potential for certain facilities (such as facilities proposed that would require full-time personnel on site or otherwise require connection to telecommunication facilities) to require extension of telecommunication infrastructure as part of operation. As such, given that the location of most future CBP facilities is unknown, Mitigation Measure **UTIL-3** would be required to ensure that impacts related to extension of infrastructure are minimized for the proposed CBP projects that would require telecommunication services by requiring project-specific subsequent CEQA documentation for projects proposed at sites without immediate access to telecommunication connections.

Because it is not known where future CBP facilities will be installed, there may be locations in which telecommunication services are not available within the immediate vicinity of a given CBP site. As such, MM **UTIL-3** would ensure that a subsequent CEQA documentation is prepared for projects that require extension or development of such infrastructure, which will ensure that any impacts are appropriately assessed and mitigated. Ultimately, through the implementation of mitigation, the CBP would have a less than significant impact related to construction of new or expansion or modifications to existing telecommunications facilities.

Mitigation Measures

The IEUA has determined that the proposed project could contribute potentially significant construction-related greenhouse gas emissions, therefore resulting in a significant impact related to construction or new or expansion or modifications to existing water facilities under utilities and service systems. All other issues under utilities and service systems can be mitigated through the implementation of the following measures:

- UTIL-1:** *Implementation of a Drainage Plan to Reduce Downstream Flows. Prior to issuance of permits for construction of project facilities, IEUA shall prepare a drainage plan that includes design features to reduce stormwater peak concentration flows exiting the above ground facility sites (consistent with MS4 requirements) so that the capacities of the existing downstream drainage facilities are not exceeded. These design features could include bio-retention, sand infiltration, return of stormwater for treatment within the treatment plant, and/or detention facilities.*
- UTIL-2:** *For future CBP projects that do not have access to electrical or natural gas connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either extension of infrastructure or creation of new infrastructure to meet electricity and/or natural gas needs at a future CBP facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.*
- UTIL-3:** *For future CBP projects that do not have access to telecommunication connections in the immediate vicinity (defined here as a 1,000-foot buffer from a given project site), and will require either*

extension of infrastructure or creation of new infrastructure to meet telecommunication needs at a future CBP facility site, subsequent CEQA documentation shall be prepared that fully analyzes the impacts that would result from extension or development of electrical or natural gas infrastructure.

GHG-1: *IEUA shall implement all feasible GHG reduction measures during construction. These may include, but should not be limited to, the following measures identified in the CAPCOA 2010 report, Quantifying Greenhouse Gas Mitigation Measures:*

- *Use alternative fuels for construction equipment*
- *Use electric and hybrid construction equipment*
- *Limit construction equipment idling beyond regulation requirements*
- *Institute a heavy-duty off-road vehicle plan*
- *Implement a construction vehicle inventory tracking system*

With implementation of the recommended GHG mitigation measures identified Subchapter 4.9, the Greenhouse Gas Section of the PEIR, GHG emissions may still exceed the SCAQMD thresholds for construction activities. While construction related impacts are mitigated to the maximum extent feasible, no feasible mitigation exists to completely avoid generating significant greenhouse gas emissions within the Chino Basin as a result of implementing these water and wastewater infrastructure projects.

The IEUA Board finds that with the implementation of the above measures, impacts from greenhouse gas emissions generated by future CBP construction and operations would be reduced or controlled to the maximum extent feasible, thereby minimizing the potential for the CBP to cause a significant impact related to the extension of water and wastewater infrastructure. Regardless, no feasible mitigation is available to minimize construction-related GHG emissions to a level of insignificance. Thus, exceedances of applicable SCAQMD thresholds are considered significant and unavoidable, and therefore the proposed CBP could result in significant and unavoidable impacts related to construction or new or expansion or modifications to existing water and wastewater facilities.

Based upon the findings presented in the Final PEIR, the above-described environmental issue has been determined by IEUA to be: (1) adequately addressed in the FPEIR; and (2) impacted to a degree deemed by IEUA to be significant and unavoidable because of the limited ability of the project to fully mitigate biological resource, greenhouse gas emission, and utilities and service systems impacts. No substantial evidence was subsequently presented to or identified by IEUA which further modified or otherwise altered IEUA's significant and unavoidable impact finding with mitigation determined for these environmental issues. This concludes the summary of environmental impacts that were identified in the FPEIR as unavoidable significant adverse impacts even with mitigation related to implementation of the proposed project.

G. ALTERNATIVES TO THE PROPOSED ACTION

The California Environmental Quality Act (CEQA) requires discussion of reasonable project alternatives that could feasibly attain most of the project's objectives (CEQA Guidelines §15126.6). CEQA requires that an PEIR evaluate a reasonable range of alternatives to the project, or to the location of the project that: (1) offers substantial environmental advantages over the proposed project, and (2) may be feasibly accomplished in a successful manner and within a reasonable period of time considering the economic, environmental, legal, social, and technological factors involved.

The purpose in analyzing alternatives to a proposed project is to determine if a feasible or reasonable alternatives "are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA Guidelines, Section 15126.6(b)). The CBP project objectives are to:

- Maintain Permit Compliance for the Continued Use of Recycled Water in the Chino Groundwater Basin.
- Maintain Commitments for Salt Management to Enable Sustainable Use of Recycled Water in the Basin.
- Develop Infrastructure That Addresses Long Term Supply Vulnerabilities.
- Provide a Source of Water for Emergency Response; and,
- Develop an Integrated Solution to Produce State and Federal Environmental Benefits.

The unavoidable significant adverse impacts identified from project implementation are the biological resource ("a," "b," and "d"), greenhouse gas ("a"), and utilities and service systems ("a") impacts. Based upon data provided in the DPEIR, it was concluded that the proposed project could result in significant adverse impacts to biological resources because CBP project operations may result in a reduction in surface flows in the Santa Ana River and into Prado Basin, which, when combined with Low Impact Development ordinances, local policies, and municipal storm water detention regulations will encourage water conservation and flow detention, could result in a cumulative reduction in surface flows reaching Prado Basin, in turn resulting in potential contributions to cumulatively significant impacts to the Santa Ana Sucker due to the reduction in cumulative flows to the Santa Ana River. Additionally, it was concluded that, even with the implementation of mitigation measures designed to reduce greenhouse gas emissions, the CBP would generate construction-related GHG emissions in exceedance of the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027) and cannot ensure that electricity supporting CBP operations would be obtained from carbon-neutral electricity sources by 2045. Finally, it was concluded that the proposed CBP would result in significant impacts related to the construction-related GHG emissions that would result from the extension of water- and wastewater-related infrastructure, as such water and wastewater infrastructure impacts under Utilities and Service Systems are considered significant and unavoidable.

Since mitigation has already been identified to minimize biological resource ("a," "b," and "d"), greenhouse gas ("a" and "b"), and utilities and service systems ("a") impacts within the CBP project area, an alternative that would reduce project-related biological resource, greenhouse gas emission, and utilities and service systems impacts to below a level of significance would result in not implementing the CBP.

Among the factors that may be taken into account when addressing the feasibility of alternatives are environmental impacts, site suitability, economic viability, availability of infrastructure, regulatory limitations, jurisdictional boundaries and whether the applicant could reasonably acquire, control, or otherwise have access to the alternative option. (CEQA Guidelines §15126.6(f)(1)) Since management of water resources in the Chino Basin is an activity that cannot be conducted at another location, this evaluation will not give further consideration to an alternative location for the project. Thus, an alternative location evaluation was rejected as infeasible and unable to meet basic project objectives. A project outside of the Chino Basin cannot achieve the fundamental project objective.

It is the goal of the CBP to enhance both the SWP and the Central Valley Project for the betterment of operations, environment, resilience, and reliability. The CBP will be developed to provide flexibility to regional and local water operations, particularly during future extended droughts expected as climate change continues to impact California. New injection and extraction facilities, conveyance facilities, and water system interconnections will allow more optimal management of local water supplies, including improved storage and recovery operations, as well as redundancies in water delivery infrastructure that will facilitate future rehabilitation and replacement needs. No major changes in the CBP have been identified at this stage that can be implemented without harming its ability to meet the essential program objective of enhancing both the SWP and the Central Valley Project for the betterment of operations, environment, resilience, and reliability, in addition to providing flexibility to regional and local water operations. For example, deferring installation of CBP infrastructure in any given year to reduce construction-related GHG would simply increase the amount of construction required in the following year, thus raising GHG emissions. Therefore, a reduction of the CBP scope in any given year cannot achieve the fundamental project objectives.

One of the alternatives that must be evaluated in an EIR is the “no project alternative,” regardless of whether it is a feasible alternative to the project, i.e. would meet the project objectives or requirements. In this case, the CBP PEIR evaluated a No Project Alternative that reflects a “no action” alternative that makes salient the potential impacts and practical results redounding from IEUA not approving the CBP and taking no actions to resolve regulatory compliance issues within the Basin from continued recycled water use. Under this alternative, the environmental impacts that would occur if the CBP facilities and programs are not implemented are evaluated. Under this No Project Alternative, there would be no expansion of existing recycled water systems or groundwater by member agencies of IEUA. Anticipated future growth would generally be served with imported potable water and local agencies would need to increase their water purchases or implement more restrictive conservation programs to satisfy potable water demand. If the ambient water quality in the Chino Basin is not maintained per the RWQCB’s TDS limit, there will be greater dependence on imported water and local stormwater supplies, which are highly volatile and impacted by climate change. Since the Basin only receives imported water from one regional pipeline that is owned and operated by MWD, an unplanned or catastrophic occurrence could cut off 25 percent of the Basin’s water supply. Ultimately, the No Project Alternative’s no action approach would result in the Basin being out of regulatory compliance, threaten water supply, and does not meet IEUA’s objectives.

As such, and as required by CEQA, a second, reduced development, alternative that also meets the requirements of analyzing a “no project” alternative is provided below as the Baseline Water Quality Action Alternative. The reason for distinguishing these two alternatives is that for IEUA to take “no action” towards maintaining regulatory compliance means that at some point it will be out of compliance and ultimately, in order for IEUA to continue its operations, an advanced water purification facility would be required in order to comply with its RWQCB permits. As such, the CBP analyzes the environmental consequences of a true “no action” alternative, in addition to the Baseline Water Quality Action Alternative to meet the provisions of CEQA Guidelines Section 15126.6(e)(3)(A) and (B). Though there are a number of solutions that IEUA could implement to address the groundwater recharge challenges associated with TDS and contaminants of emerging concern, none are as optimal as the implementation of advanced water purification. The Baseline Water Quality Action Alternative (BWQAA) would address TDS levels for both direct use of recycled water and groundwater recharge and could also help address the challenges associated with Title 22 regulations. The BWQAA considers a centrally located advanced water purification system can be linked with the existing distribution system providing greater flexibility for use of the advanced treated water, providing greater benefit to the region as an available

supply and solutions for brine discharge that are more economically feasible. Also, it has the potential to be integrated in the future as direct potable reuse when such regulations are adopted. The BWQAA is only designed to meet water quality related regulatory challenges and does not include infrastructure to enhance regional water supply. As a result, the BWQAA provides water quality benefits to IEUA and the region, but no water supply, ecosystem, or emergency supply benefits are realized through the BWQAA.

Finally, the CBP also analyzes a Regional Water Quality and Reliability Plan Alternative, which addresses regional water quality and water supply challenges. The Regional Water Quality and Reliability Plan Alternative would collectively treat and store up to 15,000 AFY of recycled water in the Chino Basin, creating a new local water supply. This water will be available for local use for the 50-year project life of the alternative, thereby reducing dependence on imported water, improving water quality, and providing a new local water supply for the Basin. The production of high-quality water in the Chino Basin will deliver regional benefits in the form of enhanced water quality. The Regional Water Quality and Reliability Plan Alternative will also deliver regional benefits in the form of local water supply benefits available annually to offset the cost of imported water from MWD as well as to reduce the economic impact of supply shortages when MWD is unable to deliver full water supplies.

Therefore, the PEIR considered three alternatives: the No Project Alternative; the Baseline Water Quality Action Alternative; and the Regional Water Quality and Reliability Plan Alternative.

NO PROJECT ALTERNATIVE

A summary comparative discussion of the No Project Alternative (NPA) in terms of the specific issues evaluated in the PEIR (Aesthetics, Agriculture and Forestry Resources, Air Quality, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, and Wildfire). The following text assesses the impacts for the categories with unavoidable significant effects: Biological Resources, Greenhouse Gas Emissions, and Utilities and Service Systems.

Biological Resources: The NPA will have no significant biological resource impacts as it would not require any diversions from the Santa Ana River. The elimination of diversions from the Santa Ana River has the potential to eliminate the potentially significant impacts to the Santa Ana Sucker. When mitigation is implemented—primarily avoidance of biologically sensitive areas or compensation to offset losses to sensitive biological resources—the proposed CBP approaches the level of significance regarding biological resource to those that would result from the NPA's impacts, but a potential still exists for significant impacts under the CBP as a result of the diversion of recycled water from the Santa Ana River thus impacting the Santa Ana Sucker as the available mitigation to protect this species cannot be guaranteed to minimize impacts below significance thresholds. Under the NPA, no facilities would be installed that could impact site specific biological resources, and recycled water discharge would continue from IEUA as it does at present, thus eliminating the potential for contributing to cumulative impacts to species or habitat supported by the Santa Ana River. As such, under this evaluation and set of assumptions, the CBP's effects on biological resources is considered to be greater than the NPA, and the NPA would avoid a significant impact on biological resources that would otherwise result from implementation of the CBP.

It should be noted, however, that the NPA would eliminate the potential environmental benefit that would result from the CBP. As discussed in Chapter 3 of this DPEIR, the CBP would provide

environmental benefit in call years, which will likely be in dry seasons, to improve habitat conditions enabling Feather River salmonid species greater chance for survival. The NPA would not only forgo this environmental benefit, but it would also result in a threat to the reliability of water supply in the Chino Basin. Given this, the NPA is not considered environmentally superior to the CBP in the area of biological resources.

Greenhouse Gas: The NPA would not result in any new facilities that have been proposed to operate the CBP. The IEUA and member agencies would instead continue in a business-as-usual manner, which ultimately would result in the Chino Basin being out of regulatory compliance due to the continued use of recycled water containing higher levels of TDS. Anticipated future growth would generally be served with imported potable water, and local agencies would need to increase their water purchases or implement more restrictive conservation programs to satisfy potable water demand. With no specific facilities required under the NPA, the NPA would have minimal potential to result in significant greenhouse impacts. Because no expansion of existing recycled water systems or groundwater by member agencies of IEUA would occur, including the addition of an AWPf in conjunction with PUT and TAKE facilities as proposed by the CBP, greenhouse gas (GHG) emissions under the NPA would likely be less than those of the proposed CBP. Given that the NPA represents an alternative with no new construction or operational activities outside of the scope of a business-as-usual scenario (i.e., continuation of practices that have already been evaluated and approved under CEQA or that fall outside of the scope of CEQA), the NPA would have no potential to generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs. As such, under this evaluation and set of assumptions, the NPA would result in fewer overall construction and operational GHG emissions compared to the proposed CBP. The proposed CBP would result in significant and unavoidable GHG impacts, while the NPA would not result in any significant impacts thereof. As such, the NPA would avoid a significant impact on biological resources that would otherwise result from implementation of the CBP.

Utilities and Service Systems: The NPA would not result in any new facilities that have been proposed to operate under the CBP. Anticipated future growth would generally be served with imported potable water and local agencies would need to increase their water purchases or implement more restrictive conservation programs to satisfy potable water demand. Under the CBP, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and under the NPA, specifically as it relates to utilities infrastructure, it is anticipated that no impact to these utility systems would occur. Under the CBP mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future CBP projects; this would be not required to implement the NPA, as IEUA would continue operating its existing facilities in the same manner as it would at present. The CBP would generate solid waste during operation and construction and mitigation is required to address potential impacts related to solid waste to a level of insignificance. In contrast, under the NPA, the IEUA would not cause any impacts to solid waste as it would be required to comply with mandatory regulations pertaining to solid waste, and would not generate any new sources of solid waste requiring additional analysis.

The construction of infrastructure related to energy and natural gas and telecommunication under the CBP was analyzed and determined to be less than significant with the implementation of mitigation. This mitigation would not be required to reduce impacts under the NPA, as existing facilities are currently served by adequate electricity and natural gas, and telecommunication service systems. Under the CBP, the construction of infrastructure related to telecommunications

was determined to be less than significant with the implementation of mitigation; this mitigation would not be required to reduce impacts under the NPA, as existing facilities are currently serviced by adequate telecommunication systems. As such, for the issues of solid waste and stormwater drainage, electricity, natural gas, and telecommunications, the CBP would require mitigation to minimize impacts to a level of less than significant, while the BWQAA would not require mitigation to achieve this level of impact, but neither would result in significant impacts in these areas.

The extension of water and wastewater related infrastructure was determined to be significant under the CBP, while the NPA would eliminate those potentially significant construction-related GHG emissions impacts. Under both the NPA and the CBP, sufficient capacities are anticipated to be available at IEUA and area wastewater treatment plants. However, the resulting recycled water from the wastewater treatment plants may become unusable if the Basin would become out of regulatory compliance. If the ambient water quality in the Basin is not maintained per the RWQCB's TDS limit, there will be greater dependence on imported water and local stormwater supplies, which are highly volatile and impacted by climate change. Since the Basin only receives imported water from one regional pipeline that is owned and operated by MWD, an unplanned or catastrophic occurrence could cut off 25 percent of the Basin's water supply. A No Action approach results in the Chino Basin being out of regulatory compliance and threatens water supply. Therefore, when compared to the CBP, which would ensure that IEUA and member agencies would have sufficient water supplies available to serve the Basin and reasonably foreseeable future development during normal, dry and multiple dry years, once mitigation is implemented, the NPA would have a potential to result in a significant impact as under this alternative, the provision of sufficient water supply is not guaranteed. As such, under this evaluation and set of assumptions the proposed project effects on utilities and service systems would be significant, and as such would not eliminate the significant impact that is anticipated to occur under the CBP. Impacts from both the CBP and the NPA would be significant and unavoidable under this issue.

While the No Project Alternative (NPA) would reduce impacts related to Biological Resources, GHG emissions and a part of Utilities and Service Systems below significance levels, the NPA has a potential to result in a significant impact to the Basin's hydrology resources and water quality characteristics, and may impact the sustainability of the Basin's groundwater supply, thereby resulting in significant Hydrology and Water Quality and Utilities and Service Systems impacts. As such, the NPA is not considered to be the environmentally superior alternative. Additionally, the ability to attain the goals and objectives of the CBP under this alternative would be virtually eliminated.

BASELINE WATER QUALITY ACTION ALTERNATIVE

The reduced development BWQAA was included in the PEIR in accordance with CEQA Guidelines Section 15126.6(e)(3)(A) and (B). Given that it is reasonably foreseeable that, without the implementation of the CBP, actions will need to be taken to ensure that IEUA remains in regulatory compliance through its continued operations, the BWQAA (Alternative 1), is provided to address this foreseeable result.

Under the BWQAA, centrally located advanced water purification facilities will be used with IEUA's existing conveyance system to help address the region's regulatory compliance challenges. The expected effluent TDS concentration from the AWPf is 100 mg/L. The AWPf would have a capacity comparable to that which is proposed by the CBP, and similarly, would be located at RP-4. This low-TDS recycled water could be used to meet discharge obligations to the Santa Ana River, or for blending into IEUA's existing recycled water distribution system using existing

conveyance, significantly reducing recycled water TDS concentrations. Once blended into IEUA's recycled water distribution system, the augmented recycled water supply could be used for groundwater recharge or for indirect potable use.

Table 5-1
ALTERNATIVE 1: BASELINE WATER QUALITY ACTION ALTERNATIVE FACILITIES

Parameter	Description
AWPF	
Location	RP-4
Process	MF/RO/UV-AOP
Capacity (AFY)	15,000 ¹
Purified water conveyance	
Pump station	
Location	RP-4
Size	1,500 HP
Brine conveyance	
Disposal system	NRWS
Pipeline	1,400 feet (8-inch)

Notes: 1 Phased with 9,000 AFY online by 2030 and the remaining 6,000 AFY by 2040

HP: horsepower; MF: membrane filtration; RO: reverse osmosis; UV-AOP: ultraviolet advanced oxidation process

A summary comparative discussion of the Baseline Water Quality Action Alternative (BWQAA) in terms of the specific issues evaluated in the PEIR found not to be significant (Aesthetics, Agriculture and Forestry Resources, Air Quality, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, and Wildfire) can be found in the CBP PEIR. The following text assesses the impacts for the categories with unavoidable significant effects: Biological Resources, Greenhouse Gas Emissions, and Utilities and Service Systems.

Biological Resources: As with the CBP, development of the BWQAA would result in diversion of recycled water from the Santa Ana River through the development of a new AWPf with an ultimate capacity of 15,000 AFY, requiring a diversion of 17,000 AFY in total to support the AWPf operations. However, unlike the CBP, under the BWQAA, the diversions would continue to the Santa Ana River in comparable amounts to that which occur at present. Thus, the recycled water would be treated to a higher quality and discharged or recharged in comparable amounts to those that would occur under IEUA's current operations. As such, while development of the CBP would have a potential to cause significant unavoidable adverse impact to biological resources, specifically though the cumulative contribution to potential significant impacts to the Santa Ana Sucker due to the reduction in cumulative flows to the Santa Ana River, the BWQAA would not contribute to this cumulatively considerable impact on the Santa Ana Sucker, as IEUA would not be forecast to reduce flows thereto. Furthermore, the potential for impacting site-specific biological resources would be lessened under the BWQAA when compared to the CBP, which would implement a greater number of facilities at locations presently unknown. Thus, there is a potential that a future CBP facility may be developed in an area containing significant biological resources; however, mitigation is available to ensure that a future CBP facility would not be developed in an area containing significant biological resources that cannot be avoided. These same measures would apply to the facilities that would be developed under the BWQAA, though it is likely less

measures would be required due to the anticipated development within existing developed sites. As such, under this evaluation and set of assumptions, the proposed CBP's effects on biological resources would likely be greater than the BWQAA, and the BWQAA would avoid a significant impact on biological resources that would otherwise result from implementation of the CBP.

It should be noted too, that the BWQAA would eliminate the potential environmental benefit that would result from the CBP. As discussed in Chapter 3 of the PEIR, the CBP would provide environmental benefits in call years, which will likely be in dry seasons, to improve habitat conditions enabling Feather River salmonid species greater chance for survival.

Greenhouse Gas: The BWQAA would include construction of an AWPf and a pump station at RP-4 as well as a brine pipeline. Similar to the proposed CBP, construction and operation of these components would generate GHG emissions. However, because fewer facilities would be constructed under the BWQAA as compared to the proposed CBP (e.g., no groundwater wells, no storage reservoir, no wellhead treatment facilities), construction and operational GHG emissions would likely be lower than those of the proposed CBP. As such, while the CBP could result in significant construction GHG construction emissions even with the implementation of MM **GHG-1**, the BWQAA would not result in significant construction emissions, as it would require less intensive construction than the CBP. As such, the CBP would avoid a potentially significant construction-related GHG emissions impact.

As with the proposed CBP, this alternative would not exceed the statewide 2030 target through generation of indirect GHG emissions associated with electricity consumption because IEUA would likely procure electricity from SCE, which is on-track to achieve 60 percent renewables by 2030. As the proposed CBP and, by extension the BWQAA, have long operational horizons, it is not possible to know with certainty that the BWQAA, which would contribute less operational GHG emissions than the CBP as a result of the minimal energy intensive facilities required to facilitate its operation, would procure its electricity from carbon-neutral electricity sources by 2045. This analysis assumes that, due to the focused types of facilities required to operate the BWQAA—i.e., an AWPf at RP-4, at which, the phased capacity approach could possibly enable the planning of alternative energy sources to serve this facility by IEUA, a pump station, and a brine pipeline—electricity would likely be procured from carbon-neutral electricity sources by 2045. However, because of the uncertainty surrounding future power mix and energy demands, this assumption is not guaranteed, and therefore, it is possible that a significant operations-related GHG impact could also occur with the BWQAA should the future power mix fail to meet the carbon-neutral electricity requirement by 2045.

While the CBP would result in the net reduction of GHG emissions associated with the CBP's avoidance of SWP imports during call years, the BWQAA would not facilitate a water exchange with MWD, and as such, it would not result in a direct offset of energy emissions related to utilization of imported water in the Basin. Ultimately, similar to the proposed CBP, the operations-related GHG emissions impacts of this alternative would be potentially significant, even with the implementation of MM **GHG-2**. Implementation of MM **GHG-2** may reduce the energy usage and associated GHG emissions of facilities constructed under the BWQAA and increase the percentage of electricity supplied to the proposed facilities by renewable energy resources, which would reduce operational GHG emissions. Nevertheless, as with the proposed CBP, implementation of MM **GHG-2** may not fully mitigate the impacts of the BWQAA if IEUA is not able to supply the remaining electricity demand of these facilities from carbon-neutral electricity sources by 2045 or otherwise mitigate the operational emissions of the BWQAA. As such, under this evaluation and set of assumptions, while the BWQAA would likely result in fewer overall construction and operational GHG emissions, the level of significance of its GHG emissions

impacts would be similar to that which would occur under the CBP and would therefore be potentially significant and unavoidable.

Utilities and Service Systems: Under the CBP, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and it is anticipated that the BWQAA would have comparable, but less potential to impact these utility systems than the CBP. Under the CBP mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future CBP projects; this would be required to minimize impacts from the AWPf, pump station, and brine pipeline that would be developed under the BWQAA. As the BWQAA and CBP would both generate solid waste during operation and construction, with the BWQAA generating less solid waste than the CBP, mitigation is required to address potential impacts related to solid waste. The construction of infrastructure related to energy and natural gas, and telecommunications under the CBP was analyzed and determined to be less than significant with the implementation of mitigation. This mitigation would not be required to reduce impacts under the BWQAA as this alternative would be installed within RP-4, which already has access to electricity and telecommunication services, and the brine pipeline would not require electricity beyond the pump station required at RP-4. As such, for the issues of electricity, natural gas, and telecommunications, the CBP would require mitigation to minimize impacts to a level of less than significant, while the BWQAA would not require mitigation to achieve this level of impact. However, for the issues of solid waste and stormwater drainage, mitigation would be required to minimize impacts to a level of less than significant for both the CBP and the BWQAA.

The extension of water and wastewater related infrastructure was determined to be potentially significant under the CBP, and as the BWQAA by eliminating those potentially significant construction-related GHG emissions impacts, would eliminate the potential for those significant impacts to occur. As with the CBP, the BWQAA would ensure the provision of sufficient wastewater treatment capacity at area wastewater treatment plants through mitigation ensuring subsequent CEQA documentation is required where more brine conveyance capacity is required than area brine disposal facilities can accommodate. This is required because the BWQAA would generate similar, though slightly less overall brine from the AWPf process. The CBP would generate additional brine associated with wellhead treatment facilities that are not considered under the BWQAA. Construction of the CBP has the potential to hinder statewide GHG emissions targets, and therefore the proposed CBP could result in significant and unavoidable impacts related to construction of new or expansion or modifications to existing water and wastewater facilities. Given that the BWQAA eliminates the potential for this construction-related GHG emissions impact as a result of the less intensive construction scenario required to develop the facility, and also due to the phased capacity approach proposed by the BWQAA, the BWQAA would eliminate the potentially significant utilities and service systems impact when compared to the CBP.

The BWQAA would lessen impacts in all categories to a level of less than significant, though it would continue to contribute to significant operational GHG emissions. The BWQAA would not require as intensive construction, as it does not propose the same intensity of facilities proposed by the CBP. As such, the BWQAA would result in lessened environmental impacts for all other resource issues and would also avoid potentially significant impacts under Biological Resources and Utilities and Service Systems, though significant operations related GHG impacts could still occur under this alternative. The BWQAA would not create any new significant impacts beyond those identified by the CBP. As such, it is considered an environmentally superior alternative to the CBP; however, the BWQAA would not achieve many of the CBP's objectives.

While the BWQAA would meet permit compliance for the continued use of recycled water in the Chino Basin and would maintain commitments for salt management to enable sustainable use of recycled water in the Basin, the BWQAA would not develop infrastructure that addresses long term supply vulnerabilities, provide a source of water for emergency response, or develop an integrated solution to produce State and federal environmental benefits.

REGIONAL WATER QUALITY AND RELIABILITY PLAN ALTERNATIVE

The Regional Water Quality and Reliability Plan (Alternative 2), builds upon the BWQAA to address regional water quality and water supply challenges.

Table 5-2
AWPF AND PUT FACILITIES FOR ALTERNATIVE 2:
REGIONAL WATER QUALITY AND RELIABILITY PLAN

Parameter	Description
Recharge Locations	MZ-2
AWPF	
Location	RP-4
Process	MF/RO/UV-AOP
Capacity (AFY)	15,000
Purified water conveyance	
Pipelines	7.1 miles (8-inch to 30-inch)
Pump station	
Location	RP-4
Size	1,500 HP
Number of injection wells	16 (12 duty, 4 standby)
Brine conveyance	
Disposal system	NRWS
Pipeline	1,400 feet (8-inch)

HP: horsepower; MF: membrane filtration; RO: reverse osmosis; UV-AOP: ultraviolet advanced oxidation process

The Regional Water Quality and Reliability Plan would collectively treat and store up to 15,000 AFY of recycled water in the Chino Basin, creating a new local water supply. This water will be available for local use for the 50-year project life of the alternative, thereby reducing dependence on imported water, improving water quality, and providing a new local water supply for the Basin. The Regional Water Quality and Reliability Plan would include a network of regional pipelines that would provide the ability for IEUA and its member agencies to access stored water in the Chino Basin, connecting these new potable water supplies for use in lieu of planned water deliveries from MWD. These new water conveyance and water system interconnections also provide an important alternative source of water supply to IEUA and its member agencies during any required shutdown of MWD's major pipelines delivering water to the region, such as the Rialto Pipeline, which is planned for rehabilitation as part of a larger rehabilitation plan of MWD's pipelines within its service area.

The production of high-quality water in the Chino Basin will deliver regional benefits in the form of enhanced water quality. The Regional Water Quality and Reliability Plan will also deliver regional benefits in the form of local water supply benefits available annually to offset the cost of imported

water from MWD as well as to reduce the economic impact of supply shortages when MWD is unable to deliver full water supplies. In addition, the Regional Water Quality and Reliability Plan provides local emergency supply benefits in years when planned or unplanned service disruptions occur.

A summary comparative discussion of the Regional Water Quality and Reliability Plan in terms of the specific issues evaluated in the PEIR found not to be significant (Aesthetics, Agriculture and Forestry Resources, Air Quality, Cultural Resources, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, Transportation, Tribal Cultural Resources, and Wildfire) can be found in the CBP PEIR. The following text assesses the impacts for the categories with unavoidable significant effects: Biological Resources, Greenhouse Gas Emissions, and Utilities and Service Systems.

Biological Resources: As with the CBP, development of Alternative 2 would result in diversion of recycled water from the Santa Ana River through the development of a new AWPf with an ultimate capacity of 15,000 AFY, requiring a diversion of 17,000 AFY in total to support the AWPf operations. As such, the potentially significant impact identified under this issue that could result from the CBP's diversion of flow to the Santa Ana River could also occur under Alternative 2. Furthermore, because the specific locations for future CBP and Alternative 2 projects are not presently known, there is a potential that a future facility for both may be developed in an area containing significant biological resources that cannot be avoided. Substantial mitigation provided under the CBP would therefore apply to Alternative 2 to ensure that a future facility would not be developed in an area containing significant biological resources that cannot be avoided. However, it has been determined that even with the implementation of substantial mitigation measures to avoid contributing to cumulatively considerable impacts to covered species and supporting habitat, which can be mitigated by implementing the HCP, impacts to one species may not be completely avoided. Thus, both the CBP and Alternative 2 could potentially cause a significant unavoidable adverse impact to biological resources, specifically implementation could contribute cumulatively to potentially significant impacts to the Santa Ana Sucker due to a reduction in cumulative flows to the Santa Ana River.

It should be noted that Alternative 2 would eliminate the potential environmental benefit that would result from the CBP. As discussed in Chapter 3 of this DPEIR, the CBP would provide environmental benefit in call years, which will likely be in dry seasons, to improve habitat conditions enabling Feather River salmonid species greater chance for survival.

Greenhouse Gas: Similar to the proposed CBP, construction and operation of these components would generate GHG emissions. Modestly fewer facilities would be constructed under Alternative 2 as compared to the proposed CBP. Therefore, construction and operational GHG emissions would likely be somewhat lower than those of the proposed CBP. Given the comparable levels of construction required to develop the facilities proposed under Alternative 2, construction related GHG impacts would be the same as those projected for the CBP. As such, while MM **GHG-1** would minimize impacts to the greatest extent feasible, construction-related impacts from implementation of both the CBP and Alternative 2 could be potentially significant.

As with the proposed CBP, this alternative would not generate indirect GHG emissions associated with electricity consumption that exceed the statewide 2030 target because IEUA would likely procure electricity from SCE, which is on-track to achieve 60 percent renewables by 2030. However, similar to the proposed CBP, Alternative 2 would potentially fail to procure its electricity from carbon-neutral electricity sources by 2045 because of the uncertainty surrounding the future

power mix and energy demands. Furthermore, Alternative 2 would not have the potential to result in the net reduction of GHG emissions associated with the CBP's avoidance of SWP imports during call years. Therefore, similar to the proposed CBP, the GHG emissions impacts of Alternative 2 could be potentially significant and implementation of MM **GHG-2** would be required. Nevertheless, implementation of MM **GHG-2** may not fully mitigate the impacts of Alternative 2 if IEUA is not able to supply the remaining electricity demand of these facilities from carbon-neutral electricity sources by 2045 or otherwise mitigate the operational emissions of Alternative 2. As such, under this evaluation and set of assumptions, Alternative 2 would likely result in similar or potentially cumulatively greater overall construction or operational GHG emissions, and the level of significance of the GHG emissions impacts of Alternative 2 would be similar to that which would occur under the CBP and both could be significant and unavoidable.

Utilities and Service Systems: Under the CBP, significant impacts to stormwater drainage, energy, natural gas telecommunications, or solid waste were determined to be less than significant with the implementation of mitigation, and as with the CBP, specifically as it relates to utilities infrastructure, it is anticipated that Alternative 2 would have a comparable potential to impact these utility systems as the CBP. Under the CBP, mitigation is required to minimize impacts related to stormwater through implementation of a drainage plan to reduce downstream flows for future CBP projects; this would be required to minimize impacts from the facilities that would be developed under Alternative 2. As Alternative 2 and CBP would both generate solid waste during operation and construction, mitigation is required to address potential impacts related to solid waste. The construction of infrastructure related to energy and natural gas, and telecommunications under the CBP was analyzed and determined to be less than significant with the implementation of mitigation. This mitigation would also be required to reduce those same impacts under Alternative 2 as this alternative would be installed within locations that have not yet been selected. Thus, for the issues of solid waste, stormwater drainage, electricity, natural gas, and telecommunications, mitigation would be required to minimize impacts to a level of less than significant for both the CBP and Alternative 2.

The extension of water and wastewater related infrastructure was determined to be potentially significant under the CBP, and as Alternative 2 would not eliminate the significant construction-related GHG emissions impact, Alternative 2 could also have a potential for similar significant impacts to occur. As with the CBP, Alternative 2 would ensure the provision of sufficient wastewater treatment capacity at area wastewater treatment plants through mitigation. This is required because Alternative 2 would generate similar amounts of brine from the AWPf process. As previously stated, the CBP could result in potentially significant impacts related to construction-related GHG emissions that would exceed the approximated SCAQMD threshold for 2030 of 6,000 MT of CO₂e per year during the most intensive year of construction activities (2027), and therefore could potentially hinder the statewide GHG emission reduction target for 2030 that would result from the extension of water- and wastewater-related infrastructure. As such, construction of the CBP has the potential to hinder statewide GHG emissions targets, and therefore could result in significant and unavoidable impacts related to construction of new or expansion or modifications to existing water and wastewater facilities. Given that Alternative 2 does not eliminate the potential for this construction-related GHG emissions impact, Alternative 2 could likewise result in comparable impacts; thus, under both the CBP and Alternative 2, utilities and service systems impacts are significant and unavoidable.

Alternative 2 is comparable to the CBP in terms of environmental impacts because Alternative 2 would result in the development of nearly identical facilities to the CBP, excepting those which the CBP requires in order to connect to MWD's water distribution system. It is possible that, due to reduction in pipeline lengths and turnouts required under this alternative when compared to the

CBP, the construction related GHG emissions impact would be eliminated, but given the comparable construction scenarios, the elimination of this construction related GHG impact is not guaranteed. Furthermore, because Alternative 2 would not result in offset electricity consumption that would result from the water exchange with the SWP created by the CBP, it is likely the Alternative 2 would result in greater GHG emissions than would the CBP, and as such would not eliminate the operations-related GHG impact. Note that Alternative 2 would ultimately reduce reliance on imported water, thus some of the energy related GHG emissions that may result from operation of Alternative 2 facilities would ultimately be offset by reducing reliance on the energy intensive imported water source. Regardless, Alternative 2 could result in a significant operations-related GHG emissions impact. Furthermore, Alternative 2 would not eliminate significant Biological Resources or Utilities and Service Systems impacts. As such, while Alternative 2 would lessen significant impacts under GHG, it would not eliminate significant impacts under any of the categories for which significant impacts have been identified under the CBP. Therefore, Alternative 2 cannot be considered an environmentally superior alternative.

Furthermore, while Alternative 2 would meet nearly all of the CBP's objectives, it would not meet one of the IEUA's basic objectives, which is to develop an integrated solution to produce State and federal environmental benefits. As such, under Alternative 2, the improvement of habitat conditions enabling Feather River salmonid species greater chance for survival would be eliminated, thus failing to meet this project objective.

CONCLUSION

The "no action" No Project Alternative (NPA) analyzed above would ultimately not be feasible as it would lead to IEUA having to take actions in order to comply with mandatory regulatory requirements in order to continue operating as usual. As such, the NPA analyzed above would neither be feasible nor would it meet the fundamental project objectives outlined in the CBP Project Description. The NPA generally has lessened environmental impacts for all of the resource issues except for hydrology and water quality issues, as it is forecast to result in new significant unavoidable adverse impacts to hydrology and water quality, and would cause greater significant unavoidable adverse impacts under utilities and service systems than the CBP. This is because the NPA would result in the Chino Basin being out of regulatory compliance and would threaten water supply reliability. In the final analysis, the NPA clearly cannot be considered the environmentally superior alternative to the proposed project from a total environmental standpoint, because the environmental damage from "implementing" it is forecast to cause a significant adverse impact when compared to implementing CBP. It should be noted too, that the NPA would eliminate the potential environmental benefit that would result from the CBP. As discussed in Chapter 3 of this DPEIR, the CBP would provide environmental benefit in call years, which will likely be in dry seasons, to improve habitat conditions enabling Feather River salmonid species greater chance for survival. The NPA would not only forgo this environmental benefit, but it would also result in a threat to the reliability of water supply in the Chino Basin. Given this, the NPA is not considered an environmentally superior alternative.

The practical result of IEUA not approving the CBP would be IEUA at some point having to build a reduced development project like the Baseline Water Quality Action Alternative (BWQAA; Alternative 1), as a way to provide the facilities required in order for the use of recycled water in the Chino Basin to continue under current permits and regulations. The reduced development BWQAA, which as noted above is basically a "practical result" no project alternative, would lessen environmental impacts in all categories to a level of less than significant, though it could continue to contribute to potentially significant operational GHG emissions. This is because, while it is likely that electricity would be procured from carbon-neutral electricity sources by 2045, it is possible

that a significant operations-related GHG impact could occur should the future power mix fail to meet the carbon-neutral electricity requirement by 2045. The BWQAA would not require as intensive construction as the CBP, and as such the BWQAA would not create any new significant impacts beyond those identified by the CBP and result in lessened environmental impacts compared to the CBP. The BWQAA would also avoid Biological Resources and Utilities and Service Systems significant impacts, although potentially significant operations related GHG impacts could still occur under it. As such, the BWQAA is considered the environmentally superior alternative to the CBP, though the BWQAA would not achieve several of the CBP's basic objectives. While the BWQAA would meet permit compliance for the continued use of recycled water in the Chino Basin and would maintain commitments for salt management to enable sustainable use of recycled water in the Basin, the BWQAA would not develop infrastructure that addresses long term supply vulnerabilities, provide a source of water for emergency response, or develop an integrated solution to produce State and federal environmental benefits.

The Regional Water Quality and Reliability Plan Alternative (Alternative 2) is comparable to the CBP in terms of environmental impacts. Because Alternative 2 would result in the development of nearly identical facilities to the CBP, excepting those which the CBP requires in order to connect to MWD's water distribution system, most of the impacts related to Alternative 2 are the same as those identified under the CBP. It is possible that, due to reduction in pipeline lengths and turnouts required under Alternative 2 when compared to the CBP, the construction related GHG emissions impact would be eliminated, but given the comparable construction scenarios, the elimination of this construction related GHG impact is not guaranteed. However, because Alternative 2 would not result in offset electricity consumption that would redound from the water exchange with the SWP created by the CBP, it is likely the Alternative 2 would result in greater GHG emissions than would the CBP, and as such would not eliminate operations-related GHG impact. Note that Alternative 2 would ultimately reduce reliance on imported water; thus, some of the energy related GHG emissions that may result from operation of Alternative 2 facilities would ultimately be offset by reducing reliance on the energy intensive imported water source. Regardless, Alternative 2 would result in a significant operations-related GHG emissions impact. Furthermore, Alternative 2 would not eliminate significant Biological Resources or Utilities and Service Systems impacts. As such, while Alternative 2 would lessen significant impacts under GHG, it would not eliminate significant impacts under any of the categories for which significant impacts have been identified under the CBP. Therefore, Alternative 2 cannot be considered an environmentally superior alternative to the CBP.

Furthermore, while Alternative 2 would meet nearly all of the CBP's objectives, it would not meet one of the IEUA's basic objectives, which is to develop an integrated solution to produce State and federal environmental benefits. As such, under Alternative 2, the improvement of habitat conditions enabling Feather River salmonid species greater chance for survival would be eliminated, thus failing to meet this project objective.

This concludes the summary of alternatives that were identified and considered in the FPEIR and their feasibility and capability to be implemented to reduce the identified significant impacts to biological resource, greenhouse gas emission, and utilities and service systems.

H. PROJECT BENEFITS

The IEUA Board proposes to achieve the key objectives of the CBP—Maintain long-term permit compliance for the continued use of recycled water in the Chino Groundwater Basin; Maintain commitments for salt management to enable sustainable use of recycled water in the Basin;

Develop infrastructure that addresses long term supply vulnerabilities; Provide a source of water for emergency response; and Implement an integrated solution to produce state and Federal environmental benefits. IEUA has proposed to implement a series of one-time actions and ongoing management processes that help provide flexibility to regional and local water operations, particularly during future extended droughts expected as climate change continues to impact California. The term for the water exchange program proposed by the CBP will be fixed at 25 years for a total volume of 375,000 acre-feet, after which time the CBP will be devoted to meeting local water management needs while fulfilling commitments to improve water quality in the Chino Groundwater Basin and provide a source of emergency water supply.

BENEFITS OF IMPLEMENTING THE PROPOSED PROJECT

1. **Environmental benefits:** The CBP would develop new southern California advanced water treatment supplies to be stored in the Chino Groundwater Basin and exchanged in dry years for southern California-bound SWP supplies stored in northern California. The stored northern California water would subsequently be released as multi-day pulse flows to support anadromous fish populations in the Feather River and the Sacramento-San Joaquin Delta (Delta), providing a statewide public benefit.
 - Populations of native Chinook salmon have declined dramatically since European settlement of the Central Valley in the mid-1800s. California's salmon resources began to decline in the late 1800s and continue to decline. As urban and agricultural development of the Central Valley continued, numerous other stressors to anadromous salmonids emerged and continue to affect the viability of these fish today. Some of the more important stressors include: the high demand for limited water supply resulting in reduced instream flows, increased water temperatures and highly altered hydrology in the Sacramento-San Joaquin Delta, barriers to historic habitat, widespread loss of tidal marsh, riparian and floodplain habitat, poor water quality, commercial and/or recreational harvest, and predation from introduced species such as striped bass.
 - The provision of pulse flows through the implementation of the CBP and the cumulative contribution to pulse flows from similar projects would provide environmental benefit to a species that has experienced severe stressors in recent decades. For instance, temperatures during the summer and shoulder seasons (late Spring and early Fall) in recent years have been at a record high, thus causing significant impact on the salmonid species found in the Feather River and Sacramento-San Joaquin Delta. Therefore, the CBP would provide a tangible benefit to minimizing the aforementioned stressors on this species through future State-managed pulse flows.
2. **Water supply benefits:** Proposed facilities under the CBP would provide a new average annual water supply of 15,000 AFY. During the 25-year Water Storage Investment Program (WSIP) water exchange commitment period, the majority of this new water supply would be committed to environmental purposes through an exchange for SWP water supplies currently delivered to MWD. During that time, economic water supply benefits would still be produced for IEUA through savings associated with use of highly reliable local water supplies in lieu of Metropolitan deliveries and the CBP facilities could be used by IEUA and its member agencies when not needed for the Water Storage Investment Program (WSIP) commitment. After the 25-year WSIP water exchange commitment, all new water supplies produced by new infrastructure would be available for local use without restriction, with very high reliability as the wastewater generated within IEUA's service area and the Chino Basin region is anticipated to grow over the next several decades. Additional extraction, conveyance, and

interconnection facilities would improve the ability to manage water supplies within the Chino Basin for local use during all years and during years under which planned infrastructure maintenance and rehabilitation occurs. The CBP would also allow IEUA to avoid costs associated with procuring water supplies during years when MWD is unable to deliver full contract supplies, resulting in water shortage avoidance benefits.

3. **Emergency response benefits:** New water stored in the Chino Groundwater Basin will enhance emergency response water supply availability for IEUA and other participating agencies during crises such as prolonged drought, or catastrophic events or other infrastructure failure that limits delivery of imported water supplies. Given the great distances that imported supplies travel to reach the Inland Empire, the region is vulnerable to interruptions along hundreds of miles of aqueducts, pipelines, and other facilities associated with delivering the supplies to the region. The CBP would include provisions to provide up to 50,000 AFY of stored water in the Chino Groundwater Basin under emergency conditions to local agencies or regionally by utilizing MWD's water distribution system, thus providing emergency response benefits through the program's implementation.
4. **Additional Regional Benefits:** CBP conjunctive use operations and new interconnection infrastructure could support additional investment for expanded use of the Chino Basin for water storage/conjunctive use programs that provide corresponding benefits to the Chino Basin. The CBP will also improve IEUA's ability to manage water supplies within the Chino Basin during planned infrastructure shutdown, such as the Rialto Pipeline rehabilitation, which is anticipated to result in supply interruptions for up to 18 months beginning in 2033, and provide additional flexibility in managing Chino Basin groundwater for water quality issues and subsidence.
5. **Maintain Hydraulic Control:** The CBP would be required to and has been assessed to be capable of being implemented in a manner that would continue to enable Watermaster and Stakeholders to maintain hydraulic control, and minimize subsidence, prevent material physical injury (MPI), and manage plume movement through extensive monitoring and mitigation efforts.
6. **Maintain Commitments for Salt Management to Sustain and Enhance the Safe Yield of the Chino Groundwater Basin:** Recycled water is an increasingly essential asset to the region, particularly with the uncertain future of imported water supplies due to climate change and environmental factors. Since 2000, recycled water use within the region has increased by as much as seven times, with recharge of this water also increasing over the last 10 years. Recycled water is the region's most climate resilient water supply because the amount of water available is not affected by dry years. Today, recycled water makes up approximately 20 percent of IEUA's water supply portfolio and hundreds of millions of dollars have been invested into the regional recycled water program. Applications for recycled water face challenges in terms of changing wastewater quality and treatment requirements due to increases in indoor and outdoor water use efficiency standards and increasing regulatory and environmental requirements. Additionally, the use of recycled water is impacted by the groundwater quality of the Chino Groundwater Basin. Specifically, the applications for recycled water become constrained if the salinity in the Basin rises beyond specified regulatory limits. Maintaining and expanding recycled water projects to manage these challenges will both increase the resiliency of the regional water supplies and help to augment safe yield of the Chino Groundwater Basin through increased recharge of high-quality recycled water. The CBP would develop a new AWPf that would have a potential to reduce

recycled water TDS levels to 100 milligrams per liter (mg/L), with an overall blended target of 500 – 515 mg/L. Thus, the proposed CBP would provide a benefit to area water quality.

7. **Creation of New Jobs:** While the CBP would not create a significant permanent work force, it would create opportunities for skilled construction work throughout the construction period within which the proposed CBP facilities would be installed. It is expected that the maximum number of construction workers that would be employed to install CBP facilities is about 600 persons. Additionally, the CBP will create about 15 high-quality permanent job opportunities to serve future CBP facilities.
8. **Opportunity for Grant Funding to Offset some Construction and Operational Costs:** On November 17, 2021, the California Water Commission (CWC) approved the CBP continuing its work towards final approval of \$215 million awarded under the Water Storage Investment Program (WSIP). The Proposition 1 WSIP funding available for the CBP would result in lower costs to IEUA over the 50-year project life, thus providing an economic benefit to the region, should the CBP be implemented.
9. **Present Value Benefit:** The CBP would provide a present value benefit of roughly \$1.25 billion dollars, with a total capital cost of \$1.17 billion dollars, thus the economic benefit of the proposed project has been assessed to outweigh the cost of implementing the proposed project.

I. STATEMENT OF OVERRIDING CONSIDERATIONS

This section of the findings addresses the requirements in CEQA Section 21081(b) and CEQA Guidelines Section 15093 requiring the Lead Agency to balance the benefits of the proposed project against its unavoidable significant adverse impacts, and to determine whether the project-related significant impacts can be acceptably overridden by the project benefits when the impacts/benefits are compared and balanced. As outlined in Section F above, the proposed project is forecast to contribute to cumulative, unavoidable significant adverse environmental impacts in three environmental categories: biological resources, greenhouse gas emissions, and utilities and service systems.

The IEUA Board finds that the previously stated benefits of the proposed project, outlined in Section G above and as are forecast to result from implementation of the CBP, outweigh the cumulative unavoidable adverse environmental effects to biological resources, greenhouse gas emissions, and utilities and service systems that have been outlined above. From IEUA's perspective, IEUA finds that the proposed CBP fulfills the objectives of meeting permit compliance for the continued use of recycled water in the Chino Groundwater Basin; maintaining commitments for salt management to enable sustainable use of recycled water in the Basin; developing infrastructure that addresses long term supply vulnerabilities; providing a source of water for emergency response; and, developing an integrated solution to produce State and Federal environmental benefits.

The objective to meet permit compliance for the continued use of recycled water in the Chino Groundwater Basin would be met through the provision of groundwater recharge facilities to recharge high quality, low TDS recycled water, which would reduce TDS levels within the Chino Groundwater Basin. Furthermore, the CBP would facilitate salt management through the proposed AWPf with an expected effluent concentration of 100 mg/L, thus enabling sustainable use of recycled water in the Basin into the future. Additionally, the CBP would improve the use of recycled water at a regional level through new regional pipelines enabling greater potential access

to recycled water, and would enhance local groundwater supplies through the installation of additional extraction wells and through the installation of new wellhead treatment systems that would bring existing out-of-service wells online. Long-term supply vulnerabilities would thus be addressed. By investing in Basin-wide water supply infrastructure and local supplies, water supply reliability is improved through enhanced emergency response, improved groundwater supply and quality management, and expansion of recycled water supplies. This robust water supply portfolio available to the region will be more resilient and less susceptible to catastrophic events and the effects of climate change. Additionally, the CBP would provide an integrated solution to produce State and Federal environmental benefits through the dedication of environmental benefit by minimizing the stressors on this salmonid species through future State-managed pulse flows.

Construction-related employment of highly trained workers created by the proposed project would have an important short-term benefit to the Inland Empire communities, as would the long-term employment opportunities of such workers that would be created by the operation of future CBP facilities. Ultimately, there are numerous benefits from implementation of the CBP due to the importance of the sustainable management of water within the Chino Basin, specifically management of recycled water impacts on the Basin through the provision of a new highly treated recycled water generated by the new AWPf.

Thus, the IEUA Board concludes that the benefits outlined above, that accrue to the community from authorizing the implementation of the proposed project, outweigh the unavoidable significant adverse impacts to biological resources, greenhouse gas emissions, and utilities and service systems identified in the FPEIR and described above. The benefits stated in the previous Section H are considered sufficient to offset the significant adverse effects that cannot be avoided if the project is implemented.

The IEUA Board's findings set forth in the preceding sections have identified all of the adverse environmental impacts and feasible mitigation measures which can reduce potential adverse environmental impacts to insignificant levels where feasible, or to the lowest achievable levels where significant unavoidable adverse environmental impacts remain. The findings have also analyzed alternatives to determine whether they are reasonable or feasible alternatives to the proposed action, or whether alternatives might reduce or eliminate the significant biological resources, greenhouse gas emissions, and utilities and service systems impacts of the proposed action. No feasible alternative can achieve the requisite minimization of biological resources, greenhouse gas emissions, and utilities and service systems impacts without (a) avoiding a significant adverse impact to hydrology and water quality, and/or (b) achieving key project goals and objectives.

The CBP FPEIR presents evidence that implementing the proposed project will contribute to significant adverse biological resources, greenhouse gas emissions, and utilities and service systems impacts which cannot be assuredly mitigated to a less than significant level. These significant impacts have been outlined above and presented in detail in the PEIR and the IEUA Board finds that all feasible alternatives and mitigation measures have been adopted or identified for implementation by the IEUA and/or partner agencies, where appropriate. Nonetheless, the IEUA Board recognizes significant adverse effects remain after imposition of all feasible mitigation in the areas of biological resources, greenhouse gas emissions, and utilities and service systems, which are nevertheless offset by the substantial list of benefits described in Section H hereof.

The IEUA Board finds that the project's benefits are substantial as outlined in Section H and that these benefits, individually and collectively, justify overriding the unavoidable significant adverse impacts associated with the proposed project. This finding is supported by the fact that the

benefits listed above result in the proposed project fulfilling the objectives of meeting permit compliance for the continued use of recycled water in the Chino Groundwater Basin; maintaining commitments for salt management to enable sustainable use of recycled water in the Basin; developing infrastructure that addresses long term supply vulnerabilities; providing a source of water for emergency response; and, developing an integrated solution to produce state and Federal environmental benefits. The CBP could not be implemented outside of the Chino Basin, as the management actions proposed cannot be attained at any other location, or in another alternative manner without additional, equal or greater adverse impacts, and without meeting the project objectives.

Thus, the IEUA Board concludes that the proposed project's benefits offset the adverse impacts to biological resources, greenhouse gas emissions, and utilities and service systems that may result from implementing the CBP. The IEUA Board further finds that the benefits outlined above, when balanced against the unavoidable significant adverse environmental impacts, outweigh these impacts because of the environmental, social, and economic benefits which accrue to IEUA, Watermaster, the stakeholders, and the residents in its service area as outlined in Section H hereof.

As the CEQA Lead Agency for the proposed action, the IEUA Board has independently reviewed the applicable sections of this document and the CBP FPEIR, and fully understands the scope of impacts caused by implementation of the proposed project. Further, the IEUA Board finds that all potential adverse environmental impacts and all feasible mitigation measures to reduce these impacts have been identified in the FPEIR, public comment, and public testimony. These impacts and mitigation measures are discussed above in Section D and E, and the Board concurs with the facts and findings contained in those sections. The IEUA Board also finds that a reasonable range of alternatives was considered in the PEIR, as summarized above in Section G, and that no feasible alternatives which substantially lessen project impacts are available for adoption.

The IEUA Board concurs with the extensive environmental, economic, legal, social, technological and employment benefits identified above, which will accrue to the Chino Basin groundwater resources, the IEUA and its partner agencies, and the population residing within Chino Basin. The Board has balanced these substantial benefits against the unavoidable significant adverse environmental effects of the proposed project. Given that these substantial benefits will support the residents of the Chino Basin over the long term if the CBP is implemented, the IEUA Board hereby finds that the benefits identified herein, collectively and individually, outweigh the unavoidable, cumulative significant adverse biological resources, greenhouse gas emissions, and utilities and service systems impacts, and hereby override these impacts to obtain the benefits listed in Section H that will result from approval and implementation of this project.

CLERK OF THE
BOARD OF SUPERVISORS

DATE FILED & POSTED

Posted On: 05/20/2022

Removed On: 07/01/2022

Receipt No: No. 05202022-357

2022 MAY 20 AM 10:24

NOTICE OF DETERMINATION

COUNTY OF SAN BERNARDINO
CALIFORNIA
Office of Planning & Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

From: Inland Empire Utilities Agency
6075 Kimball Avenue
Chino, CA 91708

and

San Bernardino County Clerk of the Board
385 North Arrowhead Avenue
San Bernardino, CA 92415

Subject: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

Inland Empire Utilities Agency (IEUA) Chino Basin Program PEIR

SCH#2021090310
State Clearinghouse Number

Elizabeth Hurst
Lead Agency Contact Person

(909) 993-1634
Telephone Number

Project Location

The proposed project would occur within IEUA's service area, which occurs almost entirely within the Chino Groundwater Basin (Chino Basin). IEUA's service area is located in western San Bernardino County, and serves approximately 875,000 residents in a 242-square mile service area, while the Chino Basin consists of about 235-square miles of the upper Santa Ana River watershed. The Chino Basin is bounded:

- on the north by the San Gabriel Mountains and the Cucamonga Basin;
- on the east by the Rialto-Colton Basin, Jurupa Hills, and the Pedley Hills;
- on the south by the La Sierra Hills and the Temescal Basin; and
- on the west by the Chino Hills, Puente Hills, and the Spadra, Pomona, and Claremont Basins.

The Chino Basin is mapped within the USGS – Corona North, Cucamonga Peak, Devore, Fontana, Guasti, Mount Baldy, Ontario, Prado Dam, Riverside West and San Dimas Quadrangles, 7.5 Minute Series topographic maps. The center of the Basin is located near the intersection of Haven Avenue and Mission Boulevard at Longitude 34.038040N, and Latitude 117.575954W.

The majority of the infrastructure proposed as part of the CBP is proposed in the northern portion of the Basin, north of the Interstate 10 Freeway.

Project Description

The CBP was submitted for Proposition 1 – Water Storage Investment Program (WSIP) funding and was awarded \$206.9M in conditional funding in July 2018. Under the WSIP, the CBP is proposed to be a 25-year conjunctive use project that proposes to use advanced water purification to treat and store up to 15,000 acre-feet-per-year (AFY) of recycled water in the Chino Basin and extract the water during call years, which will likely be in dry seasons. The CBP would increase additional available groundwater supplies in the adjudicated Chino Basin through increased water recycling that would result from operation of a new Advanced Water Purification Facility (AWPF) and through groundwater storage by operation of new injection wells. The CBP would then dedicate a commensurate amount of water generated by the AWPF for Chino Basin use to provide for an exchange of State Water Project supplies in Lake Oroville in northern California that would otherwise be delivered to Southern California. The additional Lake Oroville water would subsequently be released in the form of pulse flows in the Feather River to improve habitat conditions for native salmonids and achieve environmental benefits. In order to accomplish the water exchange outlined above, the CBP would install new water and wastewater type infrastructure within the Chino Basin, and would ultimately result in additional groundwater supply therein.

CLERK OF THE
BOARD OF SUPERVISORS**Notice of Determination, page 2 of 2**


2022 MAY 20 AM 10: 25

This is to advise that the Inland Empire Utilities Agency has approved the above described project on☒ Lead Agency ☐ Responsible AgencyMay 18, 2022 and has made the following determination regarding the above described project:
(Date)

1. The project [☒ will ☐ will not] have a significant effect on the environment.
2. ☒ An Environmental Impact Report was prepared for this project pursuant to the provisions of CEQA.
☐ A Mitigated Negative Declaration was prepared for this project pursuant to the provisions of CEQA.
3. Mitigation measures [☒ were ☐ were not] made a condition of the approval of the project and a Mitigation Monitoring and Reporting Plan was adopted.
4. A Statement of Overriding Considerations [☒ was ☐ was not] adopted for this project.
5. Findings [☒ were ☐ were not] made pursuant to the provisions of CEQA.

This is to certify that the Environmental Impact Report and record of project approval is available to the general public at:

Inland Empire Utilities Agency at 6075 Kimball Avenue, Chino, CA 91708 or online at:
<https://www.ieua.org/read-our-reports/public-notices/>


SignatureChino Basin Program Manager
Title5/18/2022
Date



State of California - Department of Fish and Wildlife
2022 ENVIRONMENTAL DOCUMENT FILING FEE
CASH RECEIPT
 DFW 753.5a (REV. 01/01/22) Previously DFG 753.5a

Print

Start Over

Save

RECEIPT NUMBER:

36 — 05202022 — 357

STATE CLEARINGHOUSE NUMBER (If applicable)

2021090310

SEE INSTRUCTIONS ON REVERSE. TYPE OR PRINT CLEARLY.

LEAD AGENCY

Inland Empire Utilities Agency

LEAD AGENCY EMAIL

DATE

05202022

COUNTY/STATE AGENCY OF FILING

San Bernardino

DOCUMENT NUMBER

PROJECT TITLE

Inland Empire Utilities Agency (IEUA) Chino Basin Program PEIR

PROJECT APPLICANT NAME

Inland Empire Utilities Agency

PROJECT APPLICANT EMAIL

PHONE NUMBER

(909)993-1634

PROJECT APPLICANT ADDRESS

6075 Kimball Avenue

CITY

Chino

STATE

CA

ZIP CODE

91708

PROJECT APPLICANT (Check appropriate box)



Local Public Agency



School District



Other Special District



State Agency



Private Entity

CHECK APPLICABLE FEES:



Environmental Impact Report (EIR)

\$3,539.25

\$

3,539.25



Mitigated/Negative Declaration (MND)(ND)

\$2,548.00

\$

0.00



Certified Regulatory Program (CRP) document - payment due directly to CDFW

\$1,203.25

\$

0.00



Exempt from fee



Notice of Exemption (attach)



CDFW No Effect Determination (attach)



Fee previously paid (attach previously issued cash receipt copy)



Water Right Application or Petition Fee (State Water Resources Control Board only)

\$850.00

\$

0.00



County documentary handling fee

\$

50.00



Other

\$

PAYMENT METHOD:



Cash



Credit



Check



Other

TOTAL RECEIVED

\$

3,589.25

SIGNATURE

AGENCY OF FILING PRINTED NAME AND TITLE

Lisa Arredondo, Deputy Clerk



One Water & Stewardship Committee

Authorize exchange agreement with
Inland Empire Utilities Agency to
assist in the implementation of the
Chino Basin Program

Item 7-6

October 7, 2024

Item 7-6 Chino Basin Program

Subject

Review and consider the Lead Agency's certified 2022 Final Environmental Impact Report for the Chino Basin Program and take related CEQA actions, and authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the program

Purpose

Metropolitan has been collaborating with IEUA on the Chino Basin Program in a role of facilitating State Water Contract partner

Recommendation

Authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency

Fiscal and Budget Impact

No fiscal impact. Participation in the program will improve regional reliability and provide access to additional emergency supplies for Metropolitan's service area

Chino Basin Program (CBP) Overview

California Department of Fish and Wildlife indicated pulse flows would only occur in below normal and dry years

IEUA's pulse flow obligation to State is 375 TAF (less credits for carriage water)

Lake Oroville



Fish and habitat benefit

Pulse Flow to Delta

Metropolitan to transfer portion of Table A supplies to Department of Water Resources (max 40 TAF in one year) for pulse flows

IEUA to repay Metropolitan through in-lieu production (30 TAF) and direct pump-in (10 TAF) to Rialto Pipeline

Chino Basin Program



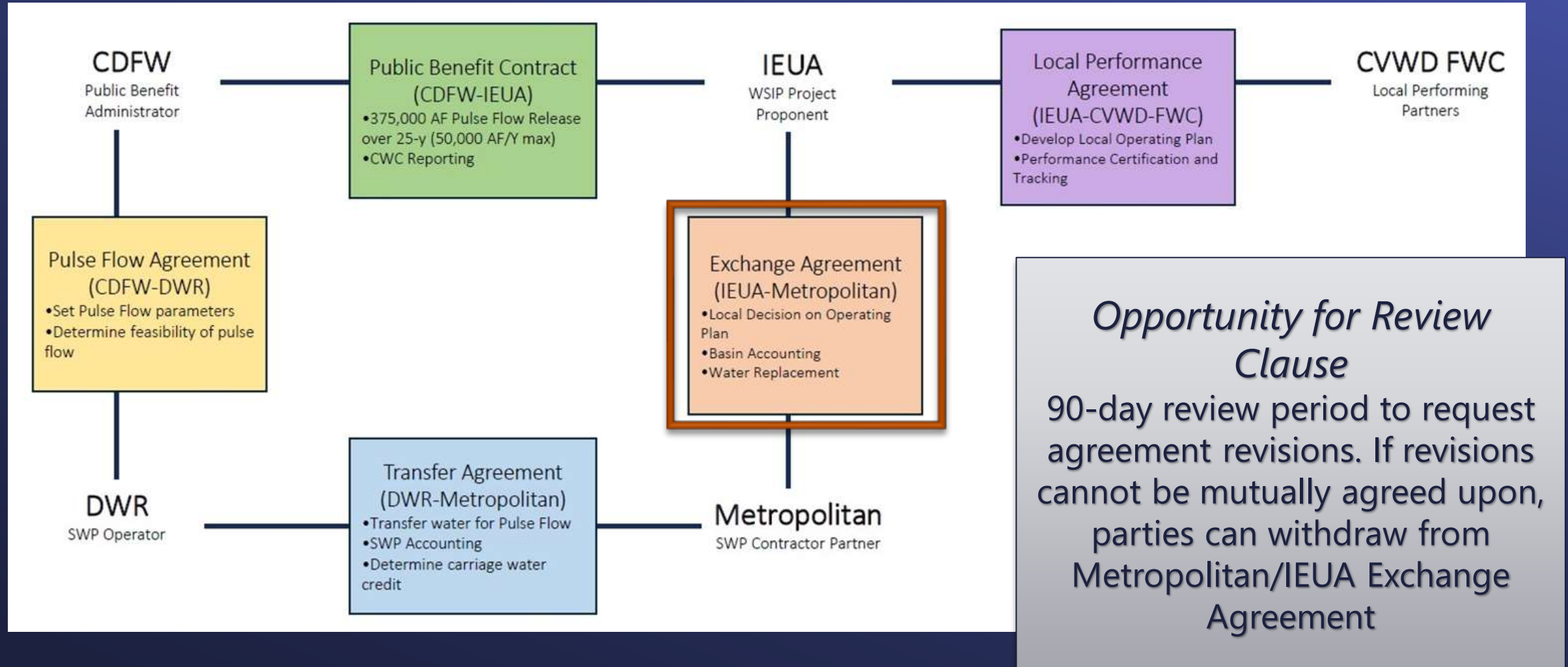
Local supply benefit once State obligation fulfilled



Emergency use benefit (50 TAF) system flexibility

Metropolitan service area

Agreements Needed for Program Execution



Metropolitan/ IEUA Exchange Agreement Terms – Planning, Design, and Construction

- Agreement does not commit Metropolitan to participate in funding or operation of CBP Facilities
 - Metropolitan will operate, maintain, administer Rialto pipeline service connection for pump-in operations
- Metropolitan will not have any ownership of CBP Facilities
- IEUA will have primary CEQA responsibility for the program and necessary facilities

Exchange Agreement Terms – Operation and Performance

Operating Committee

- Jointly formed with staff from both parties
- Will develop Annual Operating Plan to evaluate feasibility of pulse flow exchange each year, timing of payback, availability of Metropolitan supplies, etc

Local Performance

- IEUA repayment to Metropolitan completed by end of calendar year that follows pulse flow call year
- IEUA Take or Pay contract to pay supply rate for 30 TAF

Emergency Use

- Provides up to 50 TAF (40 TAF in one year) for emergency use situations
- Metropolitan should be able to initiate provision, provided enough supplies in storage

Pump-in Water Quality

- Consistent with Metropolitan's Policy for Acceptance of New Water into Conveyance Facilities (2001)
- Metropolitan must approve water quality and pump-in proposal prior to any operations

Metropolitan/ IEUA Exchange Agreement Terms – Failure to Perform

- Failure to perform agreed upon exchange is referred to as “non-performance”
- Metropolitan’s non-performance refers to the inability or unwillingness to transfer its Table A supplies to the State
 - Metropolitan is responsible for any State financial or water remuneration incurred by IEUA for Metropolitan non-performance
- IEUA’s non-performance refers to inability to execute the agreed upon pump-in or in-lieu amount

Metropolitan/ IEUA Exchange Agreement Terms – Failure to Perform

- IEUA to return non-performance water as soon as possible but no later than 12-months from notice of non-performance
- Three options to return non-performance water:
 - 1) Buy the water outright from Metropolitan (cyclic storage or similar)
 - 2) Deliver water purchased on open market to Metropolitan through Rialto Pipeline
 - 3) Implement an operating committee-approved alternative
- If repayment of non-performance extends beyond 12-months after notice, IEUA will purchase 1.5 times remaining non-performance water quantity as cyclic storage water

Next Steps

- Staff will continue working with IEUA on other necessary agreements
- Continue to support program development
 - Staff participating in CBP preliminary design report efforts beginning at the end of October
- Design and construction for CBP facilities are expected to begin in 2025 and 2027, respectively
- Program expected operational by 2032

Board Options

- Option #1
 - Review and consider the Lead Agency's certified 2022 Final Environmental Impact Report for the Chino Basin Program and take related CEQA actions, and authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the program
- Option #2
 - Do not authorize the General Manager to enter into an exchange agreement with Inland Empire Utilities Agency to assist in the implementation of the Chino Basin Program

Staff Recommendation

- Option #1





- **Board of Directors**
One Water and Stewardship Committee

10/8/2024 Board Meeting

7-7

Subject

Authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Staff is seeking authorization to enter into agreements with Western Canal Water District (Western) and Richvale Irrigation District (Richvale) for single-year water transfers during 2025 through 2027. Staff brought the proposed agreements to the Board as an information item in September 2024 and received feedback on term, budget, and water availability. Under the proposed agreements, Metropolitan would pay a one-time upfront option payment to each agency, located in the Feather River service area, for the first right to annually call on each agency's available water transfer supplies during 2025 through 2027. The proposed option payment would secure the first right to purchase available water transfer supplies from each agency at fixed prices tied to the final State Water Project (SWP) allocation. The option payment is \$250,000 for each of the two agencies. The call price for water made available is \$965 per acre-foot at SWP allocations of 20 percent or less and \$600 per acre-foot at SWP allocations greater than 20 percent. Western and Richvale may annually transfer up to a combined 52,800 acre-feet.

Staff has been exploring new water transfer partnerships to improve access to limited north-of-Delta water transfer supplies for use during dry years. The purpose of the new agreements is to secure exclusive first-right access to the available water to help maximize the quantity of water that Metropolitan can purchase. Maximizing access to these transfer supplies will improve dry-year reliability that can reach the entire service area, including Metropolitan's SWP-dependent area over the next three years as Metropolitan pursues infrastructure projects to expand the reach of Colorado River and locally stored supplies. The proposed agreements will help meet the Board's commitment to providing equitable reliability across Metropolitan's service area by increasing the potential availability of SWP supplies.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027.

Fiscal Impact: The fiscal impact in the current 2024/25 fiscal year would be the one-time option payment of \$500,000, and up to \$51 million annually for water purchases in the event the maximum amount of water were purchased under a low State Water Project allocation (20 percent or less). These costs were not included in the biennial budget for fiscal years 24/25 and 25/26 and would be sourced from budgeted funds from the

Water Supply Program and State Water Project budget. Potential purchases in fiscal years beyond the current biennium would be considered in the requested budget for Water Supply Programs for those future years.

Business Analysis: These agreements would provide first-right access to up to 52,800 acre-feet of north-of-Delta water transfer supplies, that if purchased, would improve drought reliability for the SWP-dependent area.

Option #2

Do not authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027.

Fiscal Impact: Not authorizing the agreements could result in unspent funds in the Water Supply Program and SWP budget that would have otherwise been used to fund the option payments and potential water purchases in dry years.

Business Analysis: Metropolitan would likely purchase fewer north-of-Delta water transfer supplies, have decreased flexibility in responding to future drought conditions, and increased challenges in meeting equitable reliability for all member agencies.

Applicable Policy

Metropolitan Water District Administrative Code Section 4203: Water Transfer Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

By Minute Item 52946, dated August 16, 2022, the Board adopted a resolution committing to regional reliability for all member agencies.

Related Board Action(s)/Future Action(s)

None

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action involves entering into agreements with Western Canal Water District and Richvale Irrigation District to pursue water transfer supplies for 2025 through 2027 associated with the operation of existing public water conveyance facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. (State CEQA Guidelines Section 15301).

CEQA determination for Option #2:

None required

Details and Background

Background

Staff has been exploring water transfer partnerships to help improve dry-year reliability, particularly for water that can be delivered to the entire service area and help meet the needs of the SWP-dependent area. The Board has supported the pursuit of water transfers with various parties through annual authorizations and authorized the General Manager to secure up to \$100 million of water transfer supplies in 2022 and up to \$50 million of water transfer supplies in 2023. Since 2008, Metropolitan has purchased dry-year water transfers from sellers north of the Delta via a buyers group facilitated by the State Water Contractors (SWC). However, during the recent drought years of 2021 and 2022, Metropolitan's share of purchases via the SWC buyers group was only 6,000 to 8,000 acre-feet. To maximize the potential water transfers available to Metropolitan, staff proposes entering into option agreements with Western and Richvale for the exclusive first right to purchase their available water transfer supplies from 2025 through 2027.

Sellers

Western and Richvale are agricultural water districts in the Feather River service area in Butte County with pre-1914 surface water rights. The districts have a diversion agreement with the State of California Department of Water Resources (DWR) to receive their water supplies via Thermalito Afterbay, downstream of Oroville Reservoir. Land in these districts is irrigated primarily for rice production. Water is made available for transfer solely by crop idling (fallowing) participating fields during May through December.

Both agencies have historically sold water transfer supplies to SWP contractors, including Metropolitan, via the SWC buyers group. In recent years, Western and Richvale sold transfers in 2008 to 2010, 2012, 2014, and 2018, with total combined volumes ranging from approximately 13,000 acre-feet in 2009 to over 56,000 acre-feet in 2014. Notably, the districts did not sell water in 2015, 2021, or 2022 because DWR curtailed contract deliveries to the districts by 50 percent pursuant to the drought provisions in their diversion agreement. These drought provisions allow for DWR to reduce diversion quantities by up to 50 percent in one year and no more than 100 percent in any series of seven consecutive years. Because the districts were curtailed in 2021 and 2022, it is now less likely that they will face a drought-related reduction in supplies through the end of 2027 and thus more likely that they will have water available for transfer.

Proposed Agreements

Staff is proposing two separate option agreements, one with each agency, that will provide the framework for Metropolitan having the first right to annually call on available transfer supplies from 2025 through 2027. Under the framework, Western and Richvale would decide each year whether to offer any water for sale. Metropolitan would then have the first right to purchase any of the water offered in each year. Key provisions of the proposed agreements include:

- *Term* – The term is through 2027 to coincide with the covered period for water transfers in the Addendum to the Final Environmental Impact Report for the Western Canal Water District and Richvale Irrigation District Water Transfers from 2018 to 2022. The Addendum was certified by Western and Richvale in 2022 and extended the covered period for water transfers for five years, from 2023 to 2027.
- *Option Payment* – Metropolitan will pay Western and Richvale \$250,000 each (a total of \$500,000) for the exclusive first right to purchase water offered by Western and Richvale from 2025 to 2027. The option payment of \$250,000 to each agency (\$500,000 total) is sized to help defray costs already incurred by Western and Richvale to prepare the Environmental Impact Report and Addendum, which enable them to transfer water.
- *Available Supply*
 - Western may make up to 33,600 acre-feet of water available for transfer via crop idling up to 11,200 acres.
 - Richvale may make up to 19,200 acre-feet of water available for transfer via crop idling up to 6,400 acres.
- *Notification Dates*
 - By February 28 of each year, Metropolitan will notify Western and Richvale of its interest in acquiring transfer supplies for that year, and upon notification, Western and Richvale will solicit landowner interest in participating in a transfer on the terms set forth in the agreement.
 - By March 31 of each year, Western and Richvale will notify Metropolitan of the amount of water, if any, offered during the year.
 - By April 15 of each year, Metropolitan will notify Western and Richvale of the amount of water, if any, it will purchase during the year.

- *Water Purchase Price*
 - Metropolitan will pay Western and Richvale \$965 for each acre-foot Western and Richvale deliver to point of delivery (Thermalito Afterbay) when the SWP allocation as of June 30 is less than or equal to 20 percent.
 - Metropolitan will pay Western and Richvale \$600 for each acre-foot Western and Richvale deliver to point of delivery (Thermalito Afterbay) when the SWP allocation as of June 30 is greater than 20 percent.
- *Conveyance Risk*
 - Metropolitan will bear the conveyance risk for water purchased by the April 15 call date that the sellers have provided at Thermalito Afterbay. This risk includes the inability of DWR to export transfer supply from the Delta during the “transfer window” or the potential spilling of any backed-up transfer supply temporarily stored in Lake Oroville. Staff will monitor DWR’s monthly studies as the SWP supply develops during the water year.
 - Metropolitan will be responsible for any carriage losses that DWR assesses to convey transfer supply from the point of delivery at Thermalito Afterbay through the Delta. This loss is a share of the transfer supply that contributes to Delta water quality and flow objectives and has historically ranged from 20 to 35 percent.
- *Reductions in Available Supply*
 - Western and Richvale will not make water available during a year in which their surface water allocations are reduced, including if reduced pursuant to the shortage provisions in their diversion agreement with the State of California.
 - Western and Richvale are potential participants in the Agreements to Support Healthy Rivers and Landscapes (Voluntary Agreements) under consideration as part of the State Water Resources Control Board’s planned update to the Bay-Delta Water Quality Control Plan; if Voluntary Agreements are adopted and implemented during the term of the proposed agreements, Western and Richvale’s available transfer supplies will be reduced in Above Normal, Below Normal, and Dry water year types.
- *Minimum Performance/Refund of Option Payment*
 - Western and Richvale anticipate being able to offer water for sale at the negotiated prices. If Metropolitan notifies Western and Richvale of its interest in purchasing water in a given year, and is offered less than 1,000 acre-feet for sale, the district offering less than 1,000 acre-feet for sale will refund to Metropolitan a pro-rata share of the upfront option payment (\$83,333.33).

If Metropolitan were to call on available supplies in future years, in addition to the proposed agreements with Western and Richvale, Metropolitan would need to enter into annual storage and conveyance agreements with the sellers and DWR.

Metropolitan’s decision to purchase transfer supplies under the proposed agreements will be consistent with and informed by Metropolitan’s Water Surplus and Drought Management plan. As with any decision to purchase annual water transfers via the SWP, Metropolitan will consider the developing hydrologic conditions, the need for and capacity to store the supplemental water supply, and the DWR’s ability to convey the transfer supplies through the Delta. Staff will continue to seek annual board authorization for purchasing additional water transfers beyond the scope of the proposed agreements.

Funding of Proposed Agreements

If the transfers are placed into effect, the funding for the water transfer purchases contemplated in the proposed agreements would come from Water Supply Program and SWP funds in the upcoming biennium. Staff anticipates calling on the water under the proposed agreements in dry years, such as when the SWP allocation is 0 to 20 percent. Staff anticipates unspent budget funds will be available to fund the transfers in these types of years. Low SWP allocations correspond with lower than budgeted costs for SWP supplies since the budgets for these two programs assumes funding for a 50 percent SWP allocation.

Benefits to Metropolitan

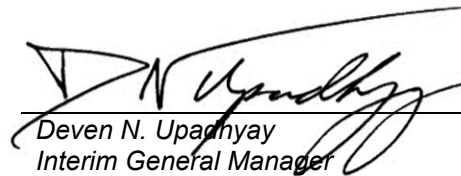
The proposed agreements benefit Metropolitan by enhancing dry-year reliability with water delivered through the State Water Project, which can reach the entire service area, including the SWP-dependent area. The agreements offer exclusive first-right access to purchase water from two major sellers in the Feather River service area ensuring a dependable source when water is typically scarce, at a fixed price. Additionally, these agreements increase Metropolitan's flexibility in managing water resources, allowing for better planning and response to fluctuating hydrologic conditions. By securing available water supply from trusted sources, Metropolitan can reduce the risk of shortages and maintain consistent and reliable water service to its member agencies.



Brandon J. Goshi
Interim Manager,
Water Resource Management

9/26/2024

Date



Deven N. Upadhyay
Interim General Manager

10/1/2024

Date

Ref# wrm12702386



One Water & Stewardship Committee

Authorize agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027

Item 7-7

October 7, 2024

Item 7-7 Water Transfer Agreements

Subject

Authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027.

Purpose

These agreements would improve access to limited north-of-Delta water transfer supplies and increase drought reliability for the SWP dependent area.

Recommendation and Fiscal Impact

Authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027. The agreements provide for a one-time upfront option payment of \$500,000 total and annual water purchase payments of up to \$51 million if called.

Recommendation and Fiscal Impact

Not budgeted. Costs would be sourced from budgeted funds from the Water Supply Program and State Water Project budget

Background

Water transfers help meet demands

Approach for dry and critical years

Board authorized the General Manager to secure up to \$50M of water transfers in 2024

Funded by unused Water Supply Program and SWP Budget

Past participation in the dry-year transfer program with State Water Contractors

Limited availability and access



Slide 6 Item 6B OW&S Committee August 19, 2024

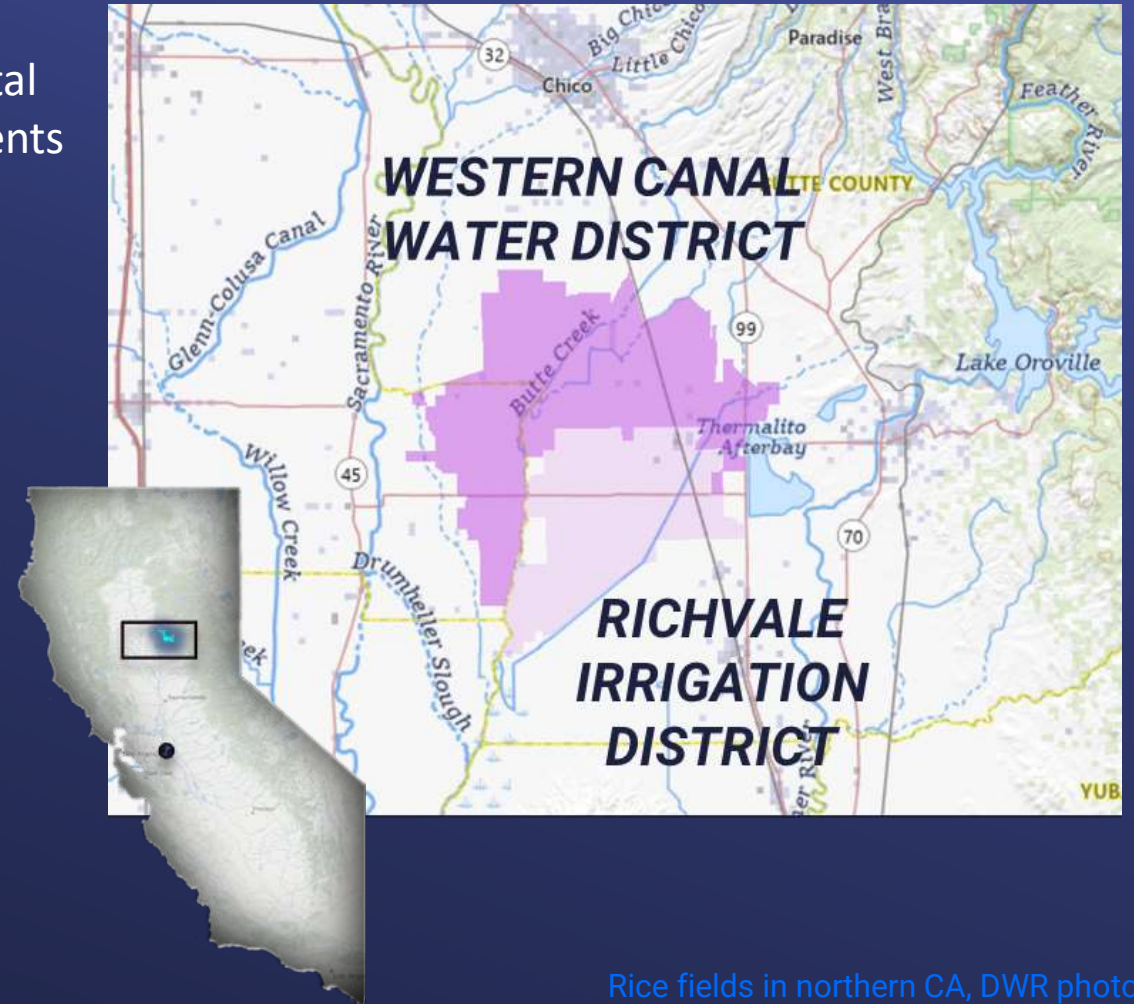
Exploring new partnerships and approaches to water transfer arrangements

- Improve access to limited supplies
- Increase drought reliability for the SWP-dependent area

Multi-Year Option – Proposed Agreements

- One agreement for each seller
 - Western Canal Water District
 - Richvale Irrigation District

} two total agreements
- Term: 2025-2027
- One-time option payment to each seller for first right of refusal on crop idling water transfers
- Water purchase price based on final SWP allocation



Rice fields in northern CA, DWR photo

Fiscal Impact

- February 2024: Board authorized the General Manager to secure up to \$50 million of water transfers if needed
 - Funding from unused Water Supply Program and SWP Budget

	FY 24/25	FY 25/26	FY 26/27
Option Payment	\$500,000	\$0	\$0
Water Purchase Payments	Up to \$51M	Up to \$51M	Up to \$51M
Total	Up to \$51.5M	Up to \$51M	Up to \$51M
Source of Funds	Unused Water Supply Program and State Water Project Budget		Budget request for Water Supply Programs

September Committee Input

The agreement term is too short

- Sellers have environmental coverage through 2027
- Term covers a period of time under which Metropolitan is developing drought actions to address SWP-dependent area

What if we don't get any water?

- No remedy for wet conditions or curtailment of seller supply
- Agreement provides for the pro-rated return of option payment if Metropolitan calls on water and the seller does not offer a minimum amount
- Option payment is an insurance policy for the SWP-dependent area

Budget concerns

- Staff anticipates unspent funds in call years

Benefits



Increase
Metropolitan's
flexibility in managing
water resources

Better planning and response to
fluctuating hydrologic conditions

Securing available
water supplies from
trusted sources reduces
the risk of shortages



Maintain consistent service to customers

Exclusive first-right access
to limited north-of-Delta
transfer supplies



Stability in
purchase
price



Building partnerships
with north of Delta
agricultural districts



Board Options

Option 1

- Authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027

Option 2

- Do not authorize the General Manager to enter into agreements with Western Canal Water District and Richvale Irrigation District for water transfer options and first rights of refusal during 2025 through 2027

Item 7-7 Water Transfer Agreements

Item 7-7 Water Transfer Agreements

Staff Recommendation

- Option 1





Bay-Delta Resources

- **Bay-Delta and Conveyance: Managing Risks and Water Supply Reliability**

Summary

This report provides an overview of the Bay-Delta system, risks to water supply, and potential risk management actions, such as the Delta Conveyance Project, that would improve the water supply reliability of the State Water Project and Metropolitan.

Purpose

Informational

Attachments

Attachment 1: GM Memo dated January 18, 2024

Attachment 2: GM Memo dated March 20, 2024

Attachment 3: GM Memo dated May 16, 2024

Attachment 4: Responses to Director requests for information

Detailed Report

Background

As described in a presentation to the One Water and Stewardship Committee in September 2024, the State Water Project, which is owned by the state of California and operated by its Department of Water Resources (DWR), provides a critical water supply to the Southern California region by providing approximately 30 percent of Metropolitan's imported supplies on a long-term average. The State Water Project infrastructure spans over 705 miles throughout the state, originating in the Northern Sierras with termini in the Bay Area, central coast and southern California. The State Water Project, with its existing storage and conveyance facilities, currently delivers low salinity water to approximately 27 million Californians, of which 19 million are within Metropolitan's service area. Given the size and importance of the State Water Project to the state, and Metropolitan's service area, staff is providing monthly updates to the Metropolitan Board from September 2024 through December 2024. These updates include:

- September 2024: State Water Project overview
- October 2024: Importance of the Bay-Delta, the State Water Project, and the potential value of adding a 45-mile conveyance facility to the State Water Project, known as the Delta Conveyance Project
- November 2024: Information Board Letter regarding continued funding to plan, permit, and advance design of the Delta Conveyance Project
- December 2024: Action Board Letter regarding continued funding to plan, permit, and advance design of the Delta Conveyance Project.

Board Report Bay-Delta and Conveyance: Managing Risks and Water Supply Reliability

Collectively, these updates are intended to provide the Board with information to assist it in its decision-making process regarding funding for continued pre-construction planning and design of the Delta Conveyance Project. In 2024, the Board will only be asked to consider an investment to support the continuation of the project's planning and design phases. The Board would not make a final decision regarding participation in the implementation of the Delta Conveyance Project until 2027.

Importance of the Delta, Specific Risks to the State Water Project

The Sacramento-San Joaquin Delta (Delta) is the hub of California's water distribution system. Two-thirds of California's water originates in the Sierra Nevada mountains, eventually flowing through the Delta. Deliveries from the State Water Project support more than 27 million people and about 750,000 acres of farmland. The water conveyance system, both natural and man-made, is critical to the health of local communities and the success of California's economy.

The Delta is formed by the confluence of the Sacramento and San Joaquin Rivers. In the Delta, freshwater from the rivers mingles with saltwater from the San Francisco Bay and Pacific Ocean's tides, forming the largest estuary on the west coast of North America. The Delta and Suisun Marsh contain more than 1,100 miles of levees and 140 leveed islands and tracts.

Many factors affect the Delta and its ability to support the variety of water users that depend on it. Seismic risk in the Delta threatens the levee system that protects Delta communities, the ecosystem, recreation, and through-Delta water supply conveyance. The United States Geologic Survey¹ has determined there is a 72 percent chance of an earthquake of magnitude 6.7 or greater in the Bay-Delta area at some point in the next 20 years. A major seismic event in the Delta could lead to levee collapse, resulting in the intrusion of salt water into the central and south Delta and impairment of water supplies. DWR, Metropolitan, and other Delta water users have continued to make investments in emergency preparedness – including levee improvements and modernization, material stockpiles, and continued maintenance of the freshwater pathway.

In addition, ongoing changes to regulations and permits issued under the Federal and California Endangered Species Acts, the Federal Clean Water Act, and the Porter Cologne Water Quality Control Act continue to degrade the water supply reliability of the State Water Project and Central Valley Project. DWR has determined that the reliability of the State Water Project has declined 21 percent over the last two decades,² largely as a result of increased regulation. Metropolitan continues to invest in the best available science both directly and indirectly through the State Water Contractors. Recent changes to the Fall X2 requirement that have the potential to improve water supply conditions for Metropolitan are based, in part, on scientific research that Metropolitan staff have been integral in advancing.

Furthermore, the effects of climate change such as less snow, more rain, more frequent and intense droughts with wetter wet years, sea level rise, and increasing water temperatures, threaten the Delta ecosystem and its ability to meet the water needs of California's agricultural and urban communities, both within and south of the Delta. Changes to precipitation and runoff patterns as a result of climate change have been occurring and are expected to intensify over the coming decades. Recent hydrologic modeling performed by the Department of Water Resources forecasts additional runoff in the winter as a result of more intense storms and less runoff in the spring due to a reduced snowpack. To meet the challenges of climate change, Metropolitan continues to evaluate new groundwater storage, in-service-area conveyance improvements, surface storage opportunities and the Delta Conveyance Project.

Delta Conveyance Project

Since 2019, DWR has led the planning efforts for the Delta Conveyance Project to improve the reliability of the State Water Project given historical and future risks. The Delta Conveyance Project includes the construction of two new intakes on the Sacramento River in the north Delta, an underground tunnel, forty-five (45) miles in length and thirty-six (36) feet in diameter, and a pumping plant to lift water from the terminus of the pipeline into

¹ [United States Geological Survey. Earthquake Outlook for the San Francisco Bay Region.](#)

² [California Department of Water Resources. Delivery Capability Report 2023.](#)

Board Report Bay-Delta and Conveyance: Managing Risks and Water Supply Reliability

the Bethany Reservoir at the beginning of the California Aqueduct. The Delta Conveyance Project would modernize the State Water Project, improve water supply reliability, and mitigate much of the seismic and climatic risks.

How it works

The Delta Conveyance Project will operate in conjunction with the existing State Water Project facilities. The Delta Conveyance Project allows for dual conveyance, through existing south Delta facilities and through two new north Delta screened intakes and associated facilities. Moving water through the south Delta export facilities would be prioritized before utilizing the northern intakes. The modeling performed for the Environmental Impact Report (EIR) shows that: (1) approximately 20 percent of State Water Project diversions will occur at the north Delta intakes while 80 percent will be diverted through the existing southern facility, and (2) the additional diversions at the north Delta intakes can occur during wet conditions while still protecting fisheries, water quality and other beneficial uses of water in the Delta. The Delta Conveyance Project would augment the State Water Project's ability to capture flows when they are available and improve the flexibility of the State Water Project.

Benefits

The Delta Conveyance Project could afford the State Water Project a wide range of benefits, including, but not limited to:

- Operational flexibility that results in water supply reliability improvement. The performance of the State Water Project was modeled with and without the Delta Conveyance Project under multiple future climate scenarios, and results tabulated in the 2024 Benefit Cost Analysis of the DCP.³ On average, the modeling results showed that the Delta Conveyance Project would increase State Water Project exports by approximately 400 thousand acre feet (TAF) per year.
- Water quality improvement of direct deliveries. Salinity levels at the northern intake are significantly lower than the salinity levels at the existing southern facility, and would assist Metropolitan in meeting its water quality goals.
- Seismic reliability improvements. Exports through the Delta are at risk if the levees fail during a seismic event. The new intakes and tunnel will be designed to withstand significant seismic events such that the Delta Conveyance Project would be able to provide water even if there were massive levee failures in the Delta.

Water year 2024 has been classified as an above normal year, but despite abundant water supply, south Delta exports were highly constrained due to fishery concerns at the south Delta export facility. Consequently, the State share of San Luis Reservoir has been unable to fill and hovering at approximately half capacity throughout the current water year due to these constrained exports. If the Delta Conveyance Project had been online in water year 2024, an additional 941 TAF could have been diverted⁴ through the northern Delta intakes during high flow events, improving water supply while minimizing impacts to fish in the south and central Delta, and DWR's portion of San Luis Reservoir would have been filled as early as March.

Costs

On May 17, 2024, the Delta Conveyance Design and Construction Authority (DCA) released an updated cost estimate for the Delta Conveyance Project. The DCA estimated the cost to be \$20.1 billion in 2023 (undiscounted) dollars. The potential fiscal impact to Metropolitan and a unit cost comparison of other projects being evaluated by Metropolitan will be discussed in the November 2024 update.

Challenges

DWR is currently addressing permitting and numerous challenges to the Delta Conveyance Project, including but not limited to:

³ [California Department of Water Resources. Benefit Cost Analysis of the Delta Conveyance Project.](#)

⁴ [California Department of Water Resources. Theoretical DCP Diversions 2024.](#)

Board Report Bay-Delta and Conveyance: Managing Risks and Water Supply Reliability

- State Water Resources Control Board Water Rights Process
- Delta Plan Consistency Certification
- Litigation (i.e., Bond Validation and ten cases challenging DWR's Final EIR, project approval and pre-construction geotechnical testing under the California Environmental Quality Act, Delta Reform Act and other environmental laws.)

Lastly, the Delta Conveyance Project by itself would not completely mitigate the risks to the State Water Project. Investments in through-Delta conveyance and other water supplies such as Metropolitan's Pure Water Southern California program, Sites Reservoir project, additional storage and demand management programs will continue to be evaluated regardless of the Board's ultimate decision on participation in the Delta Conveyance Project.

Metropolitan Board Actions and Information Updates Related to the Delta Conveyance Project

In December 2020, the Metropolitan Board of Directors authorized execution of a Funding Agreement with DWR through which Metropolitan committed to its 47.2 percent share of the Delta Conveyance Project planning and pre-construction costs. This percentage share equated to \$160.8 million to support planning and pre-construction of the project. With funds provided by Metropolitan and other State Water Project contractors, DWR completed the Final EIR, approved the Delta Conveyance Project, submitted permit applications under the Clean Water Act and federal and state Endangered Species Acts, submitted a water rights change petition to the State Water Resources Control Board, completed preliminary design, and prepared a cost estimate update and benefit-cost analysis. Funds committed in 2020 will cover expenditures planned through calendar year 2025.

However, post 2025, DWR must complete additional planning, pre-construction activities and design, and is requesting additional funding for calendar years 2026 and 2027. The additional funding will allow DWR to finalize key pre-construction efforts, such as the water rights hearing, Delta Plan consistency certification, geotechnical investigations, and advancement of preliminary design. The outcome and information from these key pre-construction activities will be used to update the cost estimate and project benefits and costs prior to the Board's decision regarding participation in the Delta Conveyance Project in 2027.

By securing the last tranche of planning funding from potential project participants in 2024, DWR aims to complete the necessary permitting, preliminary design and engineering work ahead of potential participants making final decisions. Providing DWR with the funding to complete key remaining work will avoid schedule delays, cost increases due to escalation, and maintains continuity of key staff. The DCA has estimated that each year of delay is the equivalent of increasing costs on the order of \$500 million per year.

Since the funding action taken in December 2020, Metropolitan's Board has received a total of 17 oral committee updates on the Delta Conveyance Project, with the most recent in June 2024. There have been several requests from directors for additional information. Attached are the memorandums that have been provided to the Board in response to those requests.

Funding Request

DWR has indicated that approximately \$300 million of additional investment is needed from potential project participants to fund preconstruction work planned through 2027. Assuming up to 47.2-percent share for Metropolitan, the forecasted funding agreement amendment between Metropolitan and DWR would be up to \$141.6 million for calendar years 2026 and 2027.

If the Delta Conveyance Project moves forward and bonds are issued to finance implementation, the pay-go planning costs for each participant would be reimbursed. A board action in 2024 to fund the continuation of planning and design for 2026 and 2027 does not commit Metropolitan to participate in the Delta Conveyance Project. The Board retains the authority for future consideration of Metropolitan's ultimate support and participation, which is not anticipated until 2027.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Date: January 18, 2024
To: Board of Directors
From: Adel Hagekhalil, General Manager
Subject: GM Tech Memo to Board – 2070 requested analysis

At the January 8, 2024, One Water & Stewardship meeting, a request was made to provide a DWR technical memo related to item 6a Update on Delta Conveyance Project.

The DWR Technical Memorandum: *CalSim 3 Results for 2070 Climate Change and Sea Level Projections and Sensitivity Analysis* can be accessed here:

<https://www.deltaconveyanceproject.com/delta-conveyance-project-can-help-protect-water-supply-reliability-looking-decades-ahead>

If you have any questions, please contact Nina Hawk at (916) 650-2660 or nhawk@mwdh2o.com.

Information Provided by Clicking the Link Above

California's water delivery infrastructure needs modernization. The system was built in the 20th century based on the certainty that snow would fall in the winter, be stored in the mountains as snowpack, then melt in the spring into our rivers and reservoirs. While rain and snow amounts may have been erratic in decades past, that pattern of precipitation was fairly reliable.

Those patterns are no longer happening. With climate change, we are seeing a new weather pattern with more precipitation falling as rain and less as snow, and more water flowing through the rivers in the winter months. Because this water is not available to be captured in the spring, water managers must find a way to catch it in the winter for use later in the year or risk losing it altogether.

This is what the Delta Conveyance Project will do: capture and move the water when it is available.

An important question for decision-makers is how effective this modernized infrastructure will be in improving reliability of the State Water Project many decades in the future.

That is why we are using modeling to better understand and plan for the future.

While future changes to other water infrastructure, land use or the regulatory environment are likely as a response to the changing climate, the specifics of these potential changes are unknown. Available models do not predict the future, but they can help us to understand, visualize or simulate what may happen, and can be helpful to compare scenarios.

The 2070 modeling done for the Delta Conveyance Project looks at seven possible future “no project” scenarios (if the DCP were not implemented) that examine potential climate change, sea level rise, and responses to those changes (such as land use or regulatory changes) — all based on the best available science from the most trusted sources. It then compares the scenarios to provide a range of possible no project outcomes to help decision-makers with planning decades ahead.

A single climate scenario (known as the “2070 Median”) was crafted to use in the scenario comparisons, based on 64 projections of climate change from available General Circulation Model (GCM) output. GCMs are the most advanced tools available for simulating changes to the climate at global scale based on increasing greenhouse gas. These models represent processes in the atmosphere, ocean, and land surface.

Seven possible no project scenarios for 2070 conditions were developed that collectively include climate change (2070 Median scenario), 1.8 feet and 3.5 feet of sea level rise, land fallowing/demand reduction, reduced exports, and emergency drought actions.

The modeling shows that State Water Project Delta exports are severely impacted under all seven of the scenarios for no project 2070 conditions with a possible reduction in annual average SWP exports of 0.43 to 0.68 million acre-feet (MAF) compared to existing conditions. When the Delta

Conveyance Project is added to the seven no project scenarios, the SWP exports are expected to be restored, by negating some or all of this reduction. The modeling shows that the range of changes in annual average SWP exports would be a reduction of 0.24 MAF or an increase of 0.02 MAF with the Delta Conveyance Project under 2070 Conditions compared to the existing conditions.

While modeling does not and cannot behave as a crystal ball, careful and conservative modeling can provide useful comparative context. Read the “CalSim 3 Results for 2070 Climate Change and Sea Level Projections and Sensitivity Analysis” with this important background in mind.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Date: March 20, 2024
To: Board of Directors
From: Adel Hagekhalil, General Manager
Subject: Additional Information on the Delta Conveyance Project

At the January 8, 2024, One Water and Stewardship Committee meeting several director requests were made related to Item 6a, Update on Delta Conveyance Project (project). Attached is a document that captures information responsive to those director requests. The attached document includes information related to the Final Environmental Impact Report's response to public comments and project objectives and benefits. Metropolitan staff will provide additional project information, including the project cost estimate and the associated benefit-cost analysis at a future One Water and Stewardship Committee meeting.

**Information Contained in the Attachment to
Office of the General Manager Memo to the Metropolitan Board Date: March 20, 2024 Subject:
Additional Information on the Delta Conveyance Project (Attachment)**

At the January 8, 2024, One Water & Stewardship Committee meeting several director requests were made related to item 6a Update on Delta Conveyance Project. The following information provides an overview of the Delta Conveyance Project Final EIR response to comments process, and links to all of the common and individual responses to comments on the Draft EIR included in Volume 2 of the Final EIR. In addition, a brief discussion of the Delta Conveyance Project objectives and benefits is provided along with links to materials produced by DWR that help highlight the different project benefits. Metropolitan staff will provide additional project information, including project cost estimate and the associated benefit-cost analysis at a future One Water & Stewardship Committee meeting.

Delta Conveyance Project Final EIR Response to Comments

DWR released the Draft EIR for public review on July 27, 2022, and the public comment period closed on December 16, 2022. DWR treated all comment letters received before January 1, 2023, as timely, those letters have been reviewed, considered, and responded to in the Final EIR. DWR received approximately 675 unique letters and communications from federal, state, and local/regional agencies; California Native American Tribal governments; elected officials; nongovernmental organizations; and members of the public. After reviewing letters and communications, DWR identified approximately 7,356 discrete comments.

DWR made a good-faith effort to ensure that all comments were identified, considered, and responded to in Volume 2 of the Final EIR. Substantive comments raising significant environmental issues were addressed through a combination of Common Responses and unique individual responses. DWR's response to comments approach is described in more detail in the Final EIR Volume 2, Chapter 1: *Introduction and Approach to Responses to Comments*.

Volume 2, Chapter 3: <i>Common Responses</i> provides a high-level summary of the 17 Common Responses developed by DWR for the Final EIR. Common Responses are broad technical or policy discussions that cover a specified range of issues. DWR crafted Common Responses for similar comments received from multiple agencies, organizations, entities, or members of the public, or because multiple but related subtopics could be addressed by one topical Common Response. Each Common Response summarizes the common comments to which DWR is responding and provides a detailed discussion of each issue raised. Links to each of the 17 Common Responses can be found in the table below. CR 1: CEQA Process, General Approach to Analysis, and Other Environmental Review Issues	CR 10: Surface Water Quality and Groundwater Resources
CR 2: Public Outreach Activities	CR 11: Terrestrial Biological Resources and Compensatory Mitigation Plan

CR 3: Alternatives Development and Description	CR 12: Agricultural Resources
CR 4: No Project Alternative Description and Analysis	CR 13: Recreation and Recreational Opportunities
CR 5: Public Water Agencies' Water Management Practices	CR 14: Transportation
CR 6: Climate Resilience and Adaptation	CR 15: Air Quality and Greenhouse Gases



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Date: May 16, 2024

To: Board of Directors
Member Agency Managers

From: Adel Hagekhalil, General Manager

Subject: Delta Conveyance Cost Estimate and Benefit Cost Analysis

Today, the California Department of Water Resources released a Cost Estimate and Statewide Benefit Cost Analysis for the proposed Delta Conveyance Project. Below are DWR's press release, a new DWR brochure on the economic value of the project, the cost estimate and benefit cost analysis documents, and Metropolitan's press statement.

- [DWR Press Release](#) (link)
- DWR: Facts About the Economic Value of the Delta Conveyance Project (pdf)
- Total Project Cost Memorandum (pdf)
- Benefit Cost Analysis of the DCP (pdf)
- [Metropolitan's press statement](#) (link)

Metropolitan is at a critical juncture in developing its long-term water supply and financial strategies. Given the importance of these DCP analyses in our future decision-making processes, Metropolitan has invited the Executive Director of the Delta Conveyance Design and Construction Authority, Graham Bradner, and Berkeley Research Group Vice Chairman Dr. David Sunding to provide a comprehensive update on the project cost and benefits to Metropolitan's Board at the June 2024 One Water and Stewardship Committee.

Attachments



Facts About the Economic Value of the Delta Conveyance Project

Benefits, Costs, Commitments, and Innovations



The Delta Conveyance Project is one of California's most important climate adaptation projects. Extreme weather is leading to more rain, less snow, and a limited ability to capture and move water. The Delta Conveyance Project will protect supplies by capturing water when it is plentiful to better endure dry years and adapt to extreme weather. It protects against the threat posed by earthquakes, sea level rise and levee failure. And it helps resolve conflicts in the south Delta to both protect fish and provide needed water supply.

Need for Protecting the State Water Project

The State Water Project captures and moves water all over California, from the Bay Area to the Mexico border and communities in between. It is an affordable source of high-quality, clean, and safe water for 27 million Californians and 750,000 acres of agriculture. If the State Water Project service area were a nation, it would represent the eighth largest economy in the world. And it is an important foundation for an entire suite of water supply and resiliency programs implemented by local public water agencies.

Economic Benefits

The Delta Conveyance Project passes the benefit-cost test. It enables water needs to be satisfied and water supply reliability to be maintained. It protects against a declining baseline of supplies, allows SWP to adapt against climate change, guards against earthquake risks, and helps resolve conflicts in the south Delta by improving operational flexibility.

Cost Estimate

An updated cost estimate was prepared by the Delta Conveyance Design and Construction Authority (DCA), using a detailed and rigorous approach, the cost of the project is estimated to be \$20.1B in real 2023 (undiscounted) dollars. A preliminary cost assessment conducted in 2020, early in the design process, showed the project would cost about \$16B, which accounting for inflation to 2023 would result in a similar cost. This demonstrates that even as details are added, and refinements are made to the program, costs are holding steady. The DCA is also evaluating potential design or construction innovations that would help manage costs for the program.

Benefits Outweigh Costs

After adjusting to account for the value of money over time (see page 3 regarding “discounting”), the benefits are \$37.96 billion and the costs are \$17.26 billion. This results in a benefit-cost ratio of 2.2, meaning that the benefits outweigh the costs and every dollar spent generates \$2.20 in benefits.

The project passes the benefit-cost ratio test, making the project economically viable and robust under all future scenarios analyzed.

Benefits are quantified in four different areas: Urban water supply reliability, agricultural water supply, water quality, and seismic reliability.

The primary benefit of the DCP is that the project protects against the expected effects of climate change and sea level rise, avoiding future shortages and maintaining water supply reliability.

Understanding Benefits

Urban Water Supply Reliability:

- More SWP deliveries under wetter periods allow agencies to:
 - Fill storage more frequently
 - Enter drought periods with higher reserves
 - Impose fewer periods of mandatory rationing
 - Reduce severity and frequency of shortages
- Urban economic benefits measured as consumers' willingness to pay (WTP) to avoid shortages.

Agricultural Water Supply

- Agricultural value of water based on the UC Davis Statewide Agricultural Production model and water market transaction data from Nasdaq Veles CA Water Index.

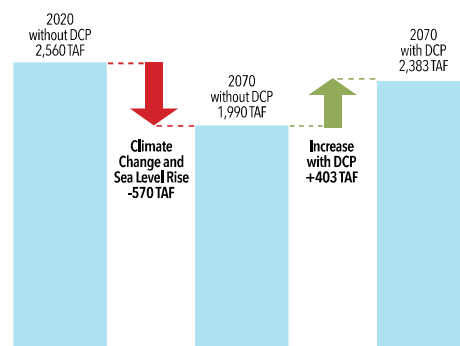
Water Quality:

- Lower salinity improves water quality.
- For urban agencies, this improves taste, the useful life of appliances, the cost of water softening, for example.
- For agricultural agencies, the cost is based on reducing requirements for additional irrigation water needed to flush salts from the root zone of crops.

Earthquake Disruption:

- Avoiding potentially significant disruption to statewide water supply caused by earthquakes saves time, saves money and protects water quality.

State Water Project Deliveries:



Assumptions that influence benefits and costs:

- Yield: assumed to provide about 403,000 acre-feet annually on average
- The cost of the project: assumed to be \$20.1 billion in undiscounted 2023 dollars
- Real discount rates: between 2% and 1.4% (Federal Office of Management and Budget, Circular A-4 guidance)
- Environmental mitigation: \$960 million
- Construction period: 15 years
- Life span of the project: 100 years



Summary of Benefits and Costs

	Main Cost Estimate	Cost with DCA Recommended Innovation Savings
Present Value of Future Benefits		
	2023 (\$M)	2023 (\$M)
Urban Water Supply and Reliability	\$33,300	\$33,300
Agricultural Water Supply and Reliability	\$2,268	\$2,268
Urban Water Quality	\$1,330	\$1,330
Agricultural Water Quality	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$2	\$2
Total Benefits	\$37,960	\$37,960
Present Value of Future Costs		
	2023 (\$M)	2023 (\$M)
Construction Costs	\$11,486	\$10,723
Other Project Costs	\$3,021	\$2,852
Community Benefit Program	\$153	\$153
Environmental Mitigation	\$735	\$735
O & M Costs*	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167
Total Costs	\$17,259	\$16,327
Benefit-Cost Ratio	2.20	2.33

*O&M Costs: includes operations and maintenance costs for project facilities

Missed Opportunity

If the Delta Conveyance Project were operational during the big winter storms of winter 2021-2022, January 1 through May 9, 2024, a significant amount of water could have been captured and moved.

Winter 2021-2022	January 2023	Jan 1-May 9, 2024
Amount of water that could have been captured:		
236,000 acre-feet	228,000 acre-feet	909,000 acre-feet
That's enough water to supply:		
Over 2.5 million people for one year	Over 2.3 million people for one year	Over 9.5 million people for one year
Nearly 850,000 households for one year	or Nearly 800,000 households for one year	Over 3.1 million households for one year



Understanding Discounting and the “Time Value of Money”

How does a Benefit-Cost Analysis account for inflation?

Inflation is the general increase in the price of goods and services over time, and it poses a challenge for benefit-cost analysis. To ensure a consistent comparison, all future costs and benefits reflect 2023 prices, a method known as using “real prices” in economic terms. This approach removes the distorting effects of inflation, allowing present-day expenditures to be directly comparable to future benefits and providing a clear basis for evaluating a project’s economic viability.

How would unexpected inflation affect the analysis?

If inflation impacts future costs and benefits similarly, changes in the inflation rate will not affect the conclusions of the benefit-cost analysis. However, if inflation disproportionately affects costs or benefits, it could skew the analysis. This is unlikely for the DCP, where benefits tied to water rates and costs associated with construction expenses generally escalate in tandem.

Why does the Benefit-Cost Analysis account for the time value of money (e.g. discount future costs and benefits)?

The time value of money is a recognition that money available today is worth more than the same amount in the future because it can be used immediately—to pay for things or to invest and earn more money. This concept is crucial, especially in long-term projects like the DCP, which assumes a 15-year construction period starting in 2029 followed by a 100-year operational project life.

How is the real discount rate applied?

The ‘real discount rate’ used in this process is determined based on federal guidance and calculated by taking the returns on treasury bills and subtracting the rate of inflation. This discounting process, distinct from the previously discussed use of real prices to account for inflation, helps prioritize projects that offer the best economic returns over their lifecycle, ensuring efficient allocation of resources.

Why is the cost of the project lower in the Benefit-Cost Analysis and higher in the cost estimate?

The cost estimate and benefit-cost analysis are equivalent but expressed differently. The cost estimate is presented in real 2023 dollars. The benefit-cost analysis is shown as “present value.” Present value accounts for various distortions to the value of money over time, including inflation and the potential for investment and it is calculated using a “discount” rate.



Other Important Considerations:

Climate change

Climate change and sea level rise are expected to significantly reduce future SWP deliveries. Future precipitation and runoff are forecasted using multiple climate scenarios that show an annual loss of more than half a million acre-feet by 2070. The primary benefit-cost analysis assumes 1.8 feet of sea level rise by 2070. Multiple sensitivity analyses test robustness of this assumption. In each of the scenarios tested, the benefits of the project significantly exceed costs.

Transfers and Trading

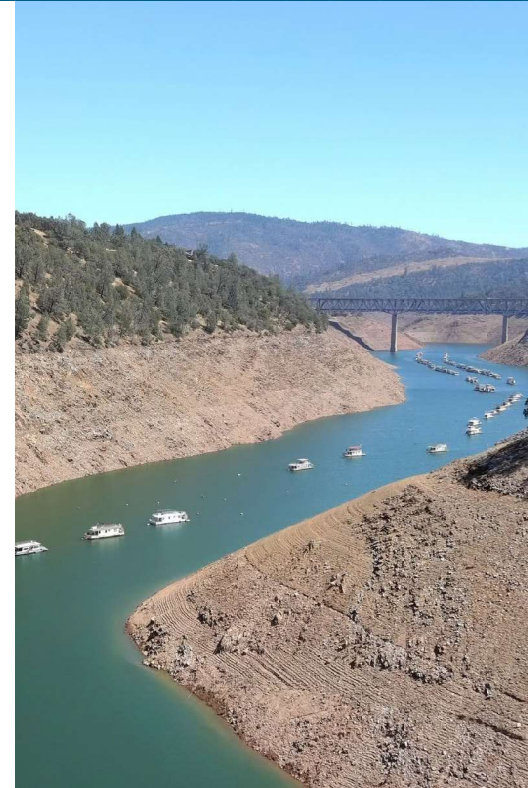
If there are water years that a Public Water Agency’s supplies exceed local needs, they may choose to transfer those supplies and the associated costs, consistent with water law and existing water supply contracts. This flexibility will allow PWAs to preserve water supplies for local needs and to transfer those excess supplies—and costs—to other parts of the state, particularly those with limited access to drinking water.

Unmitigated Environmental Impacts

Some environmental impacts are expected to be significant and unavoidable. Where possible, the cost of those impacts has been considered and included. This results in a cost of about \$153 million for lost agricultural land, air quality, noise, and transportation impacts.

Cost of Doing Nothing

Failing to implement the Delta Conveyance Project has real financial consequences resulting from climate change, sea level rise and seismic events.



Some benefits of the Delta Conveyance Project are not monetized in the benefit-cost analysis and yet are compelling for decision-makers:

- Increased operational flexibility: Resolving conflicts in the south Delta between fish and water supply goals.
- Community Benefits Program: \$200 million investments for high-priority local Delta projects, in addition to local business utilization, job training, and infrastructure leave-behinds that have potential to provide benefits that are ultimately likely to represent values beyond this funding commitment.
- Job creation: The project will create 5,000 high-paying jobs.
- Groundwater supplies: Protecting affordable surface water supplies relieves pressure on dwindling or constrained groundwater sources.

Cost Estimate: Conservative, Comprehensive, Based on Industry Standards

DWR approved the Bethany Alignment of the Delta Conveyance Project in December 2023 after concluding the project Environmental Impact Report (EIR). This approved project provided the basis for an updated cost estimate.

The estimate is comprehensive, conservative, and reflects industry standard methodologies. It:

- Is based on the 6,000 cubic feet per second Bethany Reservoir Alternative as outlined in the project Final EIR
- Includes construction costs and other costs, like planning, management, land, mitigation, power and community benefits
- Uses cost estimating approach that builds up based on labor, equipment, materials, and schedule
- Uses a thorough reconciliation process with independent cost-estimating teams and resolves cost differences
- Assumes a reasonable 30% contingency to account for uncertainties

Methodology: A More Rigorous Approach

The updated cost estimate uses a more rigorous approach for concept-level designs. It:

- Uses engineering documentation in drawings and technical reports
- Develops costs based on unit rates, quantities, and durations
- Replaces most cost "allowances" with actual estimates and material price quotes
- Uses better understanding of ground conditions, schedule, and risks

The cost estimate has been prepared by the Delta Conveyance Design and Construction Authority, a joint powers agency comprised of the participating Public Water Agencies responsible for funding, and ultimately building, the project.

Total Project Costs Summary*

Feature	Total Cost (\$M)	Feature	Total Cost (\$M)
Construction Costs		Other Project Costs	
Intakes	\$1,714	DCO Oversight	\$426
Main Tunnels	\$6,353	Program Management Office	\$668
Pumping Plant and Surge Basin	\$2,536	Engineering/Design/Construction Management	\$2,167
Aqueduct Pipe and Tunnels	\$563	Permitting and Agency Coordination	\$67
Discharge Structure	\$99	Total Planning/Design/Construction Management	\$3,328
Access Logistics and Early Works	\$253	Land	\$158
Communication	\$13	DWR Mitigation	\$960
Restoration	\$17	Power	\$415
Construction Subtotal	\$11,548	CCWD Settlement Agreement	\$47
Contingency (30%)	\$3,464	Community Benefits Program	\$200
Total Construction Costs	\$15,012	Total Other Costs	\$1,780

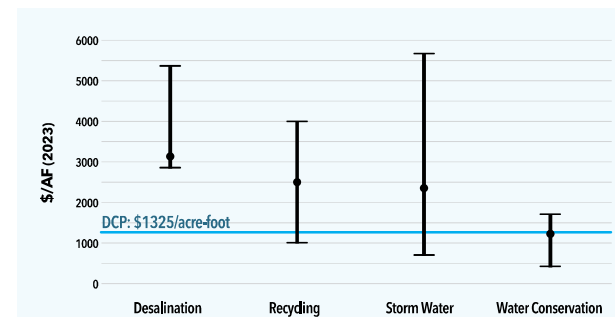
*Costs are in undiscounted 2023 dollars.

Total Project Costs = \$20,120

Cost Category	Total Project Cost Estimate (\$M)	Total Project Cost with Secondary Innovations Estimate (\$M)
Construction Costs	\$15,012	\$14,008
Other Project Costs	\$5,108	\$4,886
Total Project Costs	\$20,120	\$18,894

Comparing the Delta Conveyance Project to Alternative Supplies

The per-acre cost of the Delta Conveyance Project is less than the costs of most other types of supplies. Alternative supplies also lack the ability to provide an equivalent scale of supply and are not able to protect the long-term stability of State Water Project supplies. While a full suite of options is being considered for California and local water purveyors, the Delta Conveyance Project is the most viable and irreplaceable.



Innovations Identify Significant Cost Savings

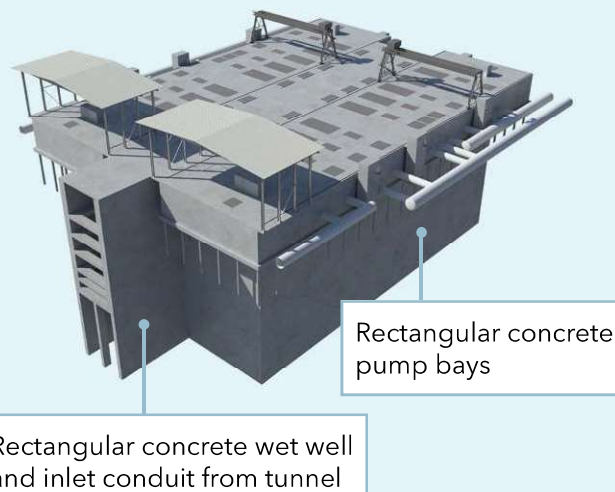
Value engineering is a part of the design phase of a project. It is used to cut costs, save time, reduce risk, or reduce community or environmental disturbances. The approved project represents a conservative configuration for analysis of impacts. An initial review of potential design and construction innovations shows an opportunity to reduce costs by about \$1.2 billion.*

Innovation Example

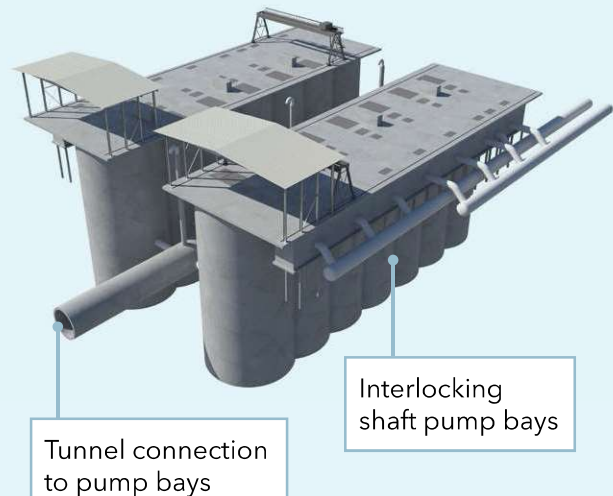
In the Engineering Project Report, the Bethany Reservoir Pumping Plant (BRPP) is a below-ground structure with vertical rectangular diaphragm walls and consists of dry-pit pump bays housing the pumping plant equipment and piping plus an adjoining rectangular concrete wet well and wet well inlet conduit connected to the tunnel reception shaft located along the center of the overall structure.

This innovation would replace the vertical, deep box diaphragm wall arrangement with interlinking shafts of diaphragm wall construction that would house the pumping plant equipment and piping and a tunnel that would replace the wet well and wet well inlet conduit, greatly reducing construction quantities and expediting schedule due to construction sequence improvements.

CURRENT PUMPING PLANT DESIGN



INNOVATION CONCEPT



INNOVATION ADVANTAGES:

- Reduces construction quantities (soil excavation, concrete, rebar)
- Shortens construction schedule by 981 days
- Reduces direct construction cost by \$138,720,000
- No changes to above-ground site configuration and surface features

*Does not represent changes to the approved project description.

For More Information



For more information on cost, benefits, funding and financing of the State Water Project and the Delta Conveyance Project, view this [FAQ](#) or use the QR code.

For more about the Delta Conveyance Project, visit:
water.ca.gov/deltaconveyance

For more about the project permitting process, visit:
deltaconveyanceproject.com

For more information about project design and engineering, visit: dcdca.org



Total Project Cost Summary Memorandum

Document History

Project Feature: Projectwide
Document version: Version 02
Date: May 14, 2024
Reference no.: EDM_PW_CE_MEM_Total-Project-Cost-Summary_001326_V02_F_20240514

Contents

Total Project Cost Summary

Appendix A - Bethany Reservoir Alternative Basis of Estimate – Construction Cost

Appendix B - Project Wide Innovations Summary

Delta Conveyance Design and Construction Authority
980 9th Street, Suite 2400
Sacramento, CA 95814

Subject	Total Project Cost Summary
Project feature	Projectwide
Prepared for:	Delta Conveyance Project (DCP) File
Prepared by:	Delta Conveyance Design and Construction Authority (DCA)
Copies to	California Department of Water Resources (DWR) / Delta Conveyance Office (DCO)
Date/Version	May 14, 2024 / Version 2
Reference no.	EDM_PW_CE_MEM_Total-Project-Cost-Summary_001326_V02_F_20240514

Executive Summary

The Delta Conveyance Design & Construction Authority (DCA) prepared this memorandum to document the updated estimate of total project costs for the Bethany Reservoir Alignment of the Delta Conveyance Project. The updated estimate is being prepared to support strategic and feasibility evaluations being performed by the California Department of Water Resources (DWR) and participating Public Water Agencies. This document includes the rationale, assumptions, pricing sources, and other inputs to the estimating process that were used to develop the total project cost estimate.

The estimate is presented in 2023 dollars and is “undiscounted”, an economic term meaning the value does not account for the time value of money. Reporting the estimate in 2023 dollars provides a base cost that allows DWR and participating Public Water Agencies to perform further economic analyses of costs and benefits in a manner that ensures consistency and comparability.

Total project costs include construction and other program costs associated with the following primary features:

- Two intakes (maximum 3,000 cfs each)
- Main Tunnel & Shafts
 - 36-foot-inside-diameter tunnel, 45 miles long
 - 11 Shafts including two double-launch shafts
- A 6,000-cfs Bethany Reservoir Pumping Plant (BRPP)
- Aqueduct from the BRPP to Bethany Reservoir
 - Includes four 15-foot-diameter pipelines
 - Tunneled crossing of Jones Penstocks and the Bethany Conservation Easement
- Discharge Structure to Bethany Reservoir
- Logistics works for access, levee improvements, power, utilities, communication, and site restoration

The total project cost estimate has been prepared in accordance with Association for the Advancement of Cost Engineering (AACE) guidelines and considers items such as labor, materials, equipment, level of effort, and other relevant cost items for a defined scope of work as described in the Environmental Impact Report (EIR) prepared by DWR and the supporting Engineering Project Report (EPR) prepared by the DCA. The updated cost estimate includes an appropriate level of contingency and risk treatment costs to manage uncertainty at the current conceptual stage of project development.

Following project approval, DWR directed DCA to consider potential design or construction innovations to further reduce community or environmental disturbances, schedule, and/or costs or improve constructability. This evaluation resulted in a set of potential reasonable and credible innovations which indicate potential savings when compared to the total project cost estimate. The innovations discussed herein do not represent changes to the project description presented in the EIR and analyzed in the EIR, but rather provide an indication of how normal design development processes can help manage costs for large infrastructure projects. As the innovation concepts advance, DWR will determine and document the need for any revisions to the project description, which will be used by DWR to determine if additional reviews will be required under CEQA and/or for project permitting.

Table ES-1 summarizes the total project costs for the 6,000-cfs Bethany Reservoir Alignment and potential reduced total project costs associated with the innovation concepts.

Table ES-1. Delta Conveyance Project Summary of Total Project Costs

Cost Category	Total Project Cost Estimate (\$M^a)	Total Project Cost with Innovations (\$M^a)
Construction Cost	\$15,012	\$14,008
Other Program Costs ^b	\$5,108	\$4,886
Total Project Cost	\$20,120	\$18,894

^a Costs are in 2023 dollars and are undiscounted.

^b Other Program Costs represent: Planning, Design, Construction Management, Land Acquisition, Environmental Mitigation, Settlement Agreement, and Community Benefits.

The total project cost estimate presented is primarily intended to support project financial and economic analysis and to provide guidance for further project development. The final costs of the project once constructed will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors.

1. Introduction

On December 21, 2023, California Department of Water Resources (DWR) approved the Delta Conveyance Project (DCP) and selected the Bethany Reservoir Alignment for further engineering, design, and permitting necessary to be completed prior to initiating implementation. DWR completed extensive environmental review and certified the Environmental Impact Report (EIR) (DWR, 2023) as compliant with the California Environmental Quality Act (CEQA).

This memorandum provides an estimate of total costs for the project to support strategic and feasibility evaluations being performed by DWR and participating Public Water Agencies. The updated cost estimate is presented in two primary categories: (1) Construction Costs, and (2) Other Program Costs. The costs presented are inclusive of all activities and work required for the project and provide the rationale, assumptions, pricing sources, and other inputs to the estimating process used to develop the cost estimate.

The estimate is presented in 2023 dollars, which provides a base cost that allows DWR and participating Public Water Agencies to evaluate potential costs and benefits using their own agency-specific approaches and methodologies and avoids potential conflicts with DCA escalation assumptions.

2. Project Scope of Work

This section describes the facilities and elements of work included in the estimate. The project scope of work aligns with the 6,000-cfs Bethany Reservoir Alignment as presented in the *Delta Conveyance Final Draft Engineering Project Report, Bethany Reservoir Alternative* (DCA, 2022) and updates to the Engineering Project Report (EPR) issued in November 2023 (DCA, 2023).

2.1 Layout

Figure 2-1 shows the following proposed conveyance facility features:

- **Intake C-E-3 and Intake C-E-5:** Two 3,000-cfs intakes located along the Sacramento River
- **Main Tunnel and Shafts:** 36-foot-inside-diameter tunnel, approximately 45 miles long, connecting C-E-3 and C-E-5 to the Bethany Reservoir Pumping Plant (BRPP) with 11 shafts along the alignment used for launching, reception, and maintenance (including the Surge Basin shaft)
- **Surge Basin Shaft and Surge Basin:** The Surge Basin Shaft is used as a reception shaft connecting the Main Tunnel to the Surge Basin and providing connection to the BRPP wet well inlet conduit
- **Bethany Reservoir Pumping Plant:** A 6,000-cfs pumping plant with wet well and dry pit structures housing 14 vertical centrifugal end suction type pumps
- **Aqueduct:** Four 15-foot-diameter parallel pipelines approximately 2.5 miles long each, which include 2 tunneled sections and vertical shafts at the connection to the Discharge Structure
- **Discharge Structure:** Located at Bethany Reservoir to discharge flow delivered from the Aqueduct into Bethany Reservoir which delivers water to the California Aqueduct
- **Logistics Works:** Includes access, levee improvements, power, utilities, communication, and site restoration to support construction of the project



Figure 2-1. Schematic of Project Features

Figure 2-2 shows the total alignment extending from the Intake facilities to the discharge structure facilities in Bethany Reservoir for delivery to the existing State Water Project.

The 6,000-cfs-project includes two river intake facilities on the Sacramento River, with on-bank intake structures and sedimentation basins that connect to the main tunnel via drop shafts. The main tunnel would be 36-foot-inside-diameter and approximately 45 miles long and would be constructed as four reaches driven in opposite directions from the Twin Cities Complex and Lower Roberts Island double-launch shafts. The tunnel drives would end at reception shafts at Intake 3, Terminous Tract, and the Surge Basin located at the BRPP. The other shafts would be used as maintenance shafts during tunnel construction and for future project operations and maintenance. The Surge Basin and BRPP at the southern end of the alignment connect to a four-pipeline aqueduct and discharge structure at Bethany Reservoir.

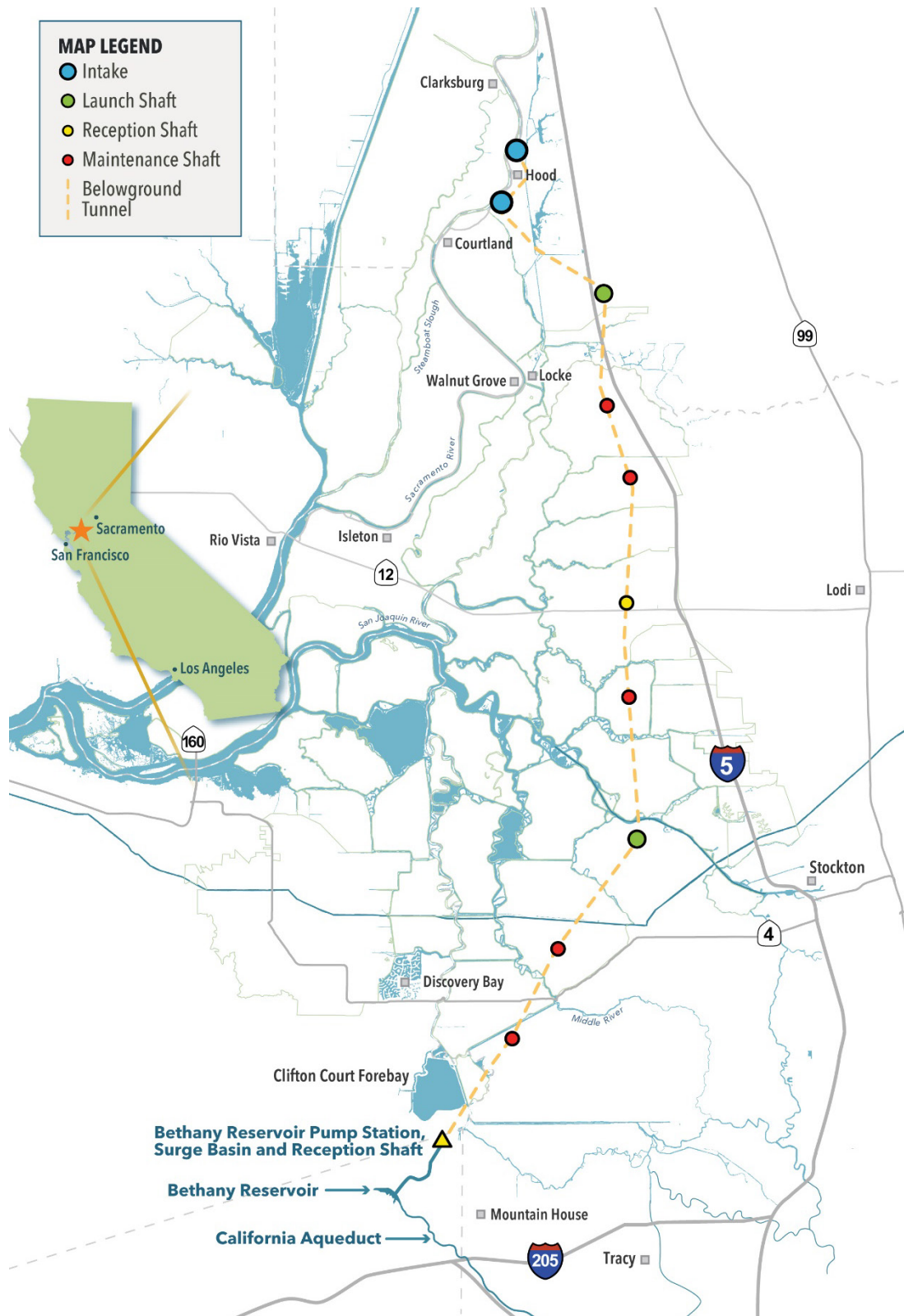


Figure 2-2. Project Map

Data Source: DCA, DWR

2.2 Project Schedule

A project schedule was developed to represent major phases of the project that includes permits, procurement, design, construction, and startup. The schedule was developed by estimating the duration of time required to complete the design and construction of each major project element along with the logical sequencing of activities required to complete the entire project such that testing and startup can occur in years 2043 and 2044 with the project becoming fully operational at the beginning of year 2045. Figure 2-3 shows the overall DCP schedule and logical sequences of the major project elements.

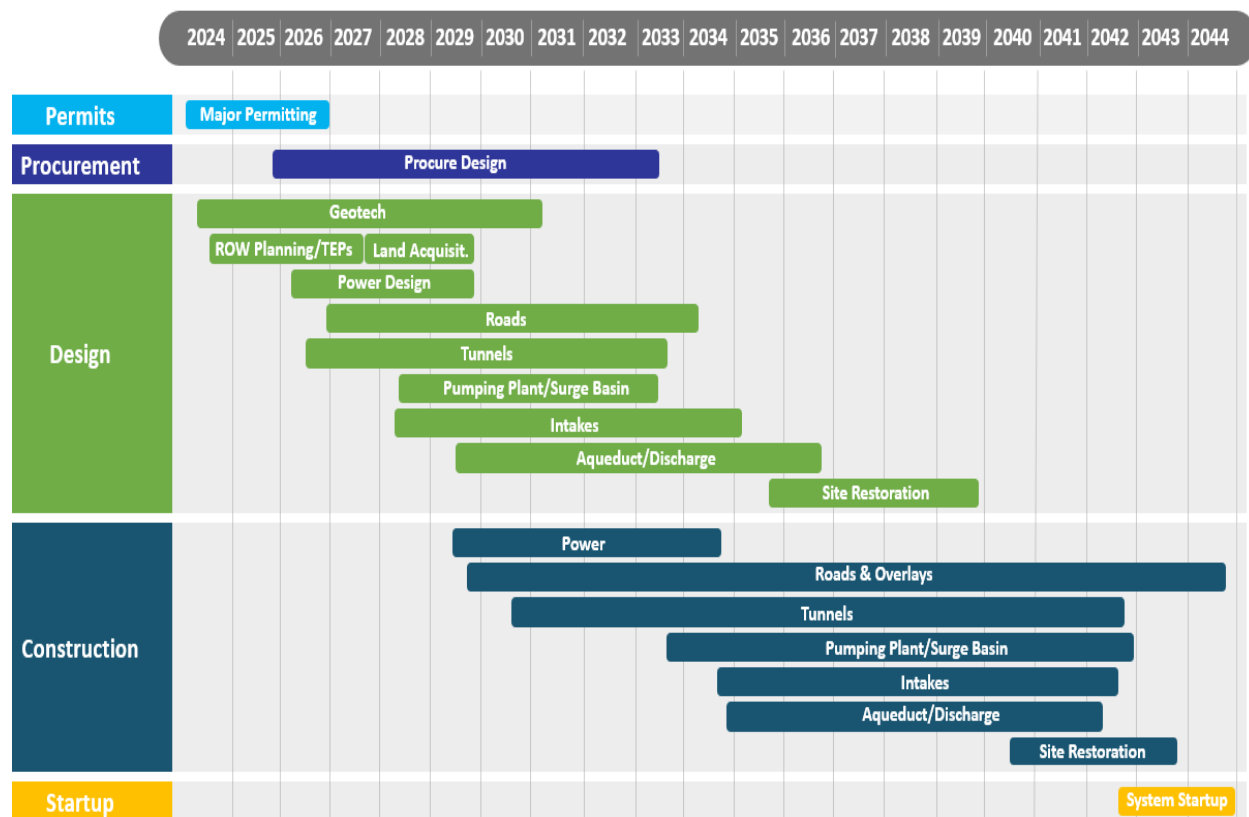


Figure 2-3. Delta Conveyance Project Schedule

3. Methodology and Estimate Classification

Total project costs for this estimate are divided into two categories: Construction Costs and Other Program Costs. The methodology used for developing the estimate and the estimate classification are presented below.

3.1 Methodology

The construction cost estimate has been prepared with quantities taken from drawings and other information contained in the EPR documents and, where applicable, has been adjusted to reflect the commitments described in the EIR. The construction cost estimate has been prepared with a crew-based estimating approach that uses materials, labor, and equipment crew estimates to complete work activities at the lowest level of detail for the anticipated method of construction as described in the EPR and EIR. Because of the scale and complexity of the project, a rigorous estimating approach was used to develop

the construction costs which included development of concept level drawings and technical memorandums, obtaining deterministic costs for unit rates and materials, replacing most of the cost allowances with actual estimates and material price quotes, and estimating the work based on the current understanding of subsurface ground conditions.

The other program costs were developed by considering the planning, design, and construction management labor costs (soft costs) and include all anticipated activities associated with delivering the project. Soft costs were developed by estimating the labor and level of effort over a given duration of time to complete the work, and other associated costs with these activities. The other program costs category of the estimate also includes costs for land, mitigation, power, the Contra Costa Water District (CCWD) Settlement Agreement, and the Community Benefits Program, which can be a mixture of direct, indirect, and labor costs.

Details of the construction costs are further presented in Section 4 and details of the other program costs are further presented in Section 5.

3.2 Estimate Classification

The DCA used the guidance provided in *17R-97: Cost Estimate Classification System Recommended Practice* (AACE, 2020) to determine the class of estimate. Based on the design stage and maturity, the project construction cost estimate generally categorizes as a Class 4 estimate, although some areas are considered Class 5. Appendix A, *Basis of Estimate-Construction Costs*, attached to this memorandum includes an Estimate Maturity Checklist that qualitatively evaluates the design maturity for individual project features. According to AACE 17R-97, estimate classification progresses down from Class 5 to Class 1 as project definition improves coinciding with improved expected accuracy (see Figure 3-1).

AACE guidelines provide anticipated accuracy ranges based on general and industry-specific benchmarking and empirical data. The total project cost estimate provides the DCA's opinion of the most probable cost. Due to the uncertainty associated with ground conditions along the tunnel alignment and industry experience with underground tunneling projects, DCA has assigned an accuracy range between +80% and -55% to the current cost estimate, but the far ends of the range have a much lower probability of occurrence than the most probable value. As illustrated on Figure 3-1, the accuracy range is expected to decrease as project definition improves and the estimate classification shifts towards Class 1.

The Class 4 estimate for the DCP is primarily presented to support project financial and economic analysis and to provide guidance for further project development. In general, the end use of cost estimates evolve over time – as the project definition increases from early conceptual design stages to final design, the end usage shifts from supporting strategic evaluations to funding authorizations and budgets to project control purposes. The final costs of the project once constructed will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors.

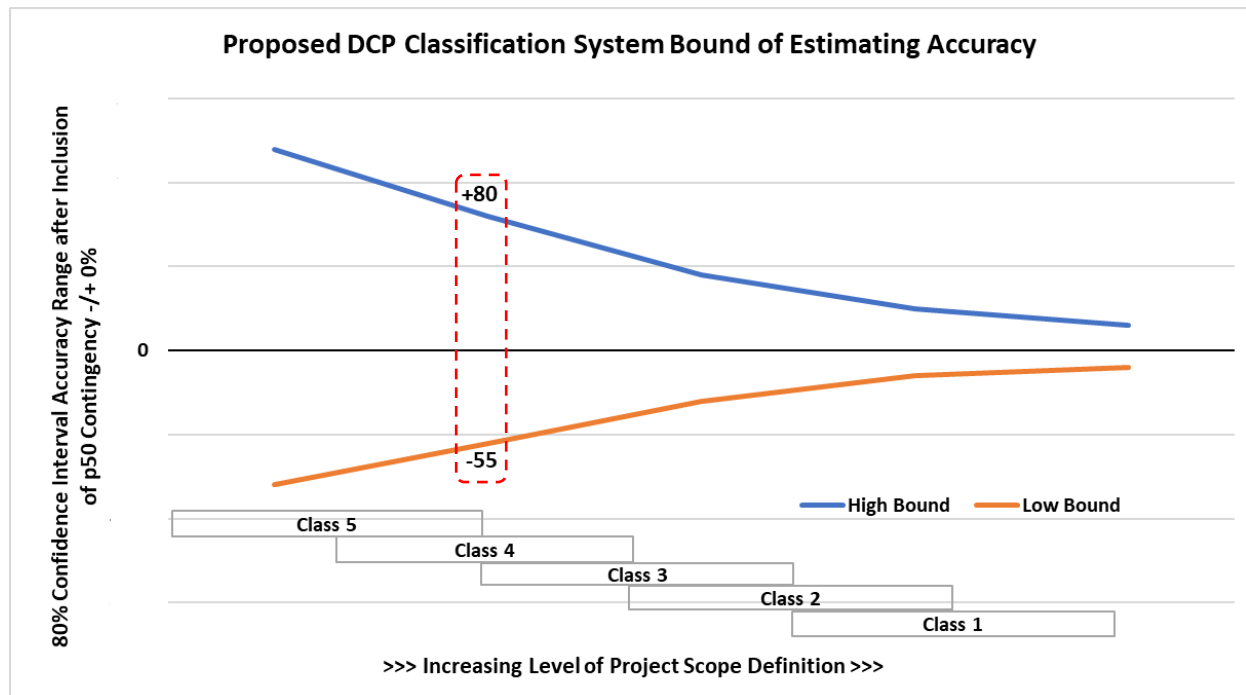


Figure 3-1. DCA Estimate Class within Range of Accuracy Modified from AACE 17R-97

4. Construction Cost Estimate

This section presents the construction cost estimate for the project including summaries of the major components and items considered while developing the estimate. Appendix A provides a more detailed breakdown and understanding of the construction cost estimate.

- Cost Basis** – A variety of elements serve as the cost basis for the construction cost estimate, such as material prices, labor rates, equipment rates, productivity of construction crews, schedule, indirect costs, sales tax, contractor markup and profit, and other add-on costs (such as insurance and bonds). The estimate does not include escalation for the construction period and for future start dates. The prices in this estimate are in 2023 dollars.
- Allowances** – Allowances are resources included in the estimate to cover the costs of known but undefined requirements for an individual activity or work item. The estimate recognizes the following allowances associated with the project:
 - Allowance for all diesel/gas-powered equipment to become zero emissions by 2035
 - Allowance for testing and commissioning of mechanical and electrical equipment before the systemwide commissioning
- Risk Treatment Costs** – Risk treatment costs are included to account for identified risks associated with design and construction of the project and reflect potential costs beyond those developed by direct interpretation of the concept designs. Risk treatment costs also help manage potential risks by reducing threats and improving opportunities and have been developed based on industry standards, professional judgement and experience, and an assessment of uncertainties and potential risks for each major project feature.
- Contingency** – In addition to risk treatment costs for each project feature, an overall construction contingency is applied to all project features beyond those directly accounted for in the estimate.

Contingency is an amount added to a construction cost estimate to account for uncertain items, conditions, or events that are likely to result in additional project costs. An assessment of project design maturity (i.e. approximately 10% level of design maturity overall) was completed along with an assessment of potential risks to determine the appropriate amount of contingency. An overall estimated construction cost contingency of 30% was included in the total project cost estimate.

4.1 Summary of Construction Estimate

Table 4-1 summarizes the construction costs and the risk treatment costs for each project feature. The 30% contingency is then applied to the summation of the estimated construction and risk treatment costs which results in an overall construction cost estimate for the project. Appendix A provides more details and a breakdown of the construction cost estimate.

Table 4-1. Summary of Construction Costs

Feature	Construction Estimate (\$M ^a)	Risk Treatment (\$M ^a)	Total Cost (\$M ^a)
Intakes	\$1,660	\$54	\$1,714
Main Tunnels and Shafts	\$6,018	\$335	\$6,353
Pumping Plant & Surge Basin	\$2,496	\$40	\$2,536
Aqueduct Pipe & Tunnels	\$541	\$22	\$563
Discharge Structure	\$95	\$4	\$99
Access Logistics & Early Works	\$241	\$12	\$253
Communication	\$13	-	\$13
Restoration	\$17	-	\$17
Subtotal Construction Costs^b	\$11,081	\$467	\$11,548
Construction Contingency (30%)			\$3,464
Total Construction Cost Estimate^b			\$15,012

^a Costs are in 2023 dollars and are undiscounted.

^b The Total Construction Cost estimate excludes provision of electrical power supply and associated infrastructure to deliver power to work sites – these costs are included with the Other Program Costs.

5. Other Program Costs

In addition to construction costs, there are a series of other program costs that need to be included in the total project cost estimate. These have been grouped into two sub-categories:

- 1) Planning, design, and construction management costs (soft costs)
- 2) Other costs

Following is a summary of these other program costs.

5.1 Planning, Design, and Construction Management Costs

Planning, design, and construction management costs (soft costs) include labor and other direct and indirect costs associated with delivering the project. These represent what is often referred to as non-

construction professional services-related costs, or soft costs, of the project. Table 5-1 summarizes the categories and elements that represent the planning, design, and construction management activities.

Table 5-1. Planning, Design, Construction Management Cost Basis Categories

2023 Cost Basis Categories – Planning/Design/Construction Management	
DWR Permitting & Oversight: <ul style="list-style-type: none"> • Engineering Standards Compliance • Program Controls Monitoring (Schedule and Budget) • Invoice Processing and Payment • Startup and Commissioning Support • Ongoing Environmental Permitting & Compliance Monitoring 	
DCA Permits & Agency Coordination: <ul style="list-style-type: none"> • Permit Coordination • Agency Coordination • Mitigation Monitoring & Reporting Coordination 	
DCA Program Management: <ul style="list-style-type: none"> • Executive Office (Human Resources, Legal, Finance, Program Office Direct Costs) • Program Management Leadership • Program Support (Assurances, Program Controls, Contracts/Procurement, Community Engagement) 	
DCA Engineering, Design, and Construction Management: <ul style="list-style-type: none"> • Engineering (Design Project Management/Technical Support, Construction Project Management/Technical Support, Geotechnical Exploration, Survey, Property Acquisition/Right-of-Way, Startup/Commissioning, Supplemental Programmatic Technical Services – Value Engineering, Hydraulic Modeling) • Design (Project Management, Basis of Design Reports, 30% Design, 60% Design, 90% Design, 100% Design, Independent Technical Review Coordination, Engineering Services During Construction, Startup/Commissioning Support) • Construction Management (Construction Project Management, Construction Oversight Services, Startup/Commissioning Support) 	

5.2 Other Costs

Other costs include items such as land acquisition, mitigation requirements, power, the settlement agreement and community benefits that are included as part of the overall cost of the project. Table 5-2 shows the different categories for these other costs.

Table 5-2. Other Cost Basis Categories

2023 Cost Basis Categories – Other Costs	
Land:	<ul style="list-style-type: none"> • Easements • Land Purchase
DWR Mitigation:	<ul style="list-style-type: none"> • Tribal Monitoring • Mitigation Plans • Habitat Restoration Projects • Other Significant Mitigation
Power:	<ul style="list-style-type: none"> • Design Services for Power Provided by Utility • Procurement/Construction of Infrastructure to Provide Power (SMUD, PG&E, WAPA) • Power Utilization Cost During Construction
Contra Costa Water District Settlement Agreement:	<ul style="list-style-type: none"> • Agreed Cost Share (50-cfs pumping capacity)
Community Benefits:	<ul style="list-style-type: none"> • Allowance for Community Benefits Program

The following points summarize the development and basis of the other costs:

- **Land Acquisition** – The land acquisition estimate is based on an estimate of costs to purchase the property and right-of-way to construct and operate the project. In addition to the property and rights-of-way costs, the estimate includes relocation assistance, utility relocation land costs, legal, and consulting fees.
- **Mitigation** – This estimate covers the environmental mitigation requirements outlined in the EIR and provided by DWR. These costs include items for Tribal monitoring, mitigation plan development, habitat mitigation (including compensatory mitigation), and other significant mitigation, as described in the EIR.
- **Power** – This item includes the costs for the design, procurement, and construction of the electrical infrastructure required to bring power to each project site from the major power utility companies in the project area. This item also includes the estimated cost associated with the electrical power consumption during construction. Primarily, this includes electrical consumption costs at the Intakes, Pumping Plant, and the Twin Cities Complex and the Lower Roberts Island double-launch shafts, where power is supplied for the tunnel boring machines. It also includes the power used during the commissioning and start-up of the overall conveyance system.
- **Contra Costa Water District (CCWD) Settlement Agreement** – This item includes the agreed cost share of \$47 million for a 50-cfs pump station to be located at the Union Island Maintenance Shaft to transfer water to CCWD's existing facilities on Victoria Island.
- **Community Benefits Program** – This item is an allowance of \$200 million to fund a community benefits program that would provide tangible benefits to local communities potentially effected by DCP construction approximately equal to 1% of the total project cost. Total actual benefits to the

community associated with implementation of the project are ultimately likely to represent a value beyond this funding commitment due to additional benefits associated with project leave behinds, job training and employment, local business participation, and other local and regional economic gains.

5.3 Summary of Other Program Costs

Table 5-3 summarizes the estimated cost associated with the other program costs. As noted in the table, an appropriate contingency between 15% to 30% has been added to each item based on whether it was a services-related or construction-related cost.

Table 5-3. Other Program Costs

Item	Estimated Cost (\$M ^a)
<i>Planning, Design, Construction Management (Soft Costs)</i>	
DWR Permitting & Oversight ^b	\$426
DCA Program Management Office ^b	\$668
DCA Engineering Management / Detailed Design / Construction Management ^b	\$2,167
DCA Permitting and Agency Coordination ^b	\$67
<i>Other Costs</i>	
Land ^c	\$158
Mitigation ^{b,c}	\$960
Power ^c	\$415
CCWD Settlement Agreement	\$47
Community Benefits Program	\$200
Total Other Program Costs	\$5,108

^a Costs are in 2023 dollars and are undiscounted.

^b Other Program Costs including soft costs and portions of the mitigation costs include a 15% contingency.

^c Land and the construction related elements of Mitigation and Power costs include a 30% contingency.

6. Total Project Cost Summary

Table 6-1 summarizes the total project cost estimate for the project.

Table 6-1 Total Project Cost Summary

Feature	Total Cost (\$M ^a)	Percent of Construction (%)
Construction Costs		
Intakes	\$1,714	Not Applicable
Main Tunnels	\$6,353	
Pumping Plant & Surge Basin	\$2,536	
Aqueduct Pipe & Tunnels	\$563	
Discharge Structure	\$99	
Access Logistics & Early Works	\$253	
Communication	\$13	
Restoration	\$17	
Construction Subtotal	\$11,548	
Contingency (30%)	\$3,464	
Total Construction Cost	\$15,012	
Other Program Costs		
DCO Oversight	\$426	2.84%
Program Management Office	\$668	4.45%
Engineering / Design /Construction Management	\$2,167	14.44%
Permitting and Agency Coordination	\$67	0.45%
Total Planning/Design/Construction Management	\$3,328	22.17%
Land	\$158	Not Applicable
DWR Mitigation	\$960	
Power	\$415	
CCWD Settlement Agreement	\$47	
Community Benefits Program	\$200	
Total Other Costs	\$1,780	
TOTAL PROJECT COSTS	\$20,120	

^a Costs are in 2023 dollars and are undiscounted.

7. Total Project Costs with Innovations

Following project approval, DWR directed DCA to further evaluate several project features presented in the EPR/EIR and consider potential design or construction innovations to improve constructability or further reduce community or environmental disturbances, schedule, and/or costs. This evaluation resulted in a set of potential innovations at this early conceptual stage of the project that are considered by the DCA to be reasonable and credible based on industry experience. The innovations discussed herein do not represent changes to the project description presented in the EPR and analyzed in the EIR, but rather provide an indication of how normal design development processes can help manage costs for large infrastructure projects. As the innovation concepts advance, DWR will determine and document the need for any revisions to the project description, which will be used by DWR to determine if additional reviews will be required under CEQA and/or for project permitting. Appendix B summarizes the considered innovations.

Innovation concepts were initially developed by the DCA through a screening process that evaluated compatibility and appropriateness given the current level of project definition. The resulting 19 innovation concepts were then advanced into initial concept design to support an analysis of potential cost savings compared to those taken from drawings and other information contained in the EPR and EIR documents.

Table 7-1 presents the estimated construction cost savings for the combined set of innovations, grouped by project feature, reflecting reductions in construction quantities, crews, and equipment. The total construction cost savings includes a proportionally scaled portion of risk treatment cost (see Table 4-1).

Table 7-1 Construction cost savings from recommended combined set of innovations

Feature	Construction Cost Savings (\$M^a)	Risk Treatment Cost Savings (\$M^{a,b})	Total Construction Cost Savings (\$M^a)
Intakes	\$35	\$1	\$36
Tunnels & Shafts	\$211	\$12	\$223
Pumping Plant & Surge Basin	\$370	\$6	\$376
Aqueducts	\$75	\$3	\$78
Discharge Structure	\$40	\$1	\$41
Logistics	\$18	\$1	\$19
Total	\$749	\$24	\$773

^a Costs are in 2023 dollars and are undiscounted.

^b Risk treatment cost savings are estimated as a scaled proportion of construction cost savings relative to the Total Project Cost estimate for the Bethany Reservoir Alignment as depicted in the EIR/EPR.

Table 7-2 compares the total project cost estimate described in Section 6 to a potential total project cost estimate associated with these early innovation concepts. The cost reductions associated with the innovations (see Table 7-1) only account for potential reductions in construction costs including risk treatment costs. In order to provide an indication of the potential full cost savings of innovations as described in Appendix B, contingencies and other program costs were applied proportionally to the revised construction costs. The costs for land acquisition, mitigation, power, the CCWD settlement

agreement, and the community benefits program were not adjusted from the total project cost estimate described in Section 6 of this memorandum.

Table 7-2. Summary of Total Project Cost and Total Project Cost with Innovations

Feature	Total Project Cost (\$M ^a)	Percent of Construction (%)	Total Project Cost with Innovations (\$M ^a)
Construction Costs			
Intakes	\$1,714	Not Applicable	\$1,678
Main Tunnels	\$6,353		\$6,130
Pumping Plant & Surge Basin	\$2,536		\$2,160
Aqueduct Pipe & Tunnels	\$563		\$485
Discharge Structure	\$99		\$58
Access Logistics & Early Works	\$253		\$234
Communication	\$13		\$13
Restoration	\$17		\$17
Construction Subtotal	\$11,548		\$10,775
Contingency (30%)	\$3,464		\$3,233
Total Construction Cost	\$15,012		\$14,008
Other Program Costs			
DCO Oversight ^b	\$426	2.84%	\$398
Program Management Office ^b	\$668	4.45%	\$623
Engineering/ Design /Construction Management ^b	\$2,167	14.44%	\$2,022
Permitting and Agency Coordination ^b	\$67	0.45%	\$63
Total Planning/Design/Construction Management^b	\$3,328	22.17%	\$3,106
Land	\$158	Not Applicable	\$158
DWR Mitigation	\$960		\$960
Power	\$415		\$415
CCWD Settlement Agreement	\$47		\$47
Community Benefits Program	\$200		\$200
Total Other Program Costs	\$1,780		\$1,780
TOTAL PROJECT COSTS	\$20,120		\$18,894

^a Costs are in 2023 dollars and are undiscounted.

^b DCO Oversight, Planning, Design, and Construction Management costs are assumed to be the same percentage of construction as the total project cost estimate.

As shown in Table 7-2, reductions in construction effort associated with a set of reasonable and credible innovations identified at this early stage of design has the potential to reduce the total cost of the project

by \$1.23B, or approximately 6%. Cost savings shown in Table 7-2 are limited to just those derived from changes in construction cost and proportional reductions in risk treatment costs and labor associated with planning, design, and construction management. Potential additional cost savings associated with innovations that were not considered in the analysis include:

- Reduced schedule durations for individual project features could reduce overhead costs and escalation impacts associated with individual components of the project.
- Reduced schedule durations for project features that affect the overall project schedule (i.e. “critical path” features) could potentially expedite the overall project construction timeline resulting in reduced overhead costs and escalation impacts. Expediting the overall project schedule could also bring the project into operation sooner.
- Innovations may reduce the impact of uncertainty within the cost estimate currently captured by risk treatment costs and project contingencies.
- Innovations may reduce the land required for construction and operations of the project, which could reduce land acquisition costs.
- Innovations may reduce the impacts of construction and operations, which could reduce mitigation requirements associated with the project.

The potential benefits of the identified innovations or future innovations should be further analyzed as project definition improves. Additional benefits of potential design or construction innovations to improve constructability or further reduce community or environmental disturbances, schedule, and/or costs savings associated with potential innovations could be realized but would require further analyses in coordination with DWR.

8. References

AACE International (AACE). 2020. 17R-97: Cost Estimate Classification System Recommended Practice. August 7.

California Department of Water Resources (DWR). 2023. Delta Conveyance Project Final Environmental Impact Report. December 2023. SCH# 2020010227.

Delta Conveyance Design and Construction Authority (DCA). 2022. Delta Conveyance Final Draft Engineering Project Report. Bethany Reservoir Alternative. May 2022.

Delta Conveyance Design and Construction Authority (DCA). 2023. Delta Conveyance Final Draft Engineering Project Report Update Bethany Reservoir Alternative. November 2023.

Appendix A

Bethany Reservoir Alignment Basis of Estimate – Construction Costs

Subject	Bethany Reservoir Alignment Basis of Estimate – Construction Cost
Project Feature	Project-wide
Prepared For:	Delta Conveyance Project (DCP) File
Prepared By:	Delta Conveyance Design and Construction Authority (DCA)
Copies To	California Department of Water Resources (DWR) / Delta Conveyance Office (DCO)
Date/Version	May 8, 2024 / Version 2
Reference No.	EDM_PW_CE_MEM_Bethany-Construction-Cost-BoE_001324_V02_D_20240508

1. Introduction

This memorandum prepared by the Delta Conveyance Design and Construction Authority (DCA) describes construction cost development methods and procedures for the Delta Conveyance Project Bethany Reservoir Alignment (Project). The documentation includes the rationale, assumptions, pricing sources, and other inputs to the estimating process used by the team in development of the construction cost estimate.

1.1 Purpose

The purpose of this document is to provide a construction cost estimate for the project as defined in the Final Environmental Impact Report (EIR) prepared by the California Department of Water Resources (DWR) and the supporting Engineering Project Report (EPR) prepared by the DCA. This document is in the form of a Basis of Estimate (BOE) and describes how construction costs have been developed for the Bethany Reservoir Alignment (6,000-cubic-foot-per-second [cfs] capacity) with the rationale, assumptions, pricing sources, and other inputs to the estimating process DCA used to develop the cost estimate. This estimate is presented in 2023 dollars and is “undiscounted”, meaning the value does not account for the time value of money.

This BOE complies with Association for the Advancement of Cost Engineering International (AACE) *34R-05: Basis of Estimate Recommended Practice* (AACE, 2021). The estimate has been prepared using a standard process for a defined scope, as discussed within this report. DCA understands the assumed facility arrangements are at a conceptual planning level. As design development progresses, any potential changes are expected to be within the expected range of accuracy of the construction estimate.

Section 15 summarizes the total construction cost, and Attachments 1 and 2 provide more detailed breakdowns of the cost components.

Contingency has not been included and is being developed separately as part of the project cost management process.

This BOE is limited to the development of construction costs and excludes other program costs, such as planning, design, and construction management labor costs (soft costs), or other activities associated with delivering the project beyond the direct construction costs. This document also excludes the costs for providing electrical power and transmission to support the project, because those costs are being coordinated with the utility provider. All of these other program costs will be reported separately in the total project cost summary document, and thus are not included in this BOE.

1.2 Organization

This document is organized as follows:

- Introduction
- Project Scope of Work
- Estimate Methodology
- Estimate Classification
- Design Basis
- Planning Basis (Schedule)
- Cost Basis
- Allowances
- Assumptions
- Exclusions and Exceptions
- Program Risks
- Risk Treatment Costs
- Contingency
- Estimate Checking and Review
- Summary
- References
- Document History and Quality Assurance

1.3 Background

DCA completed Engineering Project Reports (EPRs) that presented conceptual engineering information for three potential conveyance alignments for the project: Central alignment, Eastern alignments, and Bethany Reservoir alignment (DCA, 2022a and DCA, 2022b). Updates to these reports were prepared in late 2023 (DCA, 2023a and DCA, 2023b). On December 21, 2023, DWR approved the project and certified the Environmental Impact Report (EIR) (DWR,2023). Based upon an extensive environmental review, as documented in the EIR, DWR selected the Bethany Reservoir Alignment for further engineering, design, and permitting.

This report provides the BOE for construction costs associated with the Bethany Reservoir Alignment for the 6,000-cfs flow capacity, as presented in the EPR and EIR.

1.4 Approach

This BOE complies with AACE *34R-05: Basis of Estimate Recommended Practice* (AACE 2021). It has been developed using a buildup of quantities for the key features where drawings and quantity information are available. Other less-defined elements of work have been developed with stochastic methods using judgment and experience, and these have been added to the estimate either as built-up or allowance items. The structure of the estimate assigns the work elements into a work breakdown structure (WBS) based on anticipated works contracts that are broadly based on the main discipline features and key site locations. The feature and WBS groupings are subject to revision as the project definition is further developed.

This BOE presents the key elements in a general north to south sequence, followed by the early site development and logistics works. Section 3 provides details about the construction estimate methodology. Note the following comments regarding the estimate:

- The estimate was prepared using 2023 prices.
- A preliminary set of construction activities has been developed in conjunction with the cost estimate for assessment of activity durations and interfaces.
- Lump sum allowances are included for elements of work where no design information was available or if the estimates were provided for items not included in the DCA scope.

2. Project Scope of Work

This section describes the facilities and elements of work included in this BOE. The project scope of work aligns with the 6,000-cfs Bethany Reservoir Alignment as presented in the *Delta Conveyance Final Draft Engineering Project Report, Bethany Reservoir Alternative* (DCA 2022b) and updates to the EPR issued in November 2023 (DCA 2023).

2.1 Layout

Figure 2-1 shows the following proposed conveyance facility features:

- **Intake C-E-3 and Intake C-E-5:** Two 3,000-cfs intakes located along the Sacramento River.
- **Main Tunnel and Shafts:** 36-foot internal diameter tunnel, approximately 45 miles long, connecting C-E-3 and C-E-5 to the Bethany Reservoir Pumping Plant (BRPP) with 11 shafts, inclusive of the surge basin shaft, along the alignment used for launching, reception, and maintenance.
- **Surge Shaft and Surge Basin:** Shaft is used as a reception shaft connecting the Main Tunnel to the Surge Basin and providing connection to the BRPP wet well inlet conduit.
- **Bethany Reservoir Pumping Plant:** A 6,000-cfs pumping plant with wet well and dry pit structures housing fourteen vertical centrifugal end suction type pumps.
- **Aqueduct:** Four 15-foot-diameter parallel pipelines approximately 2.5 miles long each, which include 2 tunneled sections and vertical shafts at the connection to the Discharge Structure.
- **Discharge Structure:** Located at Bethany Reservoir to discharge flow delivered from the Aqueduct.
- **Logistics works:** Including access, power, and utilities.



Figure 2-1. Schematic of Project features

The total alignment is illustrated on the project map (Figure 2-2), extending from the Intake facilities to the discharge facilities in Bethany Reservoir for delivery to the existing State Water Project.

The 6,000-cfs-project includes two river intake facilities on the Sacramento River, with on-bank intake structures and sedimentation basins that connect to the main tunnel via drop shafts. The main tunnel at 36-foot-inside-diameter (ID) and approximately 45 miles long, would be constructed as four reaches driven in opposite directions from the Twin Cities Complex and Lower Roberts Island double launch shafts. The tunnel drives would end at reception shafts at Intake 3, Terminus Tract, and the Surge Basin located at the BRPP, with all other shafts used as maintenance shafts during construction of the tunnel and for future project operations and maintenance. The Surge Basin and BRPP at the southern end of the alignment connect to a four-pipeline aqueduct and the discharge structure at Bethany Reservoir.



Figure 2-2. Project Map
Data Source: DCA, DWR

2.2 Features

2.2.1 Intakes

The intakes, C-E-3 (Intake 3 [or B per the EIR]) and C-E-5 (Intake 5 [or C per the EIR]), and associated sedimentation facilities are designed to divert up to 6,000 cfs (3,000 cfs maximum per intake) from the Sacramento River. Each intake consists of the following major components:

- Intake structure
- Thirty fish screens (T-screen option)
- Thirty 60-inch-diameter discharge pipes from Intake to Sedimentation basin
- Sedimentation basin
- Flow control and isolation gate structure
- Four sediment drying lagoons
- Appurtenant features

The two intake sites, along with sedimentation basin facilities, are located in the northern Delta along the Sacramento River near the town of Hood.

Figure 2-3 provides a conceptual rendering of one of the on-bank intake and sedimentation facilities. The intakes have on-bank cylindrical tee fish screens. The various control gates would be used to comply with the approach velocity of 0.2 foot per second (fps) at the fish screens and the 3,000 cfs maximum flow per intake. The sedimentation basins would be designed to remove sand-sized settleable solids before entering the conveyance system.



Figure 2-3. Conceptual On-bank Intake and Sedimentation Facilities

2.2.2 Tunnel and Shafts

The single main tunnel alignment is a 36-foot-ID tunnel, approximately 45 miles long and composed of four tunnel reaches. Each tunnel reach is driven between a launch and a reception shaft using a tunnel

boring machine (TBM). From Figure 2-2, there are two double launch shafts and three reception shafts. The launch shafts consist of two double launch shafts with interlocking 115-foot-ID shafts, named the Twin Cities Double Launch Shaft, and the Lower Roberts Island Double Launch Shaft. The reaches heading south from the Twin Cities Double Launch Shaft and north from the Lower Roberts Island Double Launch Shaft terminate into the Terminus Tract Reception Shaft with a 70-foot ID. The reach heading north from the Twin Cities Double Launch Shaft terminates at the C-E-3 Intake Reception Shaft with an 83-foot ID; this shaft also serves as an outlet shaft for Intake 3. The fourth tunnel reach, heading south from Lower Roberts Island Double Launch Shaft, terminates into the Surge Basin Reception Shaft with a 120-foot ID.

Between each launch and reception shaft, intermediate maintenance shafts, each at a 70-foot ID, are provided approximately every 5 miles, for a total of 6 maintenance shafts (Figure 2-2). These shafts are provided for TBM maintenance and temporary access during construction. The C-E-5 Intake Maintenance Shaft also serves as an outlet shaft for Intake 5 and is sized at 83-foot-ID.

The average shaft depth is approximately 180 feet, with an average tunnel invert depth of approximately 140 feet below existing grade (refer to the EPR conceptual drawings for detailed dimensions). These shafts would be constructed to a top elevation about 25 to 45 feet above existing grade for flood protection during tunnel construction and during operations. The shafts are also constructed to a top elevation to maintain the maximum water surface elevation expected within the shaft during a surge event caused by sudden stoppage of the pumping station.

Tunnel construction includes installing 6-foot-long precast concrete segmental lining rings. Each ring would consist of seven segments plus the key, with a thickness of about 18 inches.

2.2.3 Bethany Reservoir Pumping Plant Complex

The BRPP Complex covers all the works within the project area north of Kelso Road and before the aqueduct continues south toward the Bethany Reservoir. The main features included in the BRPP Complex include the Surge Basin Reception Shaft, Surge Basin, BRPP, inlet conduit connecting the reception shaft to the wet well within the BRPP, and the main deep box pumping plant with the aqueduct pipes between the box and the aqueduct interface at Kelso Road.

2.2.3.1 Surge Basin Reception Shaft

The Surge Basin Reception Shaft is a 120-foot-ID and 205-foot-deep structure that would first serve as the Main Tunnel reception shaft from the southern Lower Roberts Island Double Launch Shaft reach. Once the TBM is removed and the tunnel reach completed, the shaft would be modified to become the Surge Basin overflow structure and the connection to the inlet conduit to the pumping plant. The Main Tunnel connects to the base of the shaft and the inlet wet well conduit connects on the opposite side, approximately 65 feet higher in elevation.

2.2.3.2 Surge Basin

The Surge Basin structure is an open-top, rectangular, below-ground-level basin. The top of the basin would be at existing grade and the bottom elevation (top of floor slab) at about 30 or 40 feet below the ground surface (Figure 2-4).

The Surge Basin would be located immediately to the east of Mountain House Road and would contain an access ramp that would connect to an access road to Mountain House Road to facilitate the removal of the TBM and vehicle access during the construction and operation of the Surge Basin.

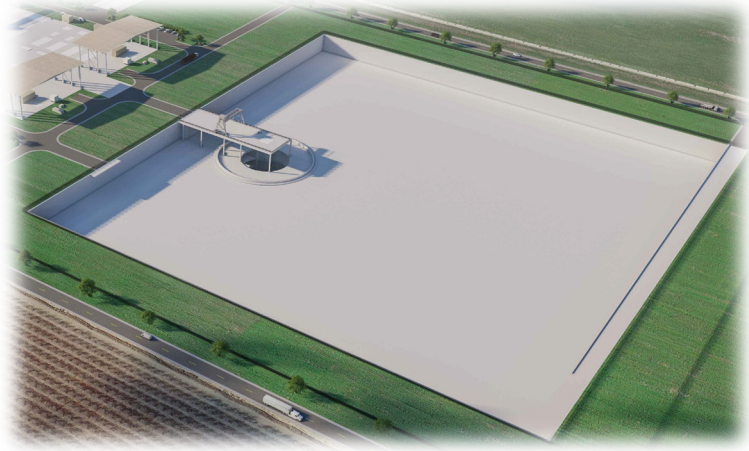


Figure 2-4. Surge Basin (Bethany)

The Surge Basin would normally be empty and would be used during infrequent hydraulic transient-surge events created by power failure or sudden stoppage to the pump station. Under these conditions, surge flows in the Main Tunnel would flow into the Surge Basin through the Surge Basin Reception Shaft. A circular weir wall with gates would be located around the top outlet of the shaft to allow water to overflow into the Surge Basin and prevent these overflows from immediately re-entering the tunnel.

The Surge Basin would include a gantry crane on a bridge structure between the southern edge of the basin and the vertical reception shaft. The bridge structure would include a removable panel, centered over the reception shaft, and a rail-mounted gantry crane that would be used to install portable submersible pumps and connect discharge piping into the reception shaft to dewater the tunnel.

2.2.3.3 Inlet Wet Well Conduit

The inlet wet well conduit would convey water from the Surge Basin Reception Shaft to the BRPP wet well. The inlet wet well conduit would be approximately 400 feet long, and 60 feet wide. Two sets of isolation bulkhead gates and openings would be provided in the inlet wet well conduit to isolate water flowing through the conduit and entering the BRPP wet well during inspection or maintenance, with double isolation provisions for the safety of the workers. The overhead-mounted gantry crane on the Surge Basin bridge structure would be used to install and remove the bulkhead panels.

2.2.3.4 Pumping Plant

The BRPP facilities would be adjacent to the surge basin (refer to Figure 2-5). The pumps lift water from a wet well hydraulically connected to the surge shaft via the inlet wet well conduit. The pumps would be operated to maintain the flow rate supplied into the tunnel at the northern Sacramento River intakes. The desired flow of the pumping plant would range from a minimum of 600 cfs to a maximum of 6,000 cfs, which would be achieved with fourteen 500-cfs pumps (12 duty pumps and 2 standby pumps).

The major components of the BRPP include the below-ground pumping plant and wet well, above-ground water surge tanks (open to atmosphere), electrical building, heating and air conditioning mechanical equipment yard, transformer yard, electrical substation adjacent to the electrical building, standby engine

generator building, equipment storage building, offices, welding shop, machine shop, storage area, and a walled enclosure/storage facility and two separate dry-pit pump bays adjacent to the wet well.

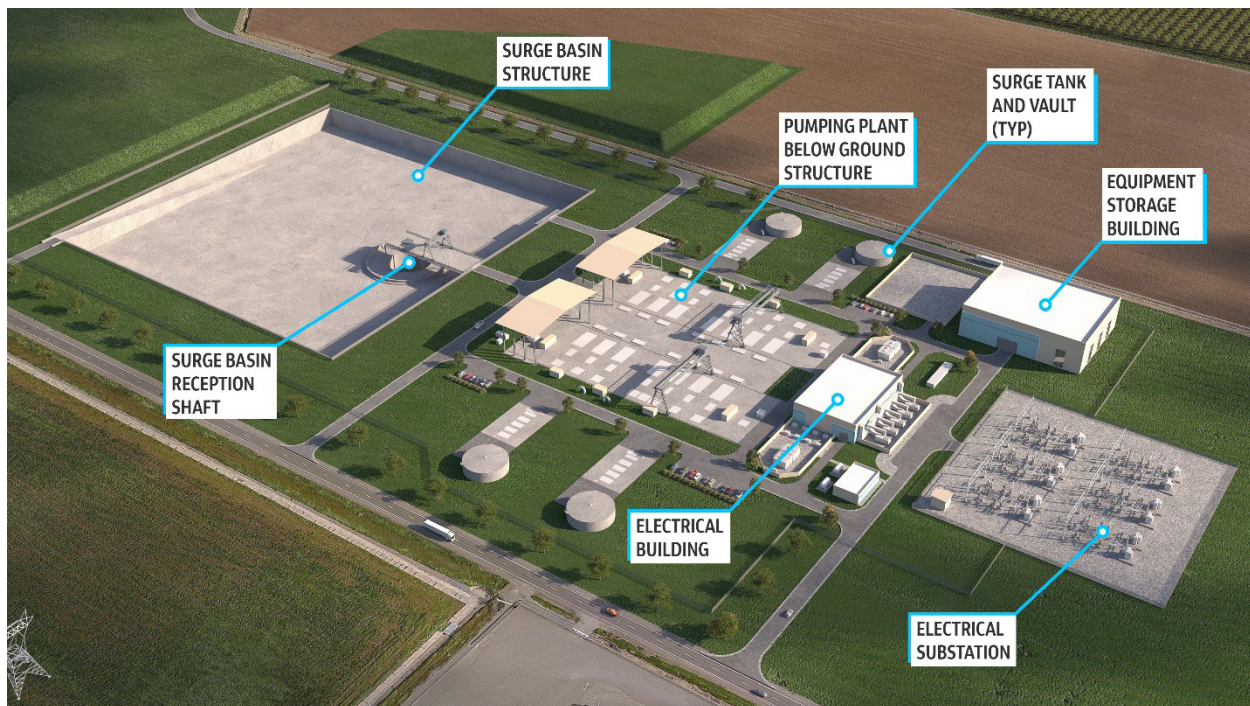


Figure 2-5. Bethany Reservoir Pumping Plant

2.2.4 Aqueduct

For the Bethany Reservoir Alignment, the aqueduct would convey water from the BRPP to Bethany Reservoir Discharge Structure located along the bank of the existing State Water Project Bethany Reservoir. The Bethany Reservoir Aqueduct would consist of four pressurized 180-inch-ID welded steel pipes. Each pipeline would convey up to 1,500 cfs. The aqueduct pipelines would be constructed using open-cut and backfill trench methods, except where the aqueduct pipelines crossed beneath the existing C. W. "Bill" Jones Pumping Plant discharge penstocks and the existing Bethany Reservoir Conservation Easement near Bethany Reservoir, where tunneling methods would be used for aqueduct construction (Figure 2-6).

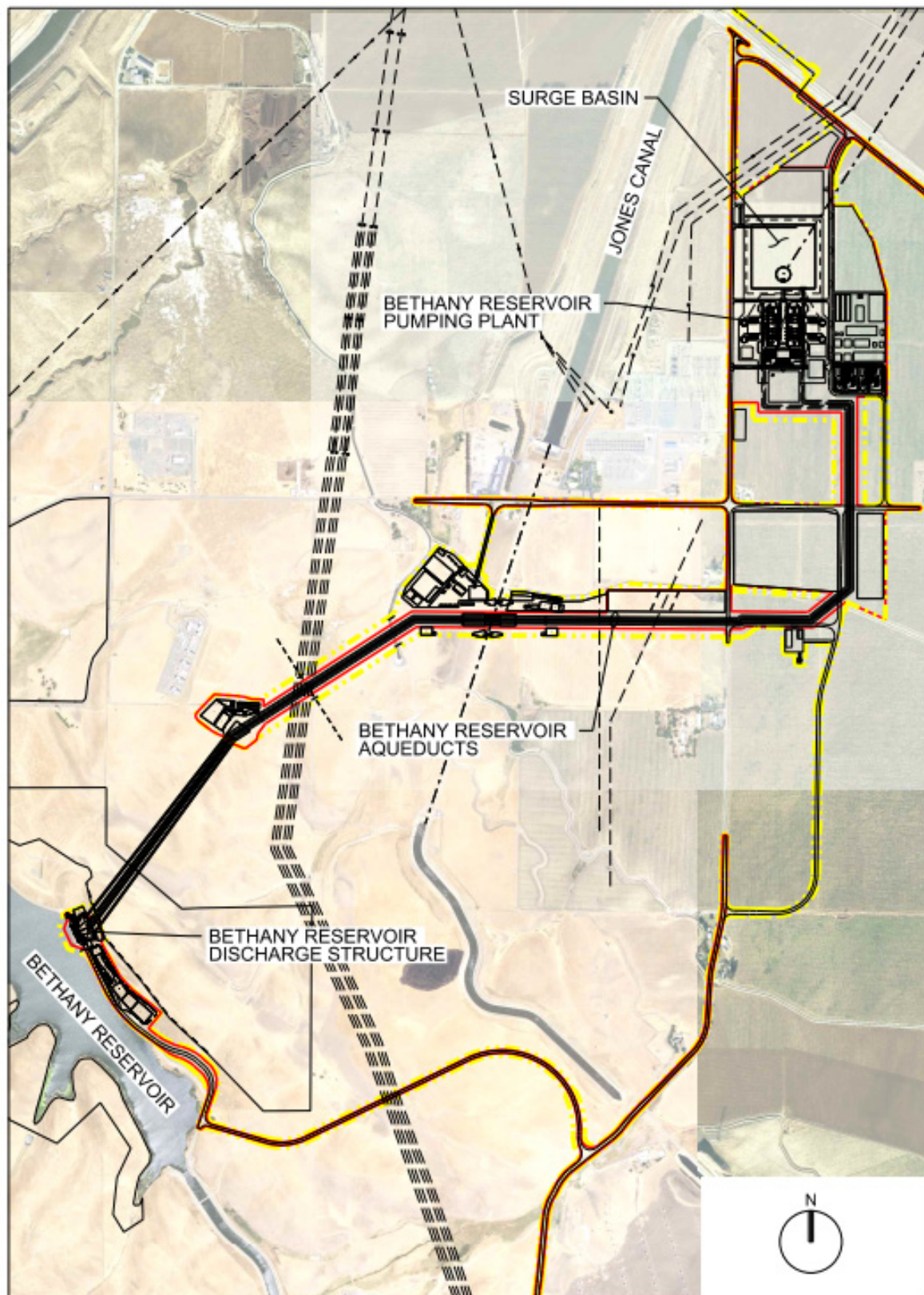


Figure 2-6. Bethany Aqueduct pipeline

2.2.5 Early Works Access Logistics

This section describes the works identified to support the main works contracts. These items include provision of access, levee protection, power, and utilities that would be available at the start of a main construction activities. The work elements defined in this section include roads and rail.

2.2.5.1 Early Works – Logistics – Roads and Levee

Early works for roads include the following provisions:

- Sacramento County Roads
 - Employee Park & Ride facility at Hood Franklin Road
 - Hood Franklin Road Snodgrass Slough bridge widening
 - Intakes 3 & 5 access roads
 - Lambert Road widening
- Twin Cities Complex Access Roads and Levees
 - Dierssen Road paving
 - Franklin Boulevard improvements at Dierssen Road
 - Twin Cities Road widening (East)
 - Twin Cities Complex ring levee
- San Joaquin County Roads
 - New Hope Tract Blossom Road widening
 - Canal Ranch access road construction
 - Terminous Tract Highway 12 widening
 - King Island access road construction
 - Lower Roberts Island access road construction
 - Lower Roberts Island levee protection work
 - Upper Jones Tract access road construction
 - Union Island access road
- Bethany Complex Access Roads
 - Byron Highway Lindemann Rd intersection
 - Byron Highway frontage road
 - Kelso Road widening
 - Mountain House Road widening
 - Mountain House Road shaft access
 - Mountain House Road by-pass
 - Bethany Reservoir access road
- Bethany Reservoir Access Road
 - Bethany Reservoir access road

2.2.5.2 Early Works – Logistics – Rail

Early works for rail include the Lower Roberts Island Rail Yard construction and extension of the rail line from the Port of Stockton.

2.2.6 Early Works Power and Utilities

2.2.6.1 Power

Power supplies to the main works sites are not included in the base construction cost estimate because this provision is being developed by DWR in coordination with the power providers (SMUD, PG&E, WAPA). These costs will be included in the other program cost element of the total project cost estimate. The power costs for each individual project do include the costs for both temporary and permanent requirements at each project site, as necessary.

2.2.6.2 Utilities

Work to provide or protect utilities is included in the mobilization and site preparation estimates for each contract. This includes:

- General allowances where no details are available
- Water supply to Bethany Complex
- Protection works for the East Bay Municipal Utility District (EBMUD) aqueduct tunnel

2.2.7 Systemwide

2.2.7.1 Communications and Control

Systemwide communications systems include fiberoptic cable for each site. Control panel equipment at each facility is included within the individual feature projects.

2.2.7.2 Testing and Commissioning

Testing and commissioning for the project, which follows all construction, is not included in this construction estimate but is included in the total project cost estimate. An allowance for contractor participation and assistance with testing and commissioning equipment within each facility is included in the feature project costs.

3. Estimate Methodology

This estimate has been prepared with quantities taken from drawings and other information contained in the EPR documents and, where applicable, adjusted to reflect the conclusion set out in the EIR. The cost estimate has been prepared using the Heavy Construction Systems Specialists (HCSS) Heavy Bid estimating software platform. This is a crew-based estimating system that uses labor and equipment crew estimates to complete work activities for the anticipated method of construction and anticipated durations. Because of the scale and complexity of the project, a more rigorous estimating approach was used to develop the construction costs which included development of concept level drawings and technical memorandums, obtaining deterministic costs for unit rates and materials, replacing most of the cost allowances with actual estimates and material price quotes, and estimating the work based on the current understanding of subsurface ground conditions.

Surface facilities include the Intakes, Surge Basin, BRPP, Aqueduct pipelines, and Discharge Structure. Early works for access logistics and levee protection are also included in the surface works estimate and are separated into the individual work packages required.

Tunnel and shaft estimates have been prepared for the main 36-foot-internal-diameter tunnels, the pipejack tunnels at the intakes, and the tunneling and shaft work required for the aqueduct section from the BRPP to the Discharge Structure located at the Bethany Reservoir.

The WBS in Table 3-1 has been used to code cost items and is based on an assumed number of works contracts with associated construction elements. This WBS is used to assess the number of contractor setups required for the overall estimate. The contract grouping and total number of contracts are subject to change as the project develops.

Table 3-1. Work Breakdown Structure, and Estimate Coding

Feature Code	Feature Name	Contract Code	Contract Name
1	Intakes	13	Intake 3 Facilities
		15	Intake 5 Facilities
2	Tunnels and Shafts	21	Reach 1 Shafts & Tunnel (Twin Cities to Intake 3)
		22	Reach 2 Shafts & Tunnel (Twin Cities to Terminus)
		23	Reach 3 Shafts & Tunnel (Lower Roberts to Terminus)
		24	Reach 4 Shafts & Tunnel (Lower Roberts to Bethany Complex)
3	Pumping Plant	33	BRPP, Surge Basin, and Reception Shaft
5	Aqueduct	55	Bethany Aqueduct including Tunnels and Shafts
6	Discharge	66	Bethany Discharge Structure
7	Logistics	71	Sacramento County Access Roads – Intakes Access Roads and Park & Ride
		72	Twin Cities Advanced Sitework – Access Roads & Levees
		73a	Lower Roberts Island Access Roads and Park & Ride
		73b	State Route 12 Road
		74a	Bethany Complex Access Roads – Byron Hwy & Interchange
		74b	Bethany Complex Access Roads – BRPP area & Roundabout
		75	Bethany Reservoir Access Road
		76	Projectwide Road Maintenance
		77	Lower Roberts Island Rail & Rail Yard
		78	Lower Roberts Island Levee improvements advanced work
8	Communications & Power	83	SCADA Projectwide
		86	Power (SMUD)
		87	Power (PG&E)
		88	Power (WAPA)

Table 3-1. Work Breakdown Structure, and Estimate Coding

Feature Code	Feature Name	Contract Code	Contract Name
9	Environmental	91	Bouldin Island Compensatory Mitigation
		92	I-5 Pond Compensatory Mitigation
		93	Projectwide Restoration & Site Establishment

SMUD = Sacramento Municipal Utility District

PG&E = Pacific Gas and Electric Company

WAPA = Western Area Power Administration

4. Estimate Classification

DCA used the guidance provided in *17R-97: Cost Estimate Classification System Recommended Practice* (AACE, 2020) to determine the class of estimate. The engineering information available for these estimates is assessed to determine the maturity class of estimate as shown in Table 4-1. Based on this information, the project construction cost estimate falls generally within Class 4, although with some areas still at Class 5. The Class 4 designation should be considered an overall classification level; individual project features would have different levels of design maturity that contribute to this judgement.

Table 4-1. Estimate Maturity Checklist

General Project Information	Class 5 Initiation	Class 4 Planning
Project Scope Description	Preliminary	<u>Advanced^a</u>
Plant Capacity	Assumed	<u>Advanced^a</u>
Site Location	Assumed	<u>Specific^a</u>
Site Layout	None required	<u>Preliminary^a</u>
Earthwork Quantities	None required	<u>Preliminary^a</u>
Process Selection and Criteria	None required	<u>Preliminary^a</u>
Design Discipline Criteria and Standards	None required	<u>Preliminary^a</u>
Equipment Lists	<u>None required^a</u>	Preliminary
Geotechnical Information	<u>None required^{a,b,c}</u>	<u>Preliminary^{a,b,c}</u>
Permitting Requirements	<u>Assumed^a</u>	Preliminary
Site Environmental Survey	<u>None required^{a,b}</u>	<u>Preliminary^{a,b}</u>
Site Hazards Survey	<u>None required^a</u>	Preliminary
Aerial Photography	None required	<u>Preliminary^a</u>
Site Survey	<u>None required^{a,b}</u>	<u>Preliminary^{a,b}</u>
Building Programming	<u>None required^a</u>	Preliminary
Architectural Material Boards	None required	<u>None required^a</u>
Traffic Plan	None required	<u>None required^a</u>
Acoustical Study	None required	<u>None required^a</u>
Contract Packaging Strategy	<u>None required^a</u>	Advanced

Table 4-1. Estimate Maturity Checklist

General Project Information	Class 5 Initiation	Class 4 Planning
Equipment Procurement Approach	<u>None required</u> ^a	Preliminary
Calculations	None required	<u>Preliminary</u> ^a
Project Schedule	Assumed	<u>Preliminary</u> ^a
Project Risk Log	Assumed	<u>Preliminary</u> ^a

Notes:

^a **Bold and underline** text represents the current class of information available.

^b Information levels may vary for project features where both columns are **bold and underline**

^c Majority of tunnel alignment has no Geotechnical information

The accuracy of the estimate is proportionally impacted by considering different project elements such as underground tunneling requirements, the project's location in an environmentally sensitive area, limited geotechnical information, permitting requirements, a site environmental survey, and a site hazards survey. The additional uncertainty associated with defining these elements should also be reflected in the project risk management approach and associated consideration of contingency costs allowance that are not included in this construction cost estimate.

Figure 4-1 shows the class location of this estimate within the varying limits of accuracy. The range of accuracy will decrease as the class of estimate becomes more definitive (decreasing class number) from left to right according to AACE 17R-97 (AACE, 2020). The construction cost estimate provides the DCA's opinion of the most probable cost. Due to the uncertainty associated with ground conditions along the tunnel alignment and industry experience with underground tunneling projects, DCA has assigned an accuracy range between +80% and -55% to the current cost estimate. The zero axis represents the current total construction estimate including appropriate contingency with the 80% confidence interval range represented by percentage increase or decrease on that value.

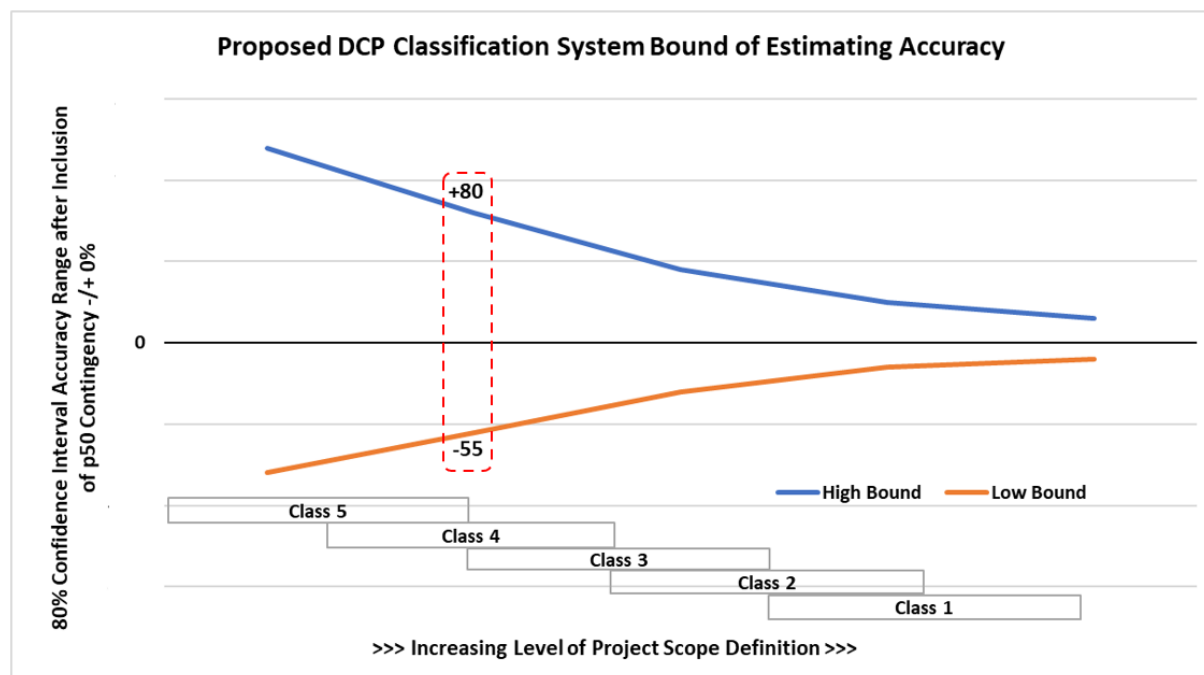


Figure 4-1. DCA Estimate Class within Range of Accuracy Modified from AACE 17R-97

The Class 4 estimate for the DCP is primarily presented to support project financial and economic analysis and to provide guidance for further project development. The final costs of the project once constructed will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors.

5. Design Basis

The scope of the project used for this estimate is as defined in the EPRs (DCA 2022a, 2022b) and the EPR Update (DCA 2023a, DCA 2023b). These documents contain summaries for the Central and Eastern Alignments and for the Bethany Reservoir Alignment, as well as concept-level engineering drawings and supporting technical memoranda. This BOE document only considers the 6,000-cfs capacity option for the Bethany Reservoir Alignment together with the tee-screen option for the intake structures.

6. Planning Basis

This section describes the basis for developing the sequence of activities used in conjunction with the construction estimate. The sequence has been used to support the development of duration-related costs in the estimate. Refer to the construction portion of the DCP summary schedule presented in Figure 6-1.

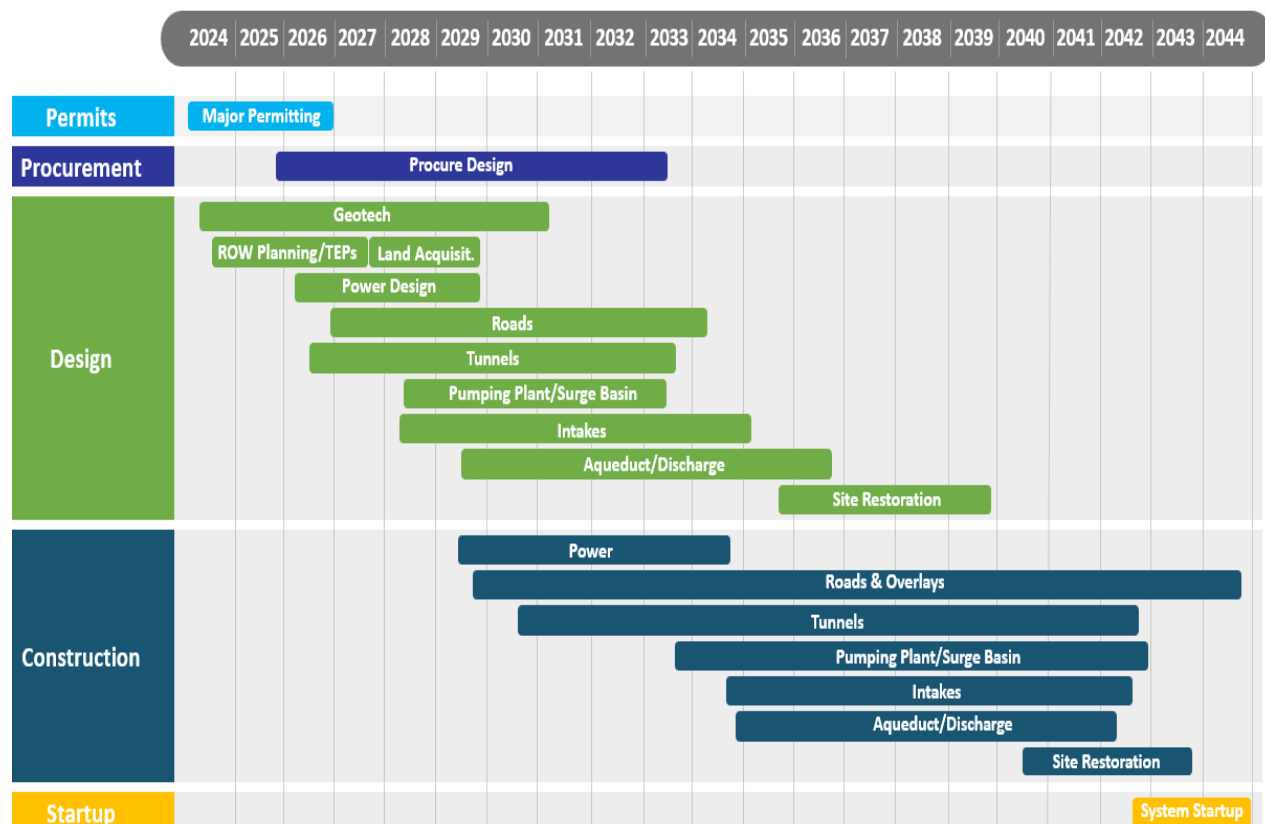


Figure 6-1. Delta Conveyance Project Summary Schedule

6.1 Preconstruction Activities

For this BOE, the preconstruction activities are assumed to include all activities required to achieve the start of early works construction, followed by main works construction.

6.2 Construction Sequence

Preliminary construction sequences were developed using the activities from the HCSS estimate. The estimate includes the allocated resources required to perform each task to complete the work. These tasks would include labor, equipment, materials, and, in some cases, subcontracts. The estimators calculated the time that would be required to perform each individual task for a given crew. The arrangement of activities is based on this effort, and depending on the type of work performed, the durations were adjusted to reflect likely work sequences. The durations were also adjusted to accommodate multiple crews working concurrent where necessary.

7. Cost Basis

Following is a summary of the cost element considerations. In general, all costs are based on 2023 dollars reflecting local area rates.

- **Material Prices** – material prices in the estimate are using 2023 prices. Concrete prices are based on supply from commercial or onsite batch plants and the estimate considers the cost of construction and operations of the batch plant to be included in the concrete unit rates.
- **Labor Rates** – labor rates are based on prevailing wage rate determination for the local area with fringe benefits and are fully burdened to include tax, insurance, and overtime, and are adjusted for the anticipated shift pattern. Typical fringes vary and may include health & welfare, pension, vacation & holiday, and training.
- **Equipment Rates** – equipment rates are sourced from established and industry accepted databases reflecting the nature of the work, such as U.S. Army Corps of Engineers and Equipment Watch Cost Reference Guide, or from quotes obtained from suppliers. Rates used could be overall hourly hire rates, or operating rates and ownership costs if the equipment is purchased.
- **Productivity** – crews were developed for each type of work based on either labor or equipment-based production, and generally using a 5-days-per-week, 24-hour schedule for tunneling and some shaft work elements, and single 10-hour shifts for other surface works.
- **Indirect Costs** – indirect costs are generally project specific overhead costs that are not associated with a specific work element. Their value can be spread over the project duration and often determined by the duration of the works. Typical types of indirect cost include:
 - Management and supervision salaries
 - Engineering salaries
 - Administrative salaries
 - Automobile and other miscellaneous expenses
 - General plant and facilities costs
- **Sales Tax** – sales tax rates of 9.25% were used on equipment and materials required for the project. Duty fees were applied where applicable.
- **Escalation** – the estimate does not include escalation for the construction period and for future start dates. The prices are in 2023 dollars.

- Contractor Mark-up and Profit – industry accepted contractor overheads and profits reflective of the nature of the work are applied.
- Add-on Costs – insurance, bonds, and other add-on costs are included in the estimates.

8. Allowances

Allowances are resources included in estimates to cover the costs of known but undefined requirements for an individual activity, work item, account, or subaccount. This estimate recognizes the following allowances associated with the project:

- Allowance for all diesel-/gas-powered equipment to become zero emissions by 2035.
- Allowance for testing and commissioning of mechanical & electrical equipment before the systemwide commissioning.

With the development of the design, these allowances would become incorporated into future revisions of the main estimates and design drawings.

9. Assumptions

As is normally the case, certain assumptions were made to reflect the conceptual level of design development. These assumptions may be related to the scope of the work where the design documents do not provide full details, or related to the pricing where the buildup of the cost may require specific experience-based assumptions. As the design progresses, these assumptions will be confirmed or refined.

10. Exclusions and Exceptions

Exclusions and exceptions are costs that might normally be considered part of the estimate but have not been included because they are not part of the scope or are included in other non-construction parts of the project. This construction estimate does not include the following items.

- Construction cost contingency
- Electrical power supply and associated infrastructure to deliver power to work sites, which are being incorporated in the overall project estimate as part of the other program costs noted below
- Other program-related costs, including:
 - DWR oversight costs
 - DWR EIR mitigations costs
 - DCA planning, design, and construction management costs
 - DCA permitting and other administrative cost
 - Power costs (power supply to the work sites and consumption during construction)
 - Land-right-of-way costs
 - Settlement Agreements
 - Community Benefits Program

11. Program Risks

A program-level evaluation of potential risks is ongoing and will be used to identify areas of potential additional costs and potential saving opportunities.

12. Risk Treatment Cost

Risk treatment costs have been assessed as part of the risk evaluation process and are considered for each feature type. These risk treatment costs are considered containment costs to help manage potential risks by reducing threats and improving opportunities and are included in this construction cost estimate assigned to each project element based on the associated features and value of the project. Attachment 3 provides details about this distribution.

13. Contingency

As noted above, the construction estimates presented in this document include risk treatment costs but do not include contingency. Contingency is an amount added to a construction cost estimate to account for uncertain items, conditions, or events that are likely to result in additional project costs. An assessment of the construction contingency would be derived by an assessment of the current state of design development, evaluation of program risks and judgement. Together, these assessments would be used to establish an appropriate construction contingency amount that would be added to the construction cost. Contingency is included and documented as part of the total project cost estimate.

14. Estimate Checking and Review

The estimating review and validation process included the following:

- Internal checks by the estimating team
- Design review with estimating team and design team
- Independent estimate and reconciliation with the DCA program management support team
- Management review with executive managers within DCA

As indicated above, the DCA program management support team completed an independent check estimate. A reconciliation process was completed comparing the DCA's Engineering Design Management team's estimate to the check estimate following industry recognized guidelines (Sundaram, 2024).

Using the EPR (2022b) and updates to the EPR (2023b) to prepare both estimates, a cost comparison was performed at the project level of the WBS. The independent check did not include some elements of work, such as the compensatory mitigation and power supply projects. Items with significant variances were reconciled through a series of meetings between the lead estimators for the relevant features, and appropriate modifications to the estimate were agreed upon. Through this process, an overall reconciled cost difference was obtained.

15. Summary

Table 15-1 summarizes the updated 2023 construction cost estimate. More detailed summaries are provided in Attachments 1 and 2, which show the buildup of cost types and bid items respectively.

Table 15.1. Bethany Reservoir Alternative – Direct Construction Cost Estimate Summary

Feature	Contract/Element	Construction Estimate (\$M^a)	Risk Treatment (\$M^a)	Total Construction Cost (\$M^a)
Intakes	13- Intake 3 Facilities	855	28	882
	15- Intake 5 Facilities	806	26	832
Main Tunnels	21- Reach 1 Shafts & Tunnel (Twin Cities to Intake 3)	1,033	60	1,093
	22- Reach 2 Shafts & Tunnel (Twin Cities to Terminus)	1,735	95	1,830
	23- Reach 3 Shafts & Tunnel (Lower Roberts to Terminus)	1,292	69	1,362
	24- Reach 4 Shafts & Tunnel (Lower Roberts to Bethany Complex)	1,958	111	2,068
Pumping Plant	33- BRPP, Surge Shaft and Basin	2,496	40	2,536
Aqueduct	55- Bethany Aqueduct Pipeline, Tunnels and shafts	541	22	563
Discharge	66- Bethany Reservoir Discharge Structure	95	4	99
Access Logistics	71- Sacramento County Access Roads – Intakes and Park & Ride	30	1.6	32
	72- Twin Cities Advanced Sitework – Access Roads & Levees	20	1.0	21
	73a – San Joaquin County Access Roads Lower Roberts Island and Park & Ride	46	2.3	48
	73b – State Route 12 Access Road – Terminus Site	2	0.1	2
	74a – Bethany Complex Access Roads – Byron Hwy & Interchange	60	3.1	63
	74b – Bethany Complex Access Roads – BRPP area & Roundabout	21	1.1	22
	75- Bethany Reservoir Access Road	10	0.5	11
	76- Projectwide Road Maintenance	25	1.3	26
	77- Lower Roberts Island Rail & Rail Yard	16	0.8	17
	78- Lower Roberts Island Levee improvements advanced work	10	0.5	11
Communication	83- SCADA Projectwide	13	-	13

Table 15.1. Bethany Reservoir Alternative – Direct Construction Cost Estimate Summary

Feature	Contract/Element	Construction Estimate (\$M^a)	Risk Treatment (\$M^a)	Total Construction Cost (\$M^a)
Restoration	93 - Projectwide Restoration & Site Establishment	17	-	17
Total Direct Construction^{b, c, d}		11,081	467	11,548

^a Costs are in 2023 dollars and are undiscounted

^b Total excludes provision of electrical power supply and associated infrastructure to deliver to work sites

^c Total includes Risk Treatment costs

^d Total excludes contingency

Note that Attachments 1 and 2 include costs for several compensatory mitigation projects that have not been included in Table 15-1. The estimates for these elements are as follows:

- Bouldin Island Compensatory Mitigation = \$36.4 M
- I-5 Pond Compensatory Mitigation = \$54.3 M

The costs associated with these compensatory mitigation projects will be incorporated in the total project cost estimate as part of the DWR Mitigation other program cost item.

16. References

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17. Document History and Quality Assurance

The reviewers listed here have completed an internal quality control (QC) review and approval process for deliverable documents that is consistent with procedures and directives identified by the Engineering Design Manager and the DCA.

Rev.	Date	Version Description	Approval Names and Roles			
			Prepared by	Internal QC Review by	Consistency Review by	Approved for Submission by
0	02/29/2024	Initial submission	Martin Ellis / Cost & Schedule Lead	Shaun Firth / QC Reviewer	Adam Murdock / Engineering Design Manager	Terry Krause / Engineering Project Manager
1	04/01/2024	Revised draft	Martin Ellis / Cost & Schedule Lead	Shaun Firth / QC Reviewer	Adam Murdock / Engineering Design Manager	Terry Krause / Engineering Project Manager
2	05/08/2024	Revised draft	Martin Ellis / Cost & Schedule Lead	Shaun Firth / QC Reviewer	Adam Murdock / Engineering Design Manager	Terry Krause / Engineering Project Manager

Attachment 1

Project Cost Summary Table

Bethany Reservoir Alternative Basis of Estimate - Construction
Attachement 1 - Estimate Cost Summary

A	B	C	D	E	F	G	H	I	J
PROJECT	Man Hours	Labor cost	Permanent Materials	Construction Materials	Equipment Cost	Subcontractor Costs	Estimate Total	Risk Mitigation Total	Project Total
13 - Intake 3 Facilities	2,884,849	\$ 278,941,337	\$ 277,487,055	\$ 203,171,550	\$ 94,090,290	\$ 1,135,019	\$ 854,825,251	\$ 27,647,192	\$ 882,472,443
15 - Intake 5 Facilities	2,728,882	\$ 263,386,005	\$ 263,306,867	\$ 188,741,805	\$ 88,988,082	\$ 1,105,663	\$ 805,528,421	\$ 26,052,808	\$ 831,581,230
21 - Reach 1 Shafts & Tunnel (Twin Cities to Intake 3)	1,330,971	\$ 208,433,785	\$ 495,859,696	\$ 100,900,590	\$ 195,745,000	\$ 31,669,380	\$ 1,032,608,451	\$ 60,335,345	\$ 1,092,943,796
22 - Reach 2 Shafts & Tunnel (Twin Cities to Terminus)	2,414,995	\$ 366,966,472	\$ 826,724,333	\$ 160,733,395	\$ 328,889,339	\$ 51,463,336	\$ 1,734,776,876	\$ 95,159,675	\$ 1,829,936,551
23 - Reach 3 Shafts & Tunnel (Lower Roberts to Terminus)	1,894,724	\$ 283,279,054	\$ 604,771,308	\$ 121,429,839	\$ 245,863,385	\$ 37,069,474	\$ 1,292,413,060	\$ 69,221,103	\$ 1,361,634,163
24 - Reach 4 Shafts & Tunnel (Lower Roberts to Bethany Complex)	2,980,572	\$ 440,657,237	\$ 948,104,596	\$ 183,589,965	\$ 324,296,568	\$ 61,089,231	\$ 1,957,737,597	\$ 110,583,877	\$ 2,068,321,474
33 - Bethany Pumping Plant, Surge Shaft and Basin	7,486,564	\$ 751,954,884	\$ 845,359,805	\$ 435,342,562	\$ 338,840,061	\$ 124,242,938	\$ 2,495,740,250	\$ 40,000,000	\$ 2,535,740,250
55 - Bethany Aqueduct Pipeline, Tunnels and shafts	938,518	\$ 111,073,090	\$ 273,393,252	\$ 73,923,203	\$ 62,803,909	\$ 19,630,952	\$ 540,824,406	\$ 21,775,643	\$ 562,600,049
66 - Bethany Discharge Structure	370,460	\$ 36,061,254	\$ 31,644,354	\$ 19,553,873	\$ 7,976,161	\$ 27,732	\$ 95,263,374	\$ 3,724,357	\$ 98,987,731
71 - Sacramento County Access Roads - Intakes, Batch plant & P&R	84,485	\$ 7,282,941	\$ 14,374,707	\$ 6,029,690	\$ 2,251,437	\$ 351,000	\$ 30,289,775	\$ 1,561,699	\$ 31,851,474
72 - Twin Cities Advanced Sitework - Access Roads & Levees	72,988	\$ 7,048,034	\$ 5,081,051	\$ 3,459,007	\$ 3,794,908	\$ 855,136	\$ 20,238,135	\$ 1,043,450	\$ 21,281,586
73a - Lower Roberts Island Access Roads & P&R	151,484	\$ 13,625,048	\$ 15,167,853	\$ 13,648,528	\$ 2,781,566	\$ 351,000	\$ 45,573,995	\$ 2,349,732	\$ 47,923,727
73b - State Route 12 Access Road - Terminus Site	2,565	\$ 234,710	\$ 1,444,662	\$ 3,354	\$ 125,497	\$ -	\$ 1,808,224	\$ 93,230	\$ 1,901,453
74a - Bethany Complex Access Roads - Byron Hwy & Interchange	228,472	\$ 19,988,238	\$ 20,213,517	\$ 15,819,619	\$ 3,149,309	\$ 326,311	\$ 59,496,993	\$ 3,067,583	\$ 62,564,576
74b - Bethany Complex Access Roads - PP area & Roundabout	24,229	\$ 2,289,023	\$ 13,704,118	\$ 105,916	\$ 1,656,647	\$ 3,309,643	\$ 21,065,347	\$ 1,086,100	\$ 22,151,447
75 - Bethany Reservoir Access Road	11,712	\$ 1,125,293	\$ 6,115,714	\$ 108,273	\$ 1,493,524	\$ 1,462,662	\$ 10,305,466	\$ 531,336	\$ 10,836,801
76 - Projectwide Road Maintenance	30,688	\$ 2,794,080	\$ 17,525,833	\$ 3,748,997	\$ 1,007,134	\$ -	\$ 25,076,044	\$ 1,292,886	\$ 26,368,930
77 - Lower Roberts Rail & Rail Yard	28,237	\$ 2,492,579	\$ 8,904,451	\$ 2,974,747	\$ 1,103,423	\$ 829,732	\$ 16,304,932	\$ 840,660	\$ 17,145,592
78 - Lower Roberts Levee improvements advanced work	35,303	\$ 3,575,866	\$ 2,492,965	\$ 1,789,996	\$ 2,386,736	\$ 98,457	\$ 10,344,020	\$ 533,323	\$ 10,877,344
83 - SCADA Projectwide	49,851	\$ 5,784,645	\$ 1,039,279	\$ 2,411,342	\$ 4,213,011	\$ -	\$ 13,448,276	\$ -	\$ 13,448,276
93 - Projectwide Restoration & Site Establishment	87,807	\$ 7,978,351	\$ 2,042,640	\$ 121,547	\$ 6,854,544	\$ -	\$ 16,997,083	\$ -	\$ 16,997,083
Grand Total	23,838,357	\$ 2,814,971,925	\$ 4,674,758,056	\$ 1,537,607,798	\$ 1,718,310,532	\$ 335,017,666	\$ 11,080,665,979	\$ 466,900,000	\$ 11,547,565,979

PROJECT	Man Hours	Labor cost	Permanent Materials	Construction Materials	Equipment Cost	Subcontractor Costs	Estimate Total	Risk Mitigation Total	Project Total
91 - Bouldin Island Compensatory Mitigation	172,384	\$ 16,222,171	\$ 4,958,073	\$ 8,309,306	\$ 6,949,439	\$ -	\$ 36,438,989	\$ -	\$ 36,438,989
92 - I-5 Pond Compensatory Mitigation	252,751	\$ 24,490,107	\$ 3,832,616	\$ 12,862,323	\$ 12,989,515	\$ 98,457	\$ 54,273,017	\$ -	\$ 54,273,017
Grand Total	425,135	\$ 40,712,278	\$ 8,790,688	\$ 21,171,629	\$ 19,938,954	\$ 98,457	\$ 90,712,006	\$ -	\$ 90,712,006

Note: Contractors indirect costs and mark ups are distributed and included with cost columns C through G for each project identified in column A

Attachment 2

Estimate Bid Item Summary Cost Table

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
13 - Intake 3 Facilities				
	113317105 - Mobilization / Site Setup Intake 5 Pipe Jacking	LS	1	346,670
	113317110 - Purchase 60" WSP AWWA C300	LF	7650	6,166,818
	113317115 - Off Load 60" WSP AWWA C300	LF	7650	12,469
	113317136 - Plant & Equipment	LS	1	6,883,773
	113317137 - Indirects	MO	12	3,549,342
	113317139 - Demob & Clean Up	LS	1	231,114
	113317220 - Setup Akkerman MTBM Equipment	EA	30	286,308
	113317230 - Pipe Jack 60" WSP AWWA C300	LF	7650	1,334,466
	113317231 - Weld 60" AWWA C300 Joints	EA	383	350,545
	113317232 - Pipe Reception Pit	EA	30	361,657
	113317235 - Muck Excavation & Truck Haul Off	CY	5562	250,568
	133001000 - Int 3 Ph M Contractors Profit & Burden	LS	1	112,728,000
	133002000 - Int 3 Environmental Protection	LS	1	14,635,224
	133002100 - Int 3 Tire Wash Station	EA	1	53,845
	133003000 - Int 3 Ph 1 Contractor Mobilization	LS	1	1,024,164
	133005000 - Int 3 Ph M Contractor Mngt & Admin., Technica	MO	85	91,029,164
	133007000 - Int 3 Ph M Contractor's Temporary Facilities	LS	1	16,506,406
	133008000 - Int 3 Ph M Lost Labor Time	LS	1	2,091,140
	133009000 - Int 3 Ph M Cont Temporary Facility Operations	MO	85	21,200,533
	133010000 - Int 3 Owners Office Facilities	LS	1	217,191
	133013000 - Int 3 Ph 1 Erect Rebar & Metal Fab Shop	SF	8000	2,973,727
	133014000 - Int 3 Ph M Dismantle Metal & Rebar Fab Shop	LS	1	417,403
	133016000 - Int 3 Ph M Operate Metal & Rebar & Fab Shop	TON	36682	6,726,071
	133305000 - Int 3 Ph 1 Site Work	LS	1	57,693,487
	133306000 - Int 3 Ph 2 Site Work	LS	1	80,397,434
	133307000 - Int 3 Ph 2 Cofferdam	LS	1	29,152,086
	133308000 - Int 3 Ph 2 Erect Work Trestle	LF	1034	6,969,554
	133309000 - Int 3 Ph 3 Final Site Work	LS	1	43,574,192
	133311000 - Int 3 Ph 2 Jet Grout Under Intake	CY	102600	14,273,606
	133313000 - Int 3 Ph 2 Excavate Inside Intake Cofferdam	CY	74978	3,277,784
	133314000 - Int 3 Ph 2 Install Training Wall Anchors & Backfil	LS	1	7,458,395
	133315000 - Int 3 Ph 2 Drilled Piers	EA	1215	85,622,077
	133317000 - Int 3 Ph 2 Tremie Concrete Under Intake Structure	CY	8547	3,466,176
	133319000 - Int 3 Ph 2 Dewater Intake C'dam & Place Xbra	LS	1	8,251,635
	133319500 - Int 3 Ph 2 Prep & Leveling Slab Concrete	CY	2142	2,285,765
	133321000 - Int 3 Ph 2 Intake Structural Concrete	CY	30673	41,241,753
	133322000 - Int 3 Ph 2 Intake Gate Shaft & outlet Structures	EA	30	14,066,767
	133322600 - Int 3 Ph 3 Jack 60" Dia Pipe	LF	0	-
	133323000 - Int 3 Ph 2 5'x5' Gates, Frames & Opera	EA	60	9,724,118
	133324000 - Int 3 Ph 2 8'x8' Gates, Frames & Opera	EA	30	5,908,178
	133324400 - Int 3 Ph 2 Set Guides for Screens & Stoplogs	LF	2700	850,757
	133324500 - Int 3 Ph 2 Intake Stoplogs	EA	5	1,545,074
	133325000 - Int 3 Ph 3 Fish Screens & Panels	LS	30	43,620,484
	133327000 - Int 3 Ph 3 Intake Structure MEP	LS	1	12,173,390
	133329000 - Int 3 Ph 3 Finish Out	LS	1	3,431,129
	133355000 - Int 3 Ph 2 Sediment Basin Drilled Piers	EA	400	6,949,828
	133357000 - Int 3 Ph 2 Radial Gate Flow Control Structure	CY	20908	22,732,867
	133359000 - Int 3 Ph 3 Sediment Basin Radial Gates & Stoplogs	LS	1	22,915,022
	133361000 - Int 3 Ph 3 Sediment Basin MEP & Finish Work	LS	1	1,895,589
	133901100 - Int 3 Ph 3 Purchase & Store Equip for Ops	LS	1	4,746,799
	133901400 - Int 3 Ph 3 Start up and Commissioning	LS	1	3,390,000
	21400510 - Build Slurry Wall Receiving Shaft at Intake C-E-3	LS	1	16,316,309
	21400515 - Reach 1 Receiving Shaft at Intake C-E-3	LS	1	11,518,400
13 - Intake 3 Facilities Total				854,825,251

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
15 - Intake 5 Facilities				
	115517145 - Mobilize / Site Setup Intake 3 Pipe Jacking	LS	1	346,670
	115517150 - Purchase 60" WSP AWWA C300	LF	7980	6,432,838
	115517155 - Offload 60" WSP AWWA C300	LF	7980	11,651
	115517176 - Plant & Equipment	LS	1	6,803,413
	115517177 - Indirects	MO	12	3,547,146
	115517190 - Demob & Clean Up	LS	1	231,114
	115517260 - Setup Akkerman MTBM Equipment	EA	30	286,308
	115517270 - Pipe Jack 60" WSP AWWA C300	LF	7980	1,392,031
	115517271 - Weld 60" AWWA C300 Joints	EA	399	365,189
	115517272 - Pipe Reception Pit	EA	30	361,657
	115517274 - Muck Excavate & Haul Off	CY	5825	262,533
	155001000 - Int 5 Ph M Contractors Profit & Burden	LS	1	105,768,000
	155002000 - Int 5 Ph M Environmental Protection	LS	1	13,685,133
	155002100 - Int 5 Tire Wash Station	EA	1	53,845
	155003000 - Int 5 Ph 1 Contractor Mobilization	LS	1	1,024,164
	155005000 - Int 5 Ph M Contractor Mngt & Admin., Technica	MO	85	85,290,142
	155007000 - Int 5 Ph M Contractor's Temporary Facilities	LS	1	17,974,141
	155008000 - Int 5 Ph M Lost Labor Time	LS	1	1,898,080
	155009000 - Int 5 Ph M Cont Temporary Facility Operations	MO	85	21,200,533
	155010000 - Int 5 Owners Office Facilities	LS	1	522,238
	155015000 - Int 5 Ph 1 Erect Rebar & Metal Fab Shop	SF	8000	2,973,727
	155015100 - Int 5 Ph M Dismantle Metal & Rebar Fab Shop	LS	1	417,403
	155016000 - Int 5 Ph M Operate Metal & Rebar & Fab Shop	TON	35354	6,485,757
	155205000 - Int 5 Ph 1 Site Work	LS	1	51,387,815
	155206000 - Int 5 Ph 2 Site Work	LS	1	67,764,500
	155207000 - Int 5 Ph 2 Cofferdam	LS	1	28,067,147
	155208000 - Int 5 Ph 2 Erect Work Trestle	LF	1064	6,969,554
	155209000 - Int 5 Ph 3 Final Site Work	LS	1	40,738,041
	155211000 - Int 5 Ph 2 Jet Grout Under Intake	CY	34200	7,052,349
	155213000 - Int 5 Ph 2 Excavate Inside Intake Coffertam	CY	74978	3,277,784
	155214000 - Int 5 Ph 2 Install Training Wall Tiebacks & Backfi	LS	1	7,076,782
	155215000 - Int 5 Ph 2 Drilled Piers	EA	1215	83,374,231
	155217000 - Int 5 Ph 2 Tremie Concrete Under Intake Stru	CY	8547	3,466,176
	155219000 - Int 5 Ph 2 Dewater Intake C'dam & Place Xbra	LS	1	8,264,383
	155219500 - Int 5 Ph 2 Prep & Leveling Slab Concrete	CU	2142	2,285,765
	155221000 - Int 5 Ph 2 Structural Concrete	CY	30256	40,649,033
	155222000 - Int 5 Ph 2 Intake Gate Shaft & outlet Structures	EA	30	13,671,165
	155222600 - Int 5 Ph 3 Jack 60" Dia Pipe	LF	0	-
	155223000 - Int 5 Ph 2 5'x5' Gates, Frames & Opera	EA	60	9,724,118
	155224000 - Int 5 Ph 2 8'x8' Gates, Frames & Opera	EA	30	5,908,178
	155224400 - Int 5 Ph 2 Set Guides for Screens & Stoplogs	LF	2700	850,757
	155224500 - Int 5 Ph 2 Intake Stoplogs	EA	5	1,545,074
	155225000 - Int 5 Ph 3 Fish Screens & Panels	EA	30	43,620,484
	155227000 - Int 5 Ph 3 Intake Structure MEP	LS	1	12,173,390
	155229000 - Int 5 Ph 3 Finish Out	LS	1	2,978,442
	155255000 - Int 5 Ph 2 Sediment Basin Drilled Piers	EA	400	6,949,828
	155257000 - Int 5 Ph 2 Radial Gate Flow Control Structure	CY	20723	22,262,756
	155259000 - Int 5 Ph 2 Sediment Basin Radial Gates & Stoplogs	LS	1	22,914,901
	155261000 - Int 5 Ph 3 Sediment Basin MEP & Finish Work	LS	1	1,896,305
	155901100 - Int 5 Ph 3 Purchase & Store Equip for Ops	LS	1	1,802,531
	155901400 - Int 5 Ph 3 Startup & Commissioning Support	LS	1	3,300,000
	21600530 - Build Slurry Wall Pass Through Maint. Intake C-E-5	LS	1	15,809,869
	21600535 - Pass Through Maintenance Shaft Intake C-E-5	LS	1	12,413,351
15 - Intake 5 Facilities Total				805,528,421
21 - Reach 1 Shafts & Tunnel (Twin Cities to Intake 3)				
	21100425 - Twin Cities Reach 1 Launch Shaft Construction Site	LS	1	7,377,330
	21300440 - Reach 1 Tunnel	LF	42849	1,006,146,367
	21300445 - Remove TBM	EA	1	2,086,446
	21300450 - Remove Shaft Utilities & Conveyor Belt	LS	1	357,683
	21300455 - Remove Tunnel Conveyor Belt	LS	1	798,168
	21300460 - Remove Tunnel Utilities & Cleanup	LS	1	787,025
	21300462 - Instrumentation Shafts & Tunnel	LS	1	10,185,045
	21300465 - Indirects Reach 1	LS	1	-
	21300470 - Plant & Equipment Reach 1	LS	1	-
	22200531 - RTM Pads	LS	1	4,870,387
21 - Reach 1 Shafts & Tunnel (Twin Cities to Intake 3) Total				1,032,608,451

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
	22 - Reach 2 Shafts & Tunnel (Twin Cities to Terminus)			
	22100515 - Twin Cities Reach 2 Launch Shaft Construction Site	LS	1	8,191,815
	22200519 - Build Slurry Wall Reach 2 Launch Shaft	LS	1	27,082,082
	22200520 - Reach 2 Launch Shaft Twin Cities	LS	1	22,846,607
	22200523 - RTM Pads	LS	1	4,870,387
	22300530 - Reach 2 Tunnel 36 Foot	LF	66807	1,580,495,955
	22300535 - Remove TBM	LS	1	2,086,446
	22300540 - Remove Shaft Utilities & Conveyor Belt	LS	1	357,683
	22300545 - Remove Tunnel Conveyor Belt	LS	1	1,076,394
	22300550 - Remove Tunnel Utilities & Cleanup	LS	1	1,057,297
	22300552 - Instrumentation Shafts & Tunnel	LS	1	17,823,829
	22300555 - Reach 2 Indirects	LS	1	-
	22300560 - Reach 2 Plant & Equipment	LS	1	-
	22500610 - Build Slurry Wall Pass Through New Hope Shaft	LS	1	14,675,297
	22500615 - Pass Through Maintenance Shaft New Hope	LS	1	12,828,242
	22500621 - Furnish & Place Shaft Cover	LS	1	355,200
	22500630 - Pass Through Maint Shaft New Hope Work Area	LS	1	7,399,057
	22600625 - Build Slurry Wall Pass Through Canal Ranch Tract	LS	1	14,397,806
	22600630 - Pass Through Maintenance Canal Ranch Tract	LS	1	12,970,273
	22600636 - Furnish & Place Shaft Cover	LS	1	370,049
	22600640 - Pass Through Maint. Shaft Canal Ranch Tract Work A	LS	1	5,365,801
	731710000 - New Hope Tract Road	MI	0.28	167,919
	731770000 - Canal Ranch Tract	MI	1.17	212,496
	760000000 - Project Wide Road Maintenance	LS	1	146,241
	22 - Reach 2 Shafts & Tunnel (Twin Cities to Terminus) Total			1,734,776,876
	23 - Reach 3 Shafts & Tunnel (Lower Roberts to Terminus)			
	23100005 - Lower Roberts Reach 3 Launch Shaft Construct Site	LS	1	13,642,772
	23300020 - Reach 3 Tunnel 36 Foot	LF	49975	1,169,490,462
	23300025 - Remove TBM	LS	1	2,082,941
	23300030 - Remove Shaft Utilities & Conveyor Belt	LS	1	357,683
	23300035 - Remove Tunnel Conveyor Belt	LS	1	1,319,639
	23300040 - Remove Tunnel Utilities & Cleanup	LS	1	1,300,542
	23300042 - Instrumentation Shafts & Tunnel	LS	1	12,731,306
	23300045 - Reach 3 Tunnel Indirects	LS	1	-
	23300050 - Reach 3 Tunnel Plant & Equipment	LS	1	-
	23400014 - Terminus Tract Slurry Wall Reception Shaft	LS	1	11,858,585
	23400015 - Terminus Tract Reception Shaft	LS	1	12,807,556
	23400021 - Furnish & Place Shaft Cover	LS	1	370,049
	23400095 - Terminus Tract Reception Shaft Construction Site	LS	1	8,427,432
	23500096 - Build Slurry Wall Pass Through Maint.Kings Island	LS	1	14,735,734
	23500097 - Pass Through Maint Shaft Kings Island	LS	1	13,257,462
	23500103 - Furnish & Place Shaft Cover	LS	1	370,049
	23500110 - Pass Through Maint. Kings Island Work Area	LS	1	7,001,664
	24200127 - RTM Pad	LS	1	22,114,325
	731870000 - Kings Island Access Road	MI	3	544,858
	23 - Reach 3 Shafts & Tunnel (Lower Roberts to Terminus) Total			1,292,413,060
	24 - Reach 4 Shafts & Tunnel (Lower Roberts to Bethany Complex)			
	24100115 - Lower Roberts Reach 4 Launch Shaft Construct Site	LS	1	15,952,706
	24200118 - Slurry Wall Reach 4 Launch Shaft Lower Roberts	LS	1	27,922,450
	24200120 - Reach 4 Launch Shaft Lower Roberts	LS	1	23,184,163
	24200121 - RTM Pad	LS	1	22,114,325
	24200125 - Furnish & Install Shaft Cover	LS	1	370,049
	24300125 - Reach 4 Tunnel 36 Foot	LF	76697	1,767,845,909
	24300130 - Remove TBM	LS	1	2,037,822
	24300135 - Remove Shaft Utilities & Conveyor Belt	LS	1	357,683
	24300140 - Remove Tunnel Conveyor Belt	LS	1	1,157,476
	24300145 - Remove Tunnel Utilities & Cleanup	LS	1	1,209,130
	24300150 - Reach 4 Tunnel Indirects	LS	1	-
	24300155 - Reach 4 Tunnel Plant & Equipment	LS	1	-
	24300190 - Instrumentation Shafts & Tunnels	LS	1	20,370,090
	24500199 - Build Slurry Wall Pass Through Upper Jones Tract	LS	1	15,173,003
	24500200 - Pass Through Shaft Upper Jones Tract	LS	1	13,476,934
	24500206 - Furnish & Place Shaft Cover	LS	1	370,049
	24500220 - Pass Through Shaft Upper Jones Tract Work Area	LS	1	5,499,181
	24600225 - Build Slurry Wall Pass Through Union Island	LS	1	15,344,697
	24600230 - Pass Through Shaft Union Island	LS	1	13,647,623
	24600235 - Furnish & Place Shaft Cover	LS	1	370,049
	24600240 - PassThrough Shaft Union Island Work Area	LS	1	8,450,304
	731820000 - Upper Jones Tract Road	MI	2	441,979
	731880000 - Union Island Access Road	MI	2	2,441,978
	24 - Reach 4 Shafts & Tunnel (Lower Roberts to Bethany Complex) Total			1,957,737,597

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
33 - Bethany Pumping Plant, Surge Shaft and Basin				
	24400205 - Slurry Wall Reach 4 Reception Shaft Surge Basin	LS	1	19,917,361
	24400210 - Reach 4 Tunnel Reception Shaft Surge Basin	LS	1	25,071,914
	331001000 - Pump Plant/Surge Basin Contractors Profit & Burden	LS	1	338,442,637
	331002000 - Environmental Protection - Pump Plant/Surge Basin	LS	1	13,894,039
	331007000 - SB Temp. Construction Facilities Build	LS	1	3,612,219
	331007500 - Lost Labor Time - Pump Plant/Surge Basin	LS	1	5,906,869
	331015000 - Dismantle Rebar & Metal Fab Shop	SF	8970	369,428
	331103000 - Mobilize Pump Plant/Surge Basin Contractor	LS	1	1,737,286
	331105000 - Pump Plant Contractor Mngt & Admin., Technica	MO	84	128,709,210
	331109000 - Pump Plant Temp. Facilities Build	LS	1	11,981,994
	331110000 - Owners Office Facilities	LS	1	522,238
	331112500 - Temporary Fire/EMT Station	LS	1	1,370,115
	331115000 - Pump Plant/SB Temporary Facility Operate	MO	84	28,419,811
	331117500 - Pump Plant/SB Erect Rebar & Metal Fab Shop	SF	8970	3,761,077
	331117800 - Pump Plant/Surge Basin- Rebar Shop Operation	TON	92633	43,999,895
	331120000 - Construction Water Supply from Banks Canal	LS	1	5,225,302
	331400000 - PP Substation Civil & Structural Work	LS	1	8,894,969
	332005000 - Surge Basin Clear & Grub/Demolition	LS	1	252,672
	332010000 - Surge Basin Excavation & Demo'n	LS	1	12,294,677
	332015000 - Surge Basin Ramp Construction	LS	1	1,586,680
	332105000 - Pump Plant Initial Earthwork	LS	1	4,952,147
	332105100 - Pump Plant Final Site Work	AC	38	6,619,979
	332105200 - Pumping Plant SWPPP	ACRE	130	17,360,409
	332115000 - Diaphragm Wall Construction	SF	1221343	455,364,278
	332120000 - Excavate Pump Plant Phase 1 Below Floor El 42.0	CY	224000	6,819,266
	332121000 - Excavate Pump Plant Phase 2 Below Floor El 3.0	CY	129422	4,053,741
	332122000 - Excavate Pump Plant Phase 3 Below Floor El (-)22	CY	129422	4,457,492
	332123000 - Excavate Pump Plant Phase 4 Below Floor El (-)47	CY	129422	5,054,542
	332125000 - Excavate Pump Plant Phase 5 Below Floor El (-)72.0	CY	75911	3,304,984
	332126000 - Excavate Pump Plant Phase 6 Below Floor El (-)86.2	CY	105778	4,770,500
	332130000 - Excavate Pump Plant Inlet Conduit All Levels	CY	141423	6,659,150
	332135000 - Excavate PP Mech(E-W) & Elect(N-S) Rooms	0	260817	4,474,294
	332136000 - Excavate Surge Vault & Tank Inlet	CY	106053	9,373,773
	332145000 - 36" Drilled Piers Pump Plant & Surge Vaults	EA	154	4,717,654
	332150000 - 15' Dia Bethany Res. Pipe to Conn. with AQUE.PIPE	LF	6608	46,098,923
	332175000 - Remove Sec of Diaph. Walls - WW, Pipe. Elect. Cond	SF	11493	569,923
	333010000 - 36" Diaphragm Walls	SF	422000	93,426,542
	333020000 - Tiebacks	EA	1088	6,774,041
	333030080 - Rebar in Surge Basin Drilled Shafts	TON	16269	42,268,607
	333035000 - Drilled Tiedown Shafts	0	2589	155,203,479
	333100000 - PP Storage Areas & Yards	SF	11000	29,560
	333105000 - Generator Building	SF	3500	3,651,656
	333106000 - HVAC Mechanical Equipment Yard	SF	10200	2,043,848
	333110000 - Foundation Slab @ El. -110.50	CY	51543	38,251,986
	333111000 - Intermediate Slab @ El. -86.25	CY	18436	15,188,003
	333112000 - Intermediate Slab @ El. -72.00	CY	18436	15,419,969
	333113000 - Intermediate Slab @ El. -47.00	CY	18846	16,821,433
	333114000 - Intermediate Slab @ El. -22.00	CY	18436	16,018,288
	333115000 - Operation Deck Conc. @ El. 3.00	CY	18436	14,650,915
	333116000 - Roof Deck Concrete @ El. 47.00	CY	18508	16,933,124
	333116500 - PC Concrete Hatches @ El. 47.00	CY	2557	3,414,757
	333119000 - Concrete - Interior Column Facing	CY	6174	9,428,343
	333120000 - Structure Concrete Vert. Wall Liners	CY	38680	45,441,186
	333121000 - Interior Conc. Walls (Stairwells, Doghouses, etc.)	CY	23723	61,259,752
	333122000 - Pump Plant Conc. Fill around Pump Inlets/Housing	CY	3460	2,935,223
	333123000 - Mechanical Room Conc. Inv. Slab @ El. 3.00	CY	4988	4,610,843
	333124000 - Mechanical Room Conc. Walls	CY	4497	6,336,645
	333125000 - Mechanical Room Conc. Roof Slab	CY	4584	5,931,378
	333130000 - Surge Tanks Valve Vault - Inv. Slab Conc.	CY	2152	2,066,302
	333131000 - Surge Tanks Valve Vault - Conc. Walls	CY	2944	5,094,036
	333132000 - Surge Tanks Valve Vault - Conc. Roof Slab	CY	780	1,883,459
	333135000 - Surge Tanks - Inv. Slab Conc.	CY	1628	1,687,956
	333136000 - Surge Tanks - Conc. Walls	CY	1501	3,251,783
	333137000 - Surge Tanks - Conc. Roof Slab	CY	764	1,966,906
	333140000 - Wet Well Inlet Conduit Invert Slab	CY	9472	7,439,373
	333141000 - Wet Well Inlet Conduit Intermediate. Slabs	CY	16720	15,357,998
	333142000 - Wet Well Conduit Walls	CY	19367	26,010,244
	333143000 - Wet Well Conduit Top Deck Conc. @ El. 3.00	CY	4021	3,900,148
	333143100 - Isolation Gates - Wetwell Conduit	LS	1	7,910,626
	333144000 - Pump Plant Miscellaneous Metals	LS	1	13,475,089
	333145000 - 500 CFS Pumps & Motors (14 ea)	EA	14	92,767,168
	333147000 - 108" Dia. Steel Pipe, Valves, to 15' Dia. RW Conn.	LF	2700	90,556,635
	333149000 - PP Wet Well Bulkheads	LS	1	17,324,228
	333150000 - Pump Plant Overhead Gantry Cranes	LS	1	7,069,575

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
33 - Bethany Pumping Plant,	333152000 - Service Elevators	EA	6	5,041,636
	333155000 - Pump Plant Structural Canopies (2 ea)	SF	30000	1,174,825
	333157000 - Wet Well Dewatering Pumps	EA	2	22,243,603
	333160000 - HVAC Mechanical Systems	LS	1	5,464,433
	333165000 - Valve Vault Piping & Valves	LS	1	26,509,076
	333166000 - Surge Tank Piping & Valves	LS	1	2,110,917
	333190000 - PP Electrical Building - Civil & Structural Work	SF	45500	20,929,321
	333195000 - PP Equipment Storage Building	SF	45800	15,653,055
	334010000 - Surge Basin Concrete Slabs	LS	1	78,043,685
	334020000 - Surge Basin Structures	LS	1	2,269,020
	334030000 - Surge Basin Gantry Crane Bridge	LS	1	5,139,366
	334040000 - Dewatering System	LS	1	3,229,175
	334050000 - Surge Basin Site Restoration	LS	1	830,208
	336120005 - PP Substation - Electrical Distribution	LS	1	80,751,532
	336120007 - Pump Plant Buildings - Electrical	LS	1	57,717,516
	336140009 - Pump Plant - Electrical System	LS	1	15,992,669
	336150005 - Pump Plant - Site Electrical System	LS	1	26,640,940
	336160005 - SCADA System - Pump Plant Only	LS	1	1,875,715
	337111000 - Start-up & Commissioning - Pumping Plant	LS	1	9,701,000
33 - Bethany Pumping Plant, Surge Shaft and Basin Total				2,495,740,250
55 - Bethany Aqueduct Pipeline, Tunnels and shafts				
	552001000 - Aqueduct Pipes - Contractors Profit & Burden	LS	1	53,493,856
	552005000 - Mobilization - DCA AQUEDUCT PIPES - Section 1	LS	1	278,056
	552006000 - Dewatering Treatment & Disposal	LS	1	518,776
	552006500 - Traffic Control	LS	1	342,448
	552006700 - Environmental Protection - Aqueduct Pipe Contract	LS	1	8,918,594
	552007000 - Lost Labor Time - Aqueduct Pipe Inst. Contract	LS	1	309,892
	552008000 - NEW DISCHARGE STRUCTURE - Site Preparation	LS	1	5,559,113
	552010000 - Clear & Grub - Section 1	AC	81	758,296
	552015000 - Strip & Stockpile Topsoil - Section 1	LF	6307.8	837,837
	552020000 - Trench Excavation - Section 1	CY	317497	2,606,962
	552025000 - Place Trench Stabilization Material - Section 1	CY	15412	1,109,584
	552030000 - Furnish Pipe Support Cradles - Section 1	EA	1448	841,462
	552035000 - Backfill - Section 1	LS	1	27,171,889
	552040000 - Compact and Finish - Section 1	LS	1	251,289
	552045000 - Dewatering - Section 1	LS	1	973,591
	552047000 - Add Dewatering Wells @ Kelso, BBID, Mtn. House Rd.	LS	1	613,279
	552050000 - General Support Crew - Section 1	LS	1	2,033,906
	552055000 - Site Restoration & DeMobilization - Section 1	LS	1	29,588
	553005000 - Mobilization - DCA AQUEDUCT PIPES - Section 2	LS	1	278,056
	553006000 - Dewatering Treatment & Disposal	LS	1	518,776
	553006500 - Traffic Control	LS	1	342,448
	553010000 - Clear & Grub - Section 2	AC	62	477,340
	553015000 - Strip & Stockpile Topsoil - Section 2	LS	1	497,282
	553020000 - Trench Excavation - Section 2	CY	189000	1,525,153
	553025000 - Place Trench Stabilization Material - Section 2	CY	7892	624,128
	553030000 - Furnish Pipe Support Cradles - Section 2	LS	1	429,818
	553035000 - Backfill - Section 2	LS	1	15,953,684
	553040000 - Compact and Finish - Section 2	LS	1	150,501
	553045000 - Dewatering - Section 2	LS	1	747,796
	553046000 - Bridges at Jones Penstocks	LS	1	1,911,129
	553047000 - Bridges at BBID	LS	1	1,429,741
	553048000 - Bridges at Gas Line Crossing	LS	1	1,429,741
	553050000 - General Support Crew - Section 2	LS	1	1,207,632
	553055000 - Site Restoration & DeMobilization - Section 2	LS	1	29,588
	555010000 - Purchase and Transport Pipes	LS	1	147,200,051
	555015000 - Unload & Store Pipes at Storage Yard	LS	1	3,182,620
	555020000 - Installation of Pipes at Open Cut	LF	9971.5	6,126,287
	555040000 - Internal Lining	LF	57200	20,447,646
	555045000 - Cathodic Protection	LS	1	647,036
	555050000 - Installation of Pipes at Crossings	LF	920	34,135,119
	555055000 - Installation of Pipes at Tunnels & Shafts	LF	3408.5	25,204,308
	555056000 - Install Pipe at Disch Structure Vertical Shafts	EA	4	2,169,775
	555060000 - General Support Crew	LS	1	3,257,427
	555065000 - Geotechnical Monitoring and Instrumentation	LS	1	351,536
	555070000 - Indirect Cost - Section 1, 2, Tunnels & Shafts	LS	1	10,256,608
	85101000 - Mobilize Portals	LS	1	1,702,180
	85102000 - Excavate East Penstock Portal	CY	160245	2,738,587
	85102500 - Excavate West Penstock Portal	CY	224321	3,227,979
	85103000 - Excavate Conservation Easement Portal	CY	239336	4,116,579
	85103100 - Portal Headwall Cut Support	LS	1	518,086
	85103150 - Staging Areas Portals	LS	1	3,023,838
	85103500 - Plant & Equipment	LS	1	-
	85104000 - Indirect Cost	LS	1	-

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
55 - Bethany Aqueduct Pipeline	85201000 - Mobilize Tunnels & Shafts	LS	1	662,974
	85201500 - Site Setup Tunnels & Shafts	LS	1	404,143
	85202000 - Excavate Jones Penstock Tunnel 1	LF	200	1,721,806
	85202500 - Excavate Jones Penstock Tunnel 2	LF	200	1,721,806
	85203000 - Excavate Jones Penstock Tunnel 3	LF	200	1,721,806
	85203500 - Excavate Jones Penstock Tunnel 4	LF	200	1,721,806
	85203550 - Staging Areas Penstock Tunnels	LS	1	3,023,838
	85204000 - Excavate Conservation Easement Tunnel 1	LF	3064	22,994,554
	85204500 - Excavate Conservation Easement Tunnel 2	LF	3064	22,994,554
	85205000 - Excavate Conservation Easement Tunnel 3	LF	3064	24,496,527
	85205500 - Excavate Conservation Easement Tunnel 4	LF	3064	24,496,527
	85205550 - Staging Areas Conservation Easement Tunnels	LS	1	6,047,676
	85205600 - Shaft Access Excavation	LS	1	2,392,667
	85206000 - Excavate Shaft 1	LS	1	5,601,227
	85206500 - Excavate Shaft 2	LS	1	5,601,227
	85207000 - Excavate Shaft 3	LS	1	5,601,227
	85207500 - Excavate Shaft 4	LS	1	5,601,227
	85207550 - Staging Areas Shafts	LS	1	1,511,919
	85208000 - Plant & Equipment	LS	1	-
	85208500 - Indirect Cost	LS	1	-
55 - Bethany Aqueduct Pipeline, Tunnels and shafts Total				540,824,406
66 - Bethany Discharge Structure				
	663005000 - Discharge Structure - Contractors Profit & Burden	LS	1	13,411,795
	663010000 - Mobilize for Bethany Reservoir Discharge Structure	LS	1	212,419
	663011000 - Discharge Structure Contr. Management Tech.	MO	24	13,248,456
	663015000 - Discharge Structure - Temp. Facilities Build	LS	1	2,736,027
	663016000 - Discharge Structure - Temporary Facility Operate	MO	24	2,371,824
	663016500 - Lost Labor Time - Beth. Discharge Structure Cont.	LS	1	280,827
	663016700 - Environmental Protection - Disch. Struct.	LS	1	5,144,531
	663018000 - SITE WORK - Bethany Discharge Structure	LS	1	2,108,963
	663019000 - Cofferdam @ Discharge Structure	LS	1	5,446,342
	663021000 - Slab 1 East Section - Discharge Structure	CY	9342	6,620,099
	663022000 - Slab 2 Middle Section - Discharge Structure	CY	6593	4,761,282
	663023000 - Slab 3 West Section - Discharge Structure	CY	3420	2,784,841
	663026000 - Conc. Structural Walls - Bethany Discharge Struct.	CY	11400	16,010,938
	663050000 - Soil Nail Retaining Wall	SF	7689	1,172,630
	663055000 - Radial Gates & Stoplogs - Bethany Disch. Struct.	LS	1	15,089,082
	663060000 - Embankment Fill from Site Excavation	FCY	38266	145,435
	663062000 - Discharge Structure - Mech./Elect.	LS	1	2,591,734
	663064000 - Stop Log Struct. and Fuel Storage	LS	1	393,648
	663070000 - Discharge Structure - Finish Out	LS	1	732,501
66 - Bethany Discharge Structure Total				95,263,374
71 - Sacramento County Access Roads - Intakes, Batch plant & P&R				
	711001000 - Contractors Overhead and Profit	LS	1	4,393,006
	711002000 - Contractor Site Management & Facilities	MO	18	6,574,060
	711003000 - Mobilization	LS	1	169,935
	711120000 - Hood Franklin Road	MI	2.5	54,059
	711130000 - Intakes Access Road	MI	3.93	11,125,403
	711140000 - Intake #3 Access Road	MI	0.18	392,734
	711150000 - C-E-5 Intake Access Road	MI	1	2,032,299
	711315000 - Employee Park & Ride - Hood Franklin	LS	1	1,893,570
	711460000 - Lambert Road Widening	MI	3.39	3,654,711
71 - Sacramento County Access Roads - Intakes, Batch plant & P&R Total				30,289,775
72 - Twin Cities Advanced Sitework - Access Roads & Levees				
	721001000 - Contractors Overhead and Profit	LS	1	3,134,787
	721002000 - Contractor Site Management & Facilities	MO	8	3,463,476
	721003000 - Mobilization	LS	1	135,252
	721410000 - Twin Cities Site Development & Ring Levee	LS	1	9,742,205
	721420000 - Diersen Road Paving	MI	0.8	835,203
	721430000 - Franklin Blvd Improvements at Dierrsen	MI	0.49	1,277,522
	721470000 - Twin Cities Road Widening (East)	MI	1.01	1,649,690
72 - Twin Cities Advanced Sitework - Access Roads & Levees Total				20,238,135

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
73a - Lower Roberts Island Access Roads & P&R				
	711313000 - Employee Park & Ride - Charter Way	LS	1	1,064,525
	731001000 - Contractors Overhead and Profit	LS	1	11,158,598
	731002000 - Contractor Site Management & Facilities	MO	28	11,585,468
	731003000 - Mobilization - Both	LS	1	169,935
	731830000 - Lower Roberts Island Road	MI	5.93	21,595,469
73a - Lower Roberts Island Access Roads & P&R Total				45,573,995
73b - State Route 12 Access Road - Terminus Site				
	731730000 - Highway 12 /Terminus Tract Widening	MI	0.82	1,808,224
73b - State Route 12 Access Road - Terminus Site Total				1,808,224
74a - Bethany Complex Access Roads - Byron Hwy & Interchange				
	741001000 - Contractors Overhead and Profit	LS	1	12,753,303
	741002000 - Contractor Site Management & Facilities	MO	45	19,625,790
	741003000 - Mobilization	LS	1	197,246
	741900000 - Byron Hwy Frontage Rd	MI	1.18	2,511,984
	741910000 - Byron Hwy	MI	1.05	4,816,936
	741920000 - Byron Hwy - Lindermann Rd Interchange	MI	1.82	19,591,735
74a - Bethany Complex Access Roads - Byron Hwy & Interchange Total				59,496,993
74b - Bethany Complex Access Roads - PP area & Roundabout				
	741930000 - Mountain House Shaft Access Road	MI	2.4	7,470,635
	741940000 - Kelso Road Widening	MI	1.48	2,343,254
	741950000 - Mountain House Road Widening	MI	3.74	6,854,429
	741970000 - Mountain House By-pass Rd	MI	0.78	4,397,029
74b - Bethany Complex Access Roads - PP area & Roundabout Total				21,065,347
75 - Bethany Reservoir Access Road				
	741960000 - Bethany Road	MI	1.57	9,782,459
	751001000 - Contractors Overhead and Profit	LS	1	72,569
	751002000 - Contractor Site Management & Facilities	MO	1	112,880
	751003000 - Mobilization	LS	1	21,242
	751960000 - Bethany Road	MI	0.16	316,315
75 - Bethany Reservoir Access Road Total				10,305,466
76 - Projectwide Road Maintenance				
	133305000 - Int 3 Ph 1 Site Work	LS	1	220,565
	155205000 - Int 5 Ph 1 Site Work	LS	1	181,351
	760000000 - Project Wide Road Maintenance	LS	1	24,674,129
76 - Projectwide Road Maintenance Total				25,076,044
77 - Lower Roberts Rail & Rail Yard				
	770000000 - Lower Roberts Rail & Rail Yard	LS	1	16,304,932
77 - Lower Roberts Rail & Rail Yard Total				16,304,932
78 - Lower Roberts Levee improvements advanced work				
	781410000 - Lower Roberts Levee Improvement advanced work	LS	1	10,344,020
78 - Lower Roberts Levee improvements advanced work Total				10,344,020
83 - SCADA Projectwide				
	836160020 - Bethany Complex Communications (Contra Costa/Almed	MI	52.59	13,448,276
83 - SCADA Projectwide Total				13,448,276

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
93 - Projectwide Restoration & Site Establishment				
	133901500 - Int 3 Ph 2 Site Restoration	ACRE	110	1,450,973
	133901600 - Int 3 Establishment Period	YR	5	703,974
	155901500 - Int 5 Ph 2 Site Restoration	ACRE	120	1,450,201
	155901600 - Int 5 Establishment Period	YR	5	582,668
	221015000 - Twin Cities - Launch Shaft Site Restoration	LS	1	6,398,179
	223015000 - Lower Roberts Island - Launch Shaft Site Restore	LS	1	2,289,747
	334050000 - Surge Basin Site Restoration	LS	1	302,759
	334050010 - Surge Basin Establishment Period	YR	5	155,383
	721410000 - Twin Cities Site Development & Ring Levee	LS	1	2,197,919
	781410000 - Lower Roberts Levee Improvement advanced work	LS	1	1,465,279
93 - Projectwide Restoration & Site Establishment Total				16,997,083
Grand Total				11,080,665,979

Project/Contract	Bid Item	Unit	Quantity	Total 2023\$
91 - Bouldin Island Compensatory Mitigation				
	911017000 - Mitigation Bouldin Island Site B-1	LS	1	25,682,772
	911018000 - Mitigation Bouldin Island Site B-2	LS	1	5,627,733
	911019000 - Mitigation Bouldin Island Site B-3	LS	1	5,128,484
91 - Bouldin Island Compensatory Mitigation Total				36,438,989
92 - I-5 Pond Compensatory Mitigation				
	921015000 - Mitigation I-5 Pond 6	LS	1	17,319,832
	921016000 - Mitigation I-5 Ponds 7&8	LS	1	32,490,700
	921017000 - SR 12 Wildlife Crossing Culvert	LS	1	4,462,485
92 - I-5 Pond Compensatory Mitigation Total				54,273,017
Grand Total				90,712,006

Attachment 3 Risk Treatment Costs

Bethany reservoir Alternative Basis of Estimate - Construction
Attachement 3 - Distribution of Risk Treatment Costs

PROJECT	Total	Risk Treatment Cost	Percentage of total
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HCSS bid item name (All)

Sum of Bid Total			
PROJECT	Total	Risk Treatment Cost	Percentage of total
13 - Intake 3 Facilities	\$ 854,825,251	\$ 27,647,192	3%
15 - Intake 5 Facilities	\$ 805,528,421	\$ 26,052,808	3%
21 - Reach 1 Shafts & Tunnel (Twin Cities to Intake 3)	\$ 1,032,608,451	\$ 60,335,345	6%
22 - Reach 2 Shafts & Tunnel (Twin Cities to Terminus)	\$ 1,734,776,876	\$ 95,159,675	5%
23 - Reach 3 Shafts & Tunnel (Lower Roberts to Terminus)	\$ 1,292,413,060	\$ 69,221,103	5%
24 - Reach 4 Shafts & Tunnel (Lower Roberts to Bethany Complex)	\$ 1,957,737,597	\$ 110,583,877	6%
33 - Bethany Pumping Plant, Surge Shaft and Basin	\$ 2,495,740,250	\$ 40,000,000	2%
55 - Bethany Aqueduct Pipeline, Tunnels and shafts	\$ 540,824,406	\$ 21,775,643	4%
66 - Bethany Discharge Structure	\$ 95,263,374	\$ 3,724,357	4%
71 - Sacramento County Access Roads - Intakes, Batch plant & P&R	\$ 30,289,775	\$ 1,561,699	5%
72 - Twin Cities Advanced Sitework - Access Roads & Levees	\$ 20,238,135	\$ 1,043,450	5%
73a - Lower Roberts Island Access Roads & P&R	\$ 45,573,995	\$ 2,349,732	5%
73b - State Route 12 Access Road - Terminus Site	\$ 1,808,224	\$ 93,230	5%
74a - Bethany Complex Access Roads - Byron Hwy & Interchange	\$ 59,496,993	\$ 3,067,583	5%
74b - Bethany Complex Access Roads - PP area & Roundabout	\$ 21,065,347	\$ 1,086,100	5%
75 - Bethany Reservoir Access Road	\$ 10,305,466	\$ 531,336	5%
76 - Projectwide Road Maintenance	\$ 25,076,044	\$ 1,292,886	5%
77 - Lower Roberts Rail & Rail Yard	\$ 16,304,932	\$ 840,660	5%
78 - Lower Roberts Levee improvements advanced work	\$ 10,344,020	\$ 533,323	5%
83 - SCADA Projectwide	\$ 13,448,276	\$ -	0%
93 - Projectwide Restoration & Site Establishment	\$ 16,997,083	\$ -	0%
Grand Total	\$ 11,080,665,979	\$ 466,900,000	4%

Appendix B

Total Project Costs with Innovations

Title:	Project Wide Innovations Summary
Prepared for:	Delta Conveyance Project (DCP) File
Prepared by:	Delta Conveyance Design and Construction Authority (DCA)
Copies to:	Files
Date/Version:	May 8, 2024 / Version 1
Reference no.:	EDM_PW_CE_MEM_Projectwide-Innovations-Summary_001325_V01_D_20240508

1. Introduction

1.1 Context and Purpose

On December 21, 2023, California Department of Water Resources (DWR) approved the Delta Conveyance Project (DCP) and selected the Bethany Reservoir Alignment for further engineering, design, and permitting necessary to be completed prior to initiating implementation. DWR completed extensive environmental review and certified the Environmental Impact Report (EIR) (DWR, 2023) as compliant with the California Environmental Quality Act (CEQA).

Following project approval, DWR directed DCA to further evaluate several project features presented in the Bethany Reservoir Alignment Engineering Project Report (EPR) and consider potential design or construction innovations to further reduce community or environmental disturbances, schedule, and/or costs or improve constructability. This evaluation resulted in a set of potential innovations that at this early conceptual stage of the project are considered by the DCA to be reasonable and credible based on industry experience. The innovations discussed herein do not represent changes to the project description presented in the EPR and analyzed in the EIR, but rather provide an indication of how normal design development processes can help manage costs for large infrastructure projects.

As the innovation concepts are further advanced, DWR will review the innovation concepts to determine and document if the innovation concepts would result in a change in the project description presented in the EPR and analyzed in the EIR. The results of these reviews will be used by DWR to determine if additional reviews will be required under the CEQA and for project permitting.

1.2 Summary of Innovations

This memorandum summarizes the process used to identify and select innovation concepts for evaluation and compares the potential cost and schedule savings to the project as described in the EIR/EPR. A summary of these innovations and their assessment related to cost and schedule is shown in Table 1-1.

Table 1-1. Summary of Innovations

Innovation ID	Innovation Title	Potential Cost Savings^a (\$M^b)	Potential Schedule Savings^c (Days)
<i>Intakes</i>			
INV-I2	Intake Fish Screen Barrier System	\$ 1.07	14
INV-I3	Raise Intake 3 and 5 Tee Screen Elevation	\$ 4.13	28
INV-I4/I5	Intake Structure Configuration	\$ 29.81	26
<i>Tunnels and Shafts</i>			
INV-T1	Provide Separate Access to Double Launch Shafts	(\$ 0.63)	No Change
INV-T2	Tunnel Lining Optimization	\$ 45.85	No Change
INV-T3	Planning for Semi Continuous Mining	\$ 70.35	184
INV-T4	Optimizing Tunnel Profile and Shaft Sizes	\$ 95.43	192
<i>Pumping Plant and Surge Basin</i>			
INV-P1	Optional Pumping Plant Belowground Configuration	\$ 138.72	981
INV-P3	A) Surge Basin Slab Uplift Resistance B) Surge Basin Wall Configuration	P3A: \$ 178.44 P3B: \$ 52.39	P3A: 280 P3B: 237
<i>Aqueducts</i>			
INV-A1/A5	Reduce Pipe Diameter and Trench Section	\$ 60.38	79
INV-A4	Bethany Conservation Easement Tunnel/Shaft Considerations	\$ 14.36	222
<i>Discharge Structure</i>			
INV-D1	Reconfigure Discharge Structure Retaining Wall	\$ 1.39	No Change
INV-D2	Refine Bethany Reservoir Discharge Structure Configuration	\$ 38.50	554
<i>Hydraulics and Operations</i>			
INV-H1/H2	Reduce Diameter of Intake Shafts and Maintenance Shafts	\$ 40.11	No Change
<i>Logistics</i>			
INV-L1	Eliminate Rail-Served Materials Depot – Lower Roberts Island	\$ 16.30	128
INV-L2	Hood Franklin Road Intersection Innovation	\$ 2.05	No Change

^a Potential Cost Savings refers to reductions associated with potential innovations compared to the Construction Cost estimate for the Bethany Reservoir Alignment as depicted in the EPR. Values in () represent a potential increase in costs.

^b Costs are in 2023 dollars and are undiscounted.

^c Schedule savings represent the number of physical construction days that could be saved for the feature studied. The potential schedule savings would reduce the overall project schedule only if the schedule for that feature impacts the overall project critical path.

As shown in Table 1-1, each innovation concept is identified with an ID number and grouped by project feature (i.e. Intakes, Tunnels and Shafts, etc.). The innovation concepts presented in Table 1-1 are mutually exclusive and have been analyzed as independent concepts except for the following:

- Innovation T4 considers the cost differential associated with adjusting the tunnel profile and assumes the reduced shaft diameter included with innovation H1/H2.
- Innovation A4 considers a revised profile of the tunnel under the Bethany Reservoir Conservation Easement and incorporates the reduced diameter of the aqueduct pipelines as presented in innovation A5.

A summary of the potential cost savings by major project feature is presented in Table 1-2.

Table 1-2. Potential cost savings from combined set of innovations

Feature	Potential Construction Cost Savings^a (\$M^b)	Potential Risk Treatment Cost Savings^{a,c} (\$M^b)	Total Potential Cost Savings^a (\$M^b)
Intakes (I2, I3, I4, I5)	\$35	\$1	\$36
Tunnels & Shafts (T1, T2, T3, T4, H1/H2)	\$211	\$12	\$223
Pumping Plant & Surge Basin (P1, P3)	\$370	\$6	\$376
Aqueducts (A1, A4, A5)	\$75	\$3	\$78
Discharge Structure (D1, D2)	\$40	\$1	\$41
Logistics (L1, L2)	\$18	\$1	\$19
Total	\$749	\$24	\$773

^a Potential Cost Savings refers to reductions associated with potential innovations compared to the construction cost estimate for the Bethany Reservoir Alignment as depicted in the EPR. Values in () represent a potential increase in costs.

^b Costs are in 2023 dollars and are undiscounted.

^c Risk treatment cost savings are estimated as a scaled proportion of construction cost savings relative to the Total Project Cost estimate for the Bethany Reservoir Alignment as depicted in the EIR/EPR.

As shown in Table 1-2, the innovations evaluated for the tunnels and shafts and the pumping plant and surge basin present the greatest potential savings and make up the majority of the combined innovation savings. The potential benefits of the identified innovations or future innovations should be further analyzed as project definition improves. Additional benefits of potential design or construction innovations to improve constructability or further reduce community or environmental disturbances, schedule, and/or costs savings associated with potential innovations could be realized but would require further analyses in coordination with DWR.

2. Development and Screening of the Innovations

The purpose of identifying and developing innovations at this early stage of conceptual design was to demonstrate the potential project benefits associated with industry innovation, constructability improvements, and eventual value engineering activities that will likely occur in future design phases. Initially, 167 innovative ideas were identified with potential to improve the project. The DCA analyzed the ideas and categorized them into 51 potential innovations that were then advanced through additional

feasibility-level analyses and reviewed in a series of workshops with DCA and DWR staff. The result of this screening and evaluation process was the identification of 19 reasonable innovation concepts that could result in potential cost and/or schedule reductions, which are summarized in this memorandum.

3. Analysis of the Innovations

The DCA determined a variety of potential improvements, or innovations, to the EPR conceptual design based on additional engineering and design consideration and additional geotechnical subsurface information not available at the time of completing the EPR conceptual design. When deciding which innovations might be considered for further evaluation, the innovation concept was compared to the EPR conceptual design in terms of cost and schedule.

3.1 Cost Considerations

To evaluate the cost savings, a high-level concept design and subsequent cost estimate for the innovations was compared to the baseline construction cost estimate for the project described in the EPR/EIR. For some innovations, the basic design remained the same, but with a change to the quantities, and hence cost. For other innovations, new potential construction approaches associated with the concepts were evaluated and compared using the same unit costs as presented in the baseline construction cost estimate to determine the potential construction cost savings.

Cost evaluations resulted in either a cost increase, cost decrease, or minimal change compared to the baseline cost estimate prepared for the EPR concept design. The cost evaluation also considered how each innovation could either reduce or optimize construction materials, labor hours, and construction sequencing to ultimately reduce the cost and schedule duration while still meeting the overall functional requirements of the project. The construction cost savings presented for the innovations include the same cost basis used to develop the baseline construction cost estimate as related to materials, labor and equipment, taxes, contractor markup and profit, and other add on costs such as insurance and bonds. This analysis does not re-evaluate risk treatment costs associated with design and construction of the project features, but rather applies a proportionally scaled portion of the risk treatment costs as described for the baseline construction cost estimate for the project.

Innovation construction cost savings presented in this memorandum do not currently include contingency. However, it is recommended that the same contingency be applied to the innovation construction costs savings as used for the baseline total project cost estimate when comparing the cost impacts. Innovations may reduce the impact of uncertainty within the cost estimate currently captured by risk treatment costs and project contingencies and should be further evaluated in the future.

Labor costs associated with design and construction of the project features were not re-evaluated for this evaluation, so any comparison with the baseline total project cost estimate should use a proportionally scaled labor cost to indicate the total costs of the project including potential innovations. Cost savings discussed in this memorandum do not include effects related to the reduced schedule durations for each individual construction project nor for the reduction of the overall project schedule. Labor cost and schedule cost savings should be further evaluated during future design stages.

3.2 Schedule Considerations

Each innovation was individually assessed to determine the impact on the construction schedule compared to the EPR schedule. Where quantities of materials changed, the same production rates were

applied to ascertain new activity durations. Where new activities were introduced, production rates from similar activities were used wherever possible to determine the new activity duration.

The schedule savings referenced in this memorandum are in terms of construction days for each individual feature and not overall project schedule. The potential schedule savings for each individual feature would reduce the overall project schedule only if the schedule for that feature impacts the overall project critical path. An evaluation of overall project schedule savings should be completed as part of future design phases.

4. Description of the Innovations

This section summarizes each innovation and compares it with the EPR design, including an assessment of the impacts on potential cost and schedule.

4.1 Intakes

4.1.1 INV-I2 Intake Fish Screen Barrier System

EPR Concept	
The EPR concept for the fish screen barrier system at the intakes included a combination of thirty three 24-inch-diameter pipe piles with approximately 1,015 feet of floating fabricated steel log booms affixed in front of the piles spaced at approximately 35 feet.	
Innovation Concept	
This innovation concept includes a combination of twelve 24-inch-diameter piles with approximately 995 feet of floating HDPE log booms in between the piles using proprietary vendor-fabricated floating “pile sliders” attached to each pile spaced at 100 feet maximum	
Cost Savings:	\$1,070,000
Schedule Savings:	14 construction days

4.1.2 INV-I3 Raise Intake 3 and 5 Tee Screen Elevation

EPR Concept	
The EPR concept for both Intake 3 and Intake 5 places the bottom of the tee screens at EL -13 feet, which provides approximately 8.6 feet of submergence below the design (low) water surface elevation at Intake 5, and approximately 8.7 feet of submergence at Intake 3. The minimum recommended tee screen submergence is one half of the screen diameter, or 4 feet for the current 8-foot-diameter tee screen units. At the same time, the EPR concept places the screen sill at EL -17 feet, which is equal to the average river bottom elevation.	
Innovation Concept	
This innovation proposes to increase the separation between the river bottom and the bottom of the Intake 5 tee screens by up to 4.6 feet (up to 4.7 feet at Intake 3) and reduce the screen submergence to the minimum 4 feet. The height of the structure is reduced by up to 4.6 feet (up to 4.7 feet at Intake 3).	
Cost Savings:	\$4,133,000
Schedule Savings:	28 construction days

4.1.3 INV-I4 and INV-I5 Intake Structure Configuration

EPR Concept	
The EPR intake structure configuration concept includes thirty 60-inch-diameter discharge pipes, each with a separate gate structure located along the discharge pipe alignment near the sedimentation basins.	
Innovation Concept	
Combined, these two innovations include replacing the thirty 60-inch-diameter discharge pipes with fifteen 84-inch-diameter discharge pipes and combines the gate box structures with the intake structure. In addition, structural elements are added to each bay of the intake structure to resist tunnel jacking forces from construction of each of the 84-inch-diameter discharge pipes.	
Cost Savings:	\$29,810,000
Schedule Savings:	26 construction days

4.2 Tunnels and Shafts

4.2.1 INV-T1 Provide Separate Access to Double Launch Shafts

EPR Concept	
In the EPR, access to the raised launch shaft pads is via ramps that are shared by two potential contractors, each responsible for driving a tunnel from the double shaft in opposite directions.	
Innovation Concept	
This innovation adds two additional ramps together with a slightly larger top of pad area that would enable each contractor to access their respective halves of the double launch shaft and with an effective dividing wall between them. Reorganization of the equipment and access routes would mean that each contractor could be entirely responsible for maintaining their own construction roads.	
Cost Savings:	(\$630,000)
Schedule Savings:	No change to schedule

4.2.2 INV-T2 Tunnel Lining Optimization

EPR Concept	
The reinforcement details for the tunnel lining in the EPR concept was based on the maximum net pressure that could be encountered for the entire 45-mile-long tunnel being applied to all tunnel reaches. The design accounted for internal and external water pressure but assumed no soil loads acting on the tunnel to counteract the internal pressures.	
Innovation Concept	
This innovation reduces the amount of reinforcement required in the tunnel lining by considering the maximum net internal pressure that will be encountered within each tunnel reach individually and accounting for an effective soil pressure to counteract the internal pressures.	
Cost Savings:	\$45,850,000
Schedule Savings:	Reduced construction time but no impact to the overall schedule

4.2.3 INV-T3 Planning for Semi-continuous Mining

EPR Concept	
The EPR assumed tunnel excavation using a TBM with separate phases for excavation and tunnel lining installation. In this manner, a full precast concrete segmental tunnel lining ring is installed before the TBM rams push the machine forward from the leading edge of the lining to excavate the next section.	
Innovation Concept	
This innovation concept considers the latest TBM technology that allows a TBM to thrust forward from a partially completed segmental lining ring such that excavation and lining installation can happen concurrently.	
Cost Savings:	\$70,350,000
Schedule Savings:	101 construction days for Reach 1 160 construction days for Reach 2 118 construction days for Reach 3 184 construction days for Reach 4

4.2.4 INV-T4 Optimize Tunnel Profile and Shaft Sizes

EPR Concept	
The tunnel profile in the EPR slopes continuously from north to south at a constant slope of about 0.01% and is excavated to a depth of approximately 200 feet. The diaphragm walls and final linings of the shafts are shown as 5 feet and 3 feet thick respectively and the shafts invert slabs are 30 feet thick.	
Innovation Concept	
This innovation considers optimizing the vertical tunnel profile and the configuration of the reception and maintenance shafts by reducing the depth of the tunnel between Intake No. 3 and the Stockton Deep Ship Channel Crossing and then increasing the depth of the tunnel from Lower Roberts Island Launch Shaft to the Surge Basin Reception Shaft to provide clearance underneath the future East Bay Municipal Utility District (EBMUD) Mokelumne Aqueducts Resiliency Project (MARF) tunnel. It also considers reducing diameter of the reception and maintenance shafts along with the thickness of the diaphragm walls, final lining and invert slab of the reception and maintenance shafts.	
Cost Savings:	\$95,430,000
Schedule Savings:	192 construction days

4.3 Pumping Plant and Surge Basin

4.3.1 INV-P1 Optional Pumping Plant Belowground Configuration

EPR Concept	
In the EPR, the Bethany Reservoir Pumping Plant (BRPP) is a below ground structure with vertical rectangular diaphragm walls and consists of dry-pit pump bays housing the pumping plant equipment and piping plus an adjoining rectangular concrete wet well and wet well inlet conduit connected to the reception shaft located within the Surge Basin. Separate dry pit pump structures would be connected to both sides of the wet well that would be located along the center of the overall structure.	
Innovation Concept	
This innovation would replace the vertical, deep box diaphragm wall arrangement with interlinking shafts of diaphragm wall construction that would house the pumping plant equipment and piping and a tunnel that would replace the wet well and wet well inlet conduit	
Cost Savings:	\$138,720,000
Schedule Savings:	981 construction days

4.3.2 INV-P3A/B- Surge Basin Base Slab Uplift Resistance/Surge Basin Wall Configuration

EPR Concept	
In the EPR, uplift resistance to the surge basin base slab is provided by an array of six-foot diameter passive (not pre-stressed) drilled shafts. The surge basin perimeter walls are constructed using concrete diaphragm walls consisting of an upper structural section with two rows of tieback anchors and a lower unreinforced, cut off wall section.	
Innovation Concept	
This innovation considers tiedown anchors for the base slab instead of the drilled shafts (P3A) and a conventional tied-back sheetpile/concrete wall system for the surge basin walls (P3B).	
Cost Savings:	\$230,830,000
Schedule Savings:	P3A: 280 construction days P3B: 237 construction days

4.4 Aqueducts

4.4.1 INV-A1 and INV-A5 Reducing Pipe Diameter and Trench Section

EPR Concept	
The EPR concept includes four 180-inch-diameter parallel aqueduct pipelines installed from the BRPP to the Bethany Reservoir Discharge Structure with the parallel pipes spaced at 30 feet on center constructed partially below ground (0.7 x pipeline diameter) and partially above ground (0.3 x pipeline diameter) backfilled with Controlled Low Strength Material (CLSM) from the bottom of the excavated trench to the ground surface and soil cover to 6 feet above the top of pipes.	
Innovation Concept	
This innovation reduces the diameter of the four aqueduct pipelines to 166-inch-diameter, and spaces the pipelines at 21 feet on center while maintaining the backfill and soil cover dimensions.	
Cost Savings:	\$60,380,000
Schedule Savings:	79 construction days

4.4.2 INV-A4 Bethany Conservation Easement Tunnel/Shaft Considerations

EPR Concept	
In the EPR, the Bethany Conservation Easement tunnels and Bethany Reservoir Discharge Structure shafts were designed for a 180-inch-diameter pipeline. The tunnel had a constant 0.65% gradient and the shafts consisted of four circular shafts with an internal diameter of 55-feet.	
Innovation Concept	
This innovation considers the reduced aqueduct pipeline diameter proposed in INV-A5 to reduce the size of the excavated tunnel and shafts. It also considers raising the gradient of the tunnel which reduces the depth of the discharge structure shafts and reduces the diameter of the shafts from 55-feet to 32-feet.	
Cost Savings:	\$14,360,000
Schedule Savings:	222 construction days

4.5 Discharge Structure

4.5.1 INV-D1 Reconfigure Discharge Structure Retaining Wall

EPR Concept	
In the EPR, shoring during construction of the discharge structure to support hillside excavation would be required and would provide a 10-foot minimum buffer from the closest edge of the Bethany Reservoir Conservation Easement. It was assumed that the shoring system included a combination of soil-nail reinforced wall and excavations sloped between 2H:1V and 1.5H:1V.	
Innovation Concept	
This innovation involves construction of a steepened slope excavation, with soil nail reinforcement to decrease the total area of the cut and volume of excavation. This will also increase the ten-foot buffer from the Bethany Reservoir Conservation Easement and provide an access road for maintenance.	
Cost Savings:	\$1,387,000
Schedule Savings:	No change

4.5.2 INV-D2 Refine Bethany Reservoir Discharge Structure Configuration

EPR Concept	
The discharge structure concept in the EPR includes four 55-foot-diameter shafts and four separate channels to convey flow from each shaft to the Bethany Reservoir. Each flow channel would be isolated from the reservoir when not in operation using two radial gates.	
Innovation Concept	
This innovation proposes raising the discharge elevation of each aqueduct pipeline just above the crest of the dam spillway which provides isolation from the reservoir and eliminates the need for the isolation radial gates.	
Cost Savings:	\$38,500,000
Schedule Savings:	554 construction days

4.6 Hydraulics and Operations

4.6.1 INV-H1 and INV-H2 Reduce Diameter of Intake Shafts and Maintenance Shafts

EPR Concept	
The EPR design includes 83-foot-diameter shafts at Intake Structures 3 and 5 and five 70-foot-diameter maintenance shafts.	
Innovation Concept	
This innovation reduces the shafts at Intake 3 and Intake 5 to 70-foot-diameter and reduces the maintenance shafts to 66-foot-diameter.	
Cost Savings:	\$40,110,000
Schedule Savings:	No change to schedule

4.7 Logistics

4.7.1 INV-L1 Eliminate Rail-Served Materials Depot – Lower Roberts

EPR Concept	
The EPR included new rail access to Lower Roberts Island from the Port of Stockton's rail network via a new bridge over Burns Cut and a new rail-served materials depot on Lower Roberts Island.	
Innovation Concept	
This innovation maintains the construction of the Burns Cut bridge while deferring the construction of the rail-served materials depot on Lower Roberts Island as a future option.	
Cost Savings:	\$16,305,000
Schedule Savings:	128 construction days

4.7.2 INV-L2 Hood Franklin Road Intersection Innovation

EPR Concept	
The EPR concept involves the widening of an existing bridge over Snodgrass Slough on Hood-Franklin Road to accommodate left and right turn pockets onto the Intake Haul Road from Hood-Franklin Road leading to the two intake construction sites.	
Innovation Concept	
This innovation involves the installation of a single-lane roundabout that would eliminate the need to widen the bridge and would provide efficient traffic movement.	
Cost Savings:	\$2,050,000
Schedule Savings:	No change to schedule

5. Summary and Future Considerations

Compared to the EPR project description, the proposed set of 19 combined innovations are estimated to reduce the construction cost of the project by up to \$773M (without contingency) and save a combined total of 2,925 construction days on the various projects. These proposed innovation concepts are recommended for further study as the project develops. Further evaluation of these potential innovations should be fully coordinated with other innovations, environmental impact considerations, risk elements, and other changes that might result from additional future project development.

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Benefit-Cost Analysis of the Delta Conveyance Project

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Executive Summary

This report presents the results of a benefit-cost analysis for the Delta Conveyance Project (DCP), a plan to modernize the State Water Project (SWP)'s conveyance infrastructure in the Sacramento-San Joaquin River Delta (Delta). The SWP plays a crucial role in supplying water resources to 27 million Californians. Businesses in the area served by the SWP produce \$2.3 trillion in goods and services annually, making it the world's eighth-largest economy. The SWP delivers an average of 2.56 million acre-feet of water annually to urban and agricultural customers in the Bay Area, Central Valley, Central Coast, and Southern California. However, by 2070, climate change and sea-level rise are expected to reduce SWP deliveries by approximately 22%, or 546 thousand acre-feet per year (TAF/yr). In addition, the SWP faces an ongoing risk of service disruptions following seismic events near the Delta; these events could cause outages and reduce the quality of water exports from the SWP south of the Delta.

The DCP's intended purposes are to mitigate climate and seismic risks for the SWP and provide water managers with additional operational flexibility in the Delta. The DCP would add new intake facilities in the North Delta to divert water from the Sacramento River and a tunnel to convey water to the South Delta for export to the SWP's urban and agricultural customers. The DCP would increase SWP deliveries by approximately 17%, or 403 TAF/yr, largely offsetting the anticipated reduction in water deliveries due to climate change. The DCP would also be less vulnerable to earthquakes near the Delta, meaning that SWP supplies could continue largely uninterrupted following seismic events.

A benefit-cost analysis is a rigorous method for evaluating the economic viability of a project—specifically, by forecasting a project's expected future benefits and costs. The present value of future benefits and future costs is calculated relative to a no-project alternative. Present values are calculated using real discount rates that reflect the time-value of money. As detailed in recent federal guidance (OMB Circular A-94), we adopt a real discount rate that starts at 2% in 2020, reflecting current inflation-adjusted Treasury bond rates, and gradually decreases to 1.4% by 2140 to reflect long-run uncertainties. The benefit-cost ratio is calculated by dividing the present value of future benefits by the present value of future costs. As discussed later in this report, for the DCP, we calculate a benefit-cost ratio of 2.20 and show that this ratio is robust with respect to a number of alternative assumptions regarding climate change, sea-level rise, SWP operations, and project costs. The approach to benefit-cost analysis taken in this report is consistent with the approaches described in the Department of Water Resources (DWR) Economic Analysis Guidebook and with State of California and federal guidelines for economic analysis of water resource-related investments.

The benefits and costs of the DCP are estimated in the context of forecast changes in water supply and demand. Climate change and sea-level rise are expected to significantly reduce future SWP deliveries. Future precipitation and runoff are forecast using an ensemble of climate scenarios selected by DWR's Climate Change Technical Advisory Group. Then, project deliveries are simulated using CalSim 3, a resource planning model that simulates operations of the SWP and Central Valley Project (CVP) under different hydrologic conditions. The project

timeline, based on DWR's most recent expectations, involves preconstruction from 2026 to 2028, construction from 2029 to 2044, and an evaluation of economic benefits for a century of operations from 2045 to 2145.

Benefits of the DCP

This report quantifies the benefits of the DCP in four areas: urban water supply reliability, agricultural water supply, water quality, and seismic reliability.

1) Urban water supply reliability

The primary benefit of the DCP is that it would reduce the anticipated increase in the frequency of water supply shortages for SWP's urban contractors caused by climate change and sea-level rise. The frequency and size of future water supply shortages are assessed using information provided by State Water Contractors, as described in their respective urban water management plans (UWMPs) or, for the Metropolitan Water District, in the Integrated Resource Plan (IRP). These models are used to estimate the frequency and magnitude of shortages for each contractor, with and without the project and under various future climate assumptions. This approach to estimating water supply reliability is consistent with the Delta Independent Science Board's 2020 review of approaches to water supply reliability estimation.¹

The economic impact of future water shortages for urban customers is estimated using economic models that measure consumer welfare, a measure of well-being for urban water customers resulting from the reliability of their urban water supply loss. The estimates of consumer welfare loss use a standard model from the academic literature.² Calibration of this model is based on retail water rates and utility-specific estimates of customer demand sensitivity. Over the project's lifetime, the present value of improved water supply reliability (i.e., the DCP's ability to mitigate the effects of forecast climate change and sea-level rise) is estimated to be worth more than \$33.3 billion in 2023 dollars.

¹Delta Independent Science Board. 2016. *Review of Water Supply Reliability Estimation Related to the Sacramento-San Joaquin Delta*. Report to the Delta Stewardship Council. June. Sacramento, CA. Available: <https://deltacouncil.ca.gov/pdf/isb/products/2022-06-16-isb-water-supply-reliability-review.pdf>.

² See, for example, Brozovic et al. 2007, Buck et al. 2016, or Buck et al. 2023 for examples of this approach.

Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

Buck, Steven, Mehdi Nemati, and David Sunding. Consumer Welfare Consequences of the California Drought Conservation Mandate. In *Applied Economic Perspectives and Policy*, 45, No. 1 (2023):510–533.

2) *Agricultural water supply*

The benefits of improved agricultural water supply reliability are estimated using two approaches. First, a willingness-to-pay approach is used, based on the Statewide Agricultural Production (SWAP) model, a regional model of irrigated agricultural production in California's Central Valley developed by researchers at the University of California, Davis that simulates the economic decisions of farmers. This estimate reflects the long-term value of water to agricultural customers in the Central Valley. Second, we use a market-based approach, valuing the incremental water supplies produced by the DCP at average market prices, as measured by the Nasdaq Veles California Water Index. This estimate reflects the ability of farmers to extract additional value by selling water to other urban or agricultural users during short-term periods of scarcity. Averaging estimated benefits across these two approaches, the present value of the DCP's future agricultural water supply benefits is \$2.3 billion in 2023 dollars.

3) *Water quality*

The DCP is expected to lead to a modest improvement in the average quality of water exported south of the Delta. The benefits of improved water quality in the urban sector are estimated using the Salinity Economic Impact Model (SEIM) developed by the U.S. Geological Survey (USGS). The present value of benefits from improved urban water quality in Southern California is worth \$1.33 billion in 2023 dollars. The benefits of improved water quality in the agricultural sector of the San Joaquin Valley and Southern California are estimated using models that calculate the value of a reduced yield impact and irrigation water requirements due to reduced salinity in the agricultural water supply. The present value of improved agricultural water quality is expected to be around \$0.09 billion in 2023 dollars.

Anticipated operation of the DCP would lead to changes in salinity in the Delta; the impacts of these changes are assessed as being "less than significant" in the project's environmental impact report (EIR); however, costs associated with potential increased Delta salinity are accounted for under the costs of remaining environmental impacts after mitigation. Overall, the benefits of improved salinity for downstream agricultural water contractors significantly outweigh the cost of the small increase in salinity in the Delta region. The project would also provide additional operational flexibility to help SWP operations adapt to water regulations in the Delta, the benefits of which are not explicitly quantified in this report.

4) *Seismic reliability*

The project would also provide significant economic benefits by acting as an insurance policy against the risk of water supply interruptions during a major seismic event in the San Francisco Bay or Delta region. The DCP's benefits in terms of improved seismic reliability are estimated using a seismic scenario described in the Delta Flood Emergency Management Plan (DFEMP). This scenario describes a 500-year seismic event that causes up to 50 levee breaches in the Delta, flooding 20 islands. Under the recovery scenario that we consider for such an event, exports from the Delta are expected to cease for between six and 448 days. After that period, exports resume but with impaired water quality for between five to 103 additional days. The DCP is engineered to

withstand such an event and remain operational. The benefits of continued water deliveries during such an event are estimated by assuming that either the DCP operates at capacity for the duration of the seismic impacts or that it operates at a minimum level to meet health and safety requirements. Depending on the specific scenario, the benefits of DCP operations during the seismic event range from \$60 million to \$53 billion. Averaging across the scenarios considered and accounting for the annual likelihood of such an event, we estimate the present value of seismic benefits from DCP operations to be around \$1 billion in 2023 dollars.

We estimate total benefits with a present value of \$33.8 billion. Some benefits of the DCP are not explicitly quantified in this report. For example, this report does not quantify the project's benefits in terms of increased operational flexibility in the Delta or the benefits associated with the Community Benefits Program, which will invest in local communities. The DCP is also expected to relieve pressure on groundwater supplies in the Central Valley and increase the average storage levels of the state's major reservoirs, the impacts of which are not quantified in this report.

Costs of the DCP

In addition to considering benefits, this report quantifies the costs associated with construction of the DCP. Three types of costs are considered in this report: the project costs associated with development and construction of the project, the operations and maintenance (O&M) costs associated with operating the project over its 100-year lifespan, and the costs associated with any remaining environmental impacts after mitigation.

1) Construction costs and related expenditures

The Delta Conveyance Design and Construction Authority (DCA) produced two cost estimates for the DCP. The primary cost estimate reflects the project's current specifications, as detailed in the EIR, estimated at \$20.1 billion before discounting. In addition, a secondary estimate, referred to as the "project-wide innovations and savings estimate," evaluates the financial impact of potential design modifications and construction innovations. These innovations aim to enhance cost efficiency and feasibility without changing core project specifications, potentially reducing costs and construction timelines while minimizing environmental impacts. Before discounting, the secondary estimate stands at \$18.9 billion.

After applying discount rates, the present value of the primary and secondary estimates is \$15.4 billion and \$14.5 billion, respectively. These figures are based on 2023 dollars and include various cost components:

- **Construction costs** for the intakes, tunnels, pumping plants, and other infrastructure, including a 30% contingency, worth \$11.5 billion or \$10.7 billion in present-value terms for the primary and secondary estimates, respectively.
- **Other project costs** include those associated with planning, design, construction management, land acquisition, and power use as well as the cost of a settlement agreement with the Contra Costa Water District, worth \$3.0 billion or \$2.9 billion in present-value terms for the primary and secondary estimates, respectively.

- **Costs for a community benefits program**, worth \$200 million undiscounted or \$153 million in present-value terms.
- **Costs for the mitigation of environmental impacts** identified in the EIR, worth \$960 million undiscounted or \$735 million in present-value terms. Expected environmental impacts and approaches to mitigation are identified in the project's EIR.

2) Operations and maintenance costs

Projected O&M costs for the DCP are detailed in a memorandum authored by the DWR and the DCA.³ This cost forecast included facility O&M, materials, power, capital equipment replacement and refurbishment, and the management of project restoration sites. In 2023 dollars, estimated annual O&M costs are \$52.6 million, amounting to a present value of \$1.7 billion over the project's 100-year operational span from 2040 to 2140.

3) Remaining environmental impacts after mitigation.

Most environmental impacts identified as significant in the EIR can be mitigated to levels where they are considered less than significant after mitigation. However, some environmental impacts identified in the EIR are anticipated to have significant and unavoidable impacts after the implementation of proposed mitigation measures. In an appendix to this report, each significant and unavoidable impact is considered, and where appropriate, economic tools are used to estimate the economic costs associated with these impacts. Our assessment also estimates costs associated with an increase in Delta salinity, included despite being “less-than-significant” impacts in the EIR, in order to provide a complete account of all salinity-related impacts alongside the previously discussed water quality benefits. The costs of environmental impacts that remain significant after mitigation are calculated in the following areas:

- Lost agricultural land
- Air quality impacts
- Noise impacts
- Transportation impacts
- Reduced water quality in the Delta

The costs of other impacts—specifically, in terms of aesthetic and visual resources, paleontological resources, and tribal cultural resources—are not estimated because there is no appropriate economic methodology to do so. For the impacts that are quantified, the present value of future costs is \$167 million in 2023 dollars. These impacts may disproportionately affect specific populations adjacent to the construction project.

³ California Department of Water Resources. 2024. *O&M Annual Cost Estimate Basis for Bethany Reservoir Alternative*. April.

Benefit-Cost Ratios and Sensitivity Analyses

Table 1 summarizes the primary DCP benefit-cost estimate. We estimate the present value of the benefits of the DCP to be \$37.96 billion in 2023 dollars, and we estimate the present value of the costs of constructing and operating the DCP to be \$17.26 billion in 2023 dollars. Based on these estimates, we find the proposed DCP project has a benefit-cost ratio of 2.20. Under the cost estimate with project-wide innovations and savings, the benefit-cost ratio is higher, at 2.33.

Table 1 also shows estimates per acre-foot of the benefits and costs of the DCP. These estimates per acre-foot are calculated using a levelized cost-of-water approach that accounts for the timing of future SWP deliveries.⁴ Based on this approach, we estimate levelized benefits of \$2,918 per acre-foot, along with levelized costs of \$1,327 per acre-foot and \$1,255 per acre-foot, respectively, in the primary and secondary cost estimates.

The primary benefit-cost analysis shown in **Table 1** is referred to as the 2070 median scenario with 1.8 feet of sea-level rise. This scenario considers changes in precipitation and runoff from a median climate change projection, based on an ensemble of global climate models for the period 2056–2085.⁵ The primary scenario assumes 1.8 feet of sea-level rise by 2070, based on guidance from the California Ocean Protection Council for the likely range of sea-level rise under a high emissions scenario.⁶ To test the robustness of the estimated benefit-cost ratio to these assumptions, a number of sensitivity analyses are also considered that make alternative assumptions in terms of future precipitation and runoff, sea-level rise, and adaptation measures to reduce operational risks associated with climate change. Across all the sensitivity analyses considered, the incremental deliveries of the proposed project are at least 395 TAF/yr on average, highlighting that the proposed project is robust to different assumptions about climate change and sea-level rise. In each of these sensitivity scenarios, the benefits of the project significantly exceed costs with benefit-cost ratios between 1.54 and 2.69.

4 Levelized cost of water is calculated with the formula $LCOW = \frac{\sum_{t=1}^n \frac{C_t}{(1+r_t)^t}}{\sum_{t=1}^n \frac{Q_t}{(1+r_t)^t}}$ where C_t is the cost associated with the DCP at time t , Q_t is

the volume of additional SWP deliveries as a result of the DCP at time t , and r_t is the discount rate at time t . This methodology is described in more detail here:

Fane, Simon, J. Robinson, and S. White. The Use of Levelized Cost in Comparing Supply and Demand-Side Options. In *Water Science and Technology: Water Supply*, 3, No. 3 (2003):185–192.

5 See California Department of Water Resources “CalSim 3 Results for 2070 Climate Change and Sea-Level Projections and Sensitivity Analysis.”

6 See California Ocean Protection Council. 2018. *State of California Sea-Level Rise Guidance: 2018 Update*. Sacramento: CA.

Table 1: Summary of Benefits and Costs

	Main Scenario	
	Primary Cost Estimate	Costs w. Project-wide Innovations & Savings
	Present Value of Future Benefits	
	\$ Millions, 2023	\$ Millions, 2023
Urban Water Supply and Reliability	\$33,300	\$33,300
Agricultural Water Supply and Reliability	\$2,268	\$2,268
Urban Water Quality	\$1,330	\$1,330
Agricultural Water Quality	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$2	\$2
Total Benefits	\$37,960	\$37,960
	Present Value of Future Costs	
	\$ Millions, 2023	\$ Millions, 2023
Construction Costs	\$11,486	\$10,723
Other Project Costs	\$3,021	\$2,852
Community Benefit Program	\$153	\$153
Environmental Mitigation	\$735	\$735
O&M Costs	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167
Total Costs	\$17,259	\$16,327
<i>Levelized cost per AF</i>	<i>\$1,327</i>	<i>\$1,255</i>
Benefit-Cost Ratio	2.20	2.33

Sources and Notes:

- Construction Costs include 30% contingency.
- Other Project Costs include project design, management, oversight, land, power, and Contra Costa Water District Settlement Agreement cost shares.
- Benefits and costs evaluated under the 2070 median climate scenario with 1.8 feet of sea-level rise. All benefits and costs are net present values in millions of 2023 dollars.
- A declining discount rate of 2% (2023–2079), 1.9% (2080–2094), 1.8% (2095–2105), 1.7% (2106–2115), 1.6% (2116–2125), 1.5% (2127–2134), 1.4% (2135–2140) is used in accordance with Office of Management and Budget guidance.

1. Introduction

1.1. BACKGROUND ON DELTA CONVEYANCE

The Sacramento-San Joaquin River Delta (Delta) is an expansive network of waterways in Northern California at the confluence of the Sacramento and San Joaquin Rivers. The Delta serves as a critical junction for the distribution of water from the wetter northern and eastern parts of the state to the drier coastal and southern regions through two major water conveyance projects: the State Water Project (SWP) and the Central Valley Project (CVP).⁷ Water conveyed south through the SWP is used to supply residential, agricultural, commercial, and industrial customers in California, including in the South of the San Francisco Bay Area, in the Central Valley, in the Central Coast, and in Southern California. The SWP supports a service area that includes 27 million people with a gross domestic product (GDP) equivalent to the world's eighth-largest economy (\$2.3 trillion). Within this service area, the SWP currently delivers approximately 2.56 million acre-feet of water annually to urban and agricultural customers. However, the SWP infrastructure that moves this water through the Delta is outdated and at risk due to climate change, sea-level rise, and seismic activity. Climate change and sea-level rise are expected to reduce SWP water deliveries by about 22% by 2070. Rising sea levels threaten to increase saltwater intrusion, which can compromise local ecosystems and the quality of water available for export. Furthermore, climate change is expected to bring more extreme weather patterns, including both severe droughts and intense storms. This unpredictability adds stress to existing ecological constraints on storage and conveyance, potentially reducing future deliveries and making their timing more uncertain. Furthermore, the Delta's systems of aging levees, some of which date back to the gold rush era, are vulnerable to failure. A major seismic event in the Delta could lead to numerous levee failures, significantly compromising the conveyance system in the area. This would pose a direct risk to water supply and water quality throughout the region.

The construction of additional conveyance infrastructure in the Delta has been extensively studied in a number of different proposals over several decades. The Department of Water Resources' (DWR's) 1957 California Water Plan suggested a "Trans-Delta System" to convey water; a peripheral canal was part of the original proposal for the SWP. During the 1980s, Governor Brown passed legislation providing for the addition of a peripheral canal in the Delta as part of the CVP. This proposal was extensively studied; however, the legislation was subsequently repealed in a voter referendum in 1982.

⁷ The SWP is a complex system of reservoirs, aqueducts, power plants, and pumping stations. It supplies water to more than 27 million people and irrigates about 750,000 acres of farmland. Planned, built, operated, and maintained by DWR, the SWP is the nation's largest State-owned water and power generator and user-financed water system.

The CVP, managed by the Federal Bureau of Reclamation, serves primarily agricultural users in California's Central Valley. It includes 20 dams and reservoirs, 11 power plants, and 500 miles of major canals, playing a critical role in the region's agricultural productivity.

In 2009, the Bay Delta Conservation Plan proposed by Governor Schwarzenegger studied alternative Delta conveyance facilities, including twin tunnels with a capacity of 9,000 cubic feet per second. A modified version of this proposal, called Cal WaterFix, was proposed in 2015 during Governor Brown's third term. The current Delta Conveyance Project (DCP) proposal considers a single tunnel with a capacity of 6,000 cubic feet per second, along with a new route close to Interstate 5 and a connection to Bethany Reservoir on the California Aqueduct. Authors of this report have been involved in economic analyses for each of these proposals since 2009. Each analysis has used similar methodologies and has consistently found that the benefits of the proposed project exceed its costs, with comparable results in terms of estimated economic benefits.⁸

1.2. THE PURPOSE OF THE DELTA CONVEYANCE PROJECT

The purpose and objectives of the proposed DCP are described in Chapter 2 of the project's environmental impact report (EIR).⁹ The purpose of the DCP is to develop new diversion and conveyance facilities in the Delta to protect the reliability of SWP deliveries, in light of anticipated future climate change and sea-level rise. Operation of these conveyance facilities will help achieve several related objectives by addressing sea-level rise, minimizing the impact of major earthquake events on SWP and potentially CVP deliveries, and protecting the ability of the SWP to deliver water and provide further operational flexibility. If approved, these updates would improve climate resiliency and the reliability of the state's largest source of safe, affordable, and clean water for 27 million Californians and 750,000 acres of farmland, with continued support for local water supply projects, such as local storage, recycling, groundwater recharge, and water quality management projects.

1.3. THE DELTA CONVEYANCE PROJECT

The DCP would modernize the water transport infrastructure in the Delta by adding new facilities in the North Delta to divert water and a tunnel to convey water to the South Delta. The proposed project is described in Chapter 3 of the project's EIR. This analyzes the costs and benefits associated with the preferred project alternative proposed in the EIR—specifically, Alternative 5. Other alternatives outlined in the EIR and additional planning documents are not included in this evaluation.

Key components of the DCP entail upgrading existing SWP infrastructure and establishing two intakes on the Sacramento River, alongside a 45-mile-long tunnel and a pumping station to channel water into Bethany Reservoir on the California Aqueduct. The tunnel, designed with launch, reception, and maintenance shafts, runs

⁸ Sunding, David L. 2018. *Economic Analysis of Stage I of the California WaterFix*. Prepared for the California Department of Water Resources. September 20, 2018.

Hecht, Jonathan, and David Sunding. 2013. *Bay Delta Conservation Plan Statewide Economic Impact Report*. August 2013.

⁹ Delta Conveyance Project. 2023. *Certified Final Environmental Impact Report*. Permits and Regulatory Compliance. Available: <https://www.deltaconveyanceproject.com/planning-processes/california-environmental-quality-act/final-eir/final-eir-document>. Accessed: April 2024. Hereinafter "DCP EIR."

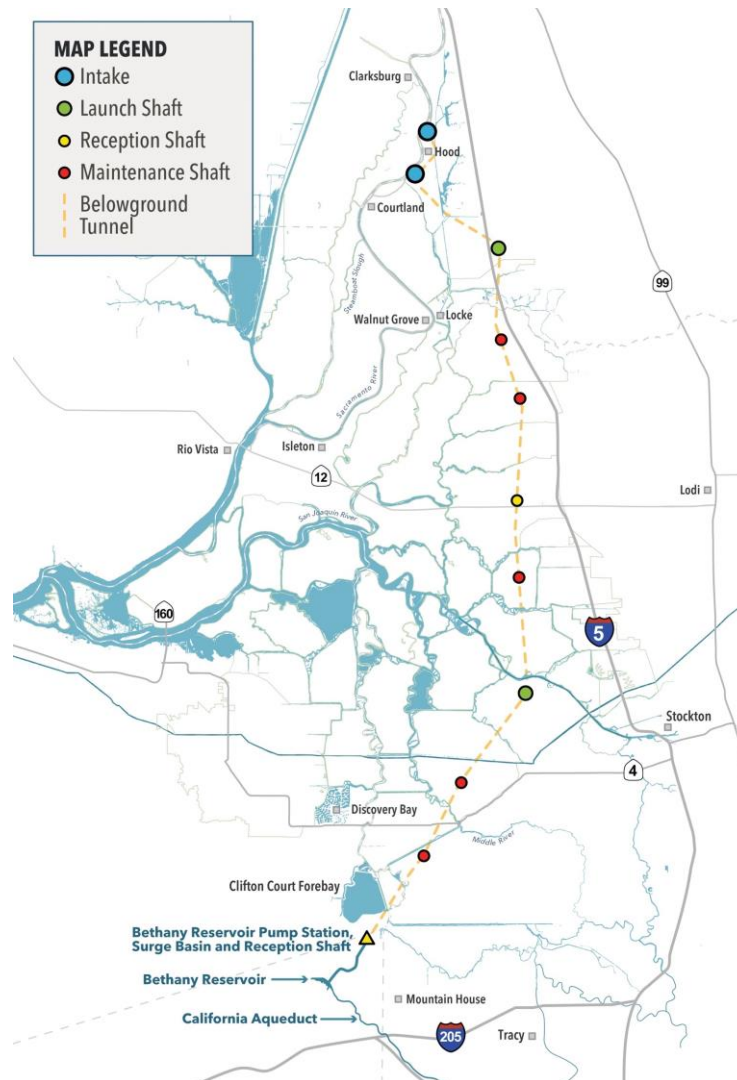
along the eastern perimeter of the Delta, strategically avoiding the central Delta region. The proposed conveyance facilities would have a capacity of 6,000 cubic feet per second. Figure 1 presents a map of the infrastructure that would be built for conveyance in the preferred alternative.

Once the water reaches existing aqueducts and water facilities in the South Delta, it can be conveyed through existing infrastructure to SWP contractors in the Bay Area, Central Coast, Central Valley, and Southern California. These infrastructure enhancements would provide DWR with the flexibility to capture, transport, and store water in accordance with regulatory standards, ensuring its availability during periods of limited supply.

The DCP's increased conveyance capacity will enable increased deliveries of project water to State Water Contractors south of the Delta. The increase in deliveries from the DCP will partially offset the expected reduction in deliveries caused by future climate change and sea-level rise.

The seismic reliability of the DCP ensures the continuous conveyance of water, even during seismic events that might otherwise cause significant disruptions to conveyance operations throughout the Delta. The seismic design criteria adopted for the 45-mile DCP tunnel is based on what is designated as the Maximum Design Earthquake (MDE), an extreme seismic event estimated to happen once every 2,475 years.

Following DWRs currently timeline, in our analysis, preconstruction activities take place between 2026 and 2028. Construction is expected to occur between 2029 and 2044, with subsequent economic benefits estimated over the 100-year operational period from 2045 to 2145.

Figure 1: Map of the Proposed Delta Conveyance Project

Sources: Map of the Delta Conveyance Project, January 2024

2. Framework for Benefit-Cost Analysis

2.1. INFLATION, DISCOUNT RATES, AND RISK

In benefit-cost analysis, as well as in other economic and financial analyses, it is standard to analyze all benefits and costs using “real prices.” For the purposes of this report, all figures are expressed in 2023 dollars. This means that, regardless of the year in which a cost or benefit occurs, the value of the cost or benefit is assessed as if it were occurring in 2023. This is done to account for inflation, the general increase in the price of goods and services over time. Because the upfront investment and benefit streams occur in different years, it is important to measure costs and benefits at different times in comparable units. Using 2023 prices removes the distorting effects of inflation, allowing present-day expenditures to be directly comparable to future benefits and providing a clear basis for evaluating a project's economic viability.

Unexpected inflation should not significantly change the outcome of our benefit-cost analysis. If inflation affects future costs and benefits similarly, changes in the inflation rate will not affect the conclusions of the benefit-cost analysis. Unexpected inflation could skew the project's benefit-cost ratio but only if the inflation experienced disproportionately affects costs relative benefits, or vice versa. This is unlikely for the DCP because the benefits are largely tied to water rates, and costs are associated with construction expenses, whose prices generally move in tandem.

In addition to inflation, benefit-cost analyses must also account for the time-value of money, which recognizes that money available today is worth more than the same amount in the future because it can be used immediately (e.g., to pay for things or to invest and earn more money). This concept is crucial, especially in long-term projects like the DCP, which assumes a 15-year construction and commissioning period starting in 2029 followed by a 100-year operational project life.

To account for the time-value of money, future benefits and costs are discounted at a rate called the “real discount rate.” This is standard in benefit-cost analysis and other infrastructure benefit-cost planning and regulatory analyses.¹⁰ The benefits of money invested at the beginning of the project unfold over 100 years, and the discounting factor incorporates the forgone opportunity cost of the money had it not been invested into the DCP but rather received the risk-free rate of return on savings in a heavily traded market.¹¹

¹⁰ The White House. 2023. *Biden-Harris Administration Releases Final Guidance to Improve Regulatory Analysis*. November 9, 2023. Available: <https://www.whitehouse.gov/omb/briefing-room/2023/11/09/biden-harris-administration-releases-final-guidance-to-improve-regulatory-analysis/>. Hereinafter “OMB Circular A-94.”

¹¹ OMB Circular A-94.

Office of Management and Budget (OMB) Circular A-94 recently updated the guidance on the use of discount rates in benefit-cost analysis. Circular A-94 identifies the real, inflation-adjusted return on long-term government debt is a good measure of the discount rate. The updated long-run discount rate starts at 2% from 2023 to 2079 and gradually falls to 1.4% from 2064 to 2172, reflecting both the social rate of time preference and the expected growth of capital.¹²

It is important to separately account for uncertainty and risk when performing benefit-cost analysis. To account for uncertain but positively correlated discount rates, economists recommend assigning probabilities to future discount rates, resulting in declining certainty-equivalent discount rates.¹³ Because the discount rate captures only the risk-free interest rate, other risks are explicitly accounted for in the benefit-cost analysis (e.g., by simulating a distribution of hydrologic outcomes when assessing the project's water supply benefits, based on historic rainfall patterns and climate change).

The outcome of a benefit-cost analysis is an estimated benefit-cost ratio, the ratio of the discounted present value of benefits to the discounted present value of costs. In this analysis, a project should be considered economically viable if the benefit-cost ratio exceeds some hurdle rate, which is set above one. This hurdle rate is a policy decision that reflects social expectations for the required return on investment. A benefit-cost ratio greater than one does not necessarily mean that the benefits exceed the costs for all parties affected by the project. A more detailed analysis is required to assess the distribution of impacts across different groups because the benefits and costs may not be uniformly distributed.

2.2. DWR AND OTHER AGENCY GUIDANCE

The approach for this benefit-cost analysis is guided by DWR's Economic Analysis Guidebook. The DWR published the guidebook in 2008 as a resource to help DWR economists perform economic analyses through its discussion of economic analysis guidelines, methods, and models, among other topics.¹⁴ In the guidebook, it is preferred that analyses be performed in a manner that is also consistent with the federal Principles, Requirements, and Guidelines (PR&Gs), except where State of California (State) interests might differ from federal interests or where the PR&Gs are considered outdated. As such, the approaches in this report have been made consistent with the federal PR&Gs, despite the fact there is no federal component to this project.

¹² OMB Circular A-94.

¹³ Arrow, Kenneth J., Maureen L. Cropper, Christian Gollier, Ben Groom, Geoffrey M. Heal, Richard G. Newell, William D. Nordhaus, Robert S. Pindyck, William A. Pizer, Paul R. Portney, Thomas Sterner, Richard S. J. Tol, and Martin L. Weitzman. 2014. Should Governments Use a Declining Discount Rate in Project Analysis? In *Review of Environmental Economics and Policy*, Volume 8, No. 2. Available: <https://www.journals.uchicago.edu/doi/full/10.1093/reep/reu008>. Accessed: December 6, 2023.

¹⁴ California Department of Water Resources. 2008. *Department of Water Resources Economic Analysis Guidebook*. January 2008, pp. vii–viii. Hereinafter “CADWR Guidebook.”

The guidebook advocates for an economic evaluation “of all economic costs for structural and non-structural alternatives. These costs include capital, operations, maintenance, and mitigation. Non-monetary costs and benefits must also be taken into account. In addition, identifying how the costs and benefits are allocated among involved parties is an important component of any plan.”¹⁵

The DWR guidebook identifies three common economic analysis methods:

1. **Cost-effectiveness analysis** is used to compare multiple alternatives for achieving an identical set of objectives and identify which alternative achieves those objectives at the lowest cost.
2. **Benefit-cost analysis** estimates all the benefits and costs of a proposed project and compares them to a no-project alternative. In a benefit-cost analysis, a project is considered economically viable if the ratio of a project’s benefits to its costs is larger than some proposed hurdle rate that is greater than one.
3. **Socioeconomic impact analysis** considers the distribution of benefits and costs of a proposed project among different parties.

This report contains only a benefit-cost analysis. It does not determine which of the proposed project alternatives is least costly, and it does not consider the distributional impacts of the proposed project.

The DWR guidebook also emphasizes the importance of incorporating risk and uncertainty into any economic analysis. In this context, risk describes situations where the probability of various outcomes can be measured or estimated, whereas uncertainty arises in scenarios where these probabilities are unknown or unquantifiable. For example, estimating the future distribution of precipitation and hydrologic inflows is a key part of our analysis. In this context, risk is described by our estimates of the probability of a future dry year, with low precipitation and inflows based on historical years. There is remaining uncertainty about the extent of future climate change, which we model by simulating a range of different climate scenarios and examining the robustness of our estimates to different climate assumptions.

2.3. CLIMATE ASSUMPTIONS

This report analyzes a range of possible future climate scenarios to give a full picture of the robustness and uncertainty in estimated benefits and costs. The primary benefit-cost analysis scenario considers changes in precipitation and runoff using a median climate change projection, based on an ensemble of global climate models for the period 2056–2085. The primary scenario assumes 1.8 feet of sea-level rise by 2070, based on guidance from the California Ocean Protection Council for the likely range of sea-level rise under a high emissions scenario. In separate sensitivity analyses, we also consider lesser degrees of climate change, either under existing conditions or 2040 climate conditions. We also consider scenarios with greater and lesser degrees

¹⁵ CADWR Guidebook, p. 3.

of sea-level rise. For a comparison across climate scenarios, refer to the Sensitivity Analyses section of the report.

To simulate the 2070 climate scenarios, meteorologic and hydrologic boundary conditions were developed with 10 Coupled Model Intercomparison Project 5 global climate projections. Historical meteorological data perturbed with the differences observed in the ensemble of selected global climate projections are used to estimate future climate conditions, including runoff, surface water evaporation, and evapotranspiration. Ten hydrologic scenarios are used, each representing one General Circulation Model (GCM). The 10 projections were selected from the 64 datasets of Locally Constructed Analogs, based on three metrics of projected change: the mean annual streamflow, a coefficient of variation of streamflow, and the average annual temperature. The inclusion of projected variability in annual streamflow served as an important factor because it is identified as an important driver affecting California's water supply.¹⁶

Because much of the land in the Delta is below sea level and it relies on more than 1,000 miles of levees for protection against flooding, taking into consideration future sea-level rise scenarios is crucial for analysis.¹⁷ The projections for sea-level rise in the San Francisco Bay considered for this analysis are based on the California Ocean Protection Council's guidance as of 2018.¹⁸ The modeling takes a probabilistic approach, assigning likelihoods of occurrence for potential sea-level rise heights and rates tied to a range of emissions scenarios. The median scenario of sea-level rise is estimated to be 1.8 feet by 2070. The model also produces estimates under extreme scenarios. A 3.5-foot sea-level rise with a probability of occurrence being less than 0.5% is considered in the Sensitivity Analyses section, corresponding to a medium-high risk aversion scenario. Sea-level rise estimates are trained on the Delta hydrodynamic model, then inputted into CalSim 3 through the Artificial Neural Network to simulate the delivery and salinity outputs considered for this analysis.¹⁹

2.4. PROJECT DELIVERIES

The future deliveries under both the project alternative and no-project baseline are simulated with the CalSim 3 model. The climate models discussed in the previous section simulate future precipitation and runoff. The results are then inputted into the CalSim 3 model to simulate future water supply scenarios, water quality estimates, reservoir levels, groundwater levels, and more. CalSim 3's modeled output with the DCP operations, given environmental and regulatory constraints and demand forecasts, compared to the no-project future

¹⁶ DCP EIR, Appendix 30A.

¹⁷ DCP EIR, Appendix 5A, Section B.

¹⁸ California Ocean Protection Council, 2018. *State of California Sea-Level Rise Guidance: 2018 Update*. Sacramento: CA.

¹⁹ DCP EIR, Appendix 30A.

baseline serve as the basis of the benefit analysis. The allocation of deliveries is based on the existing Table A allocations among contractors that joined the Agreement in Principle.

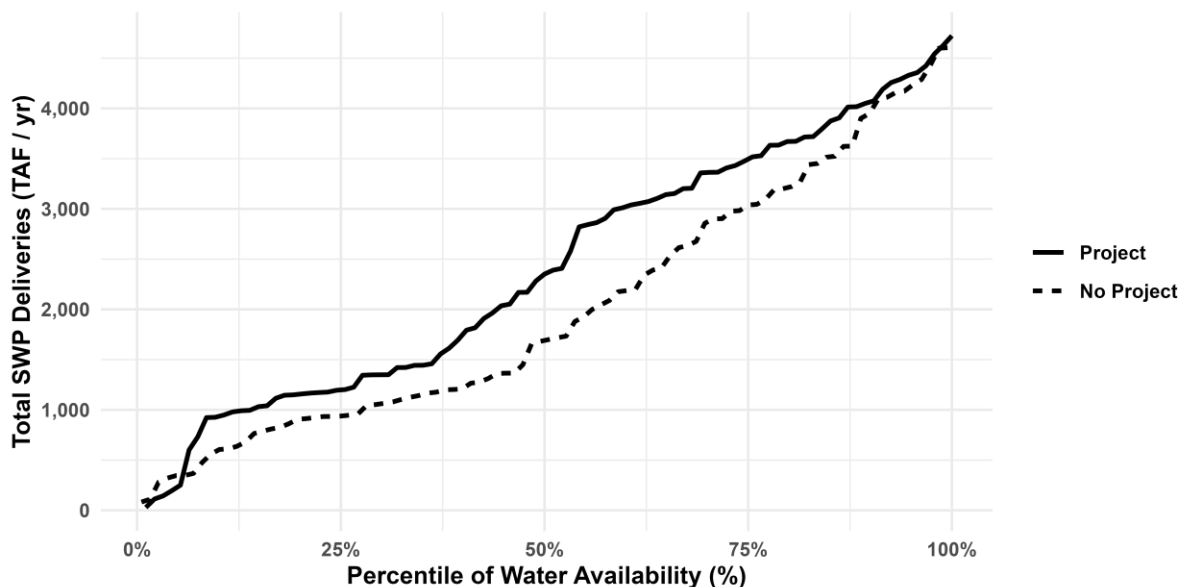
CalSim 3 is a resource planning model that simulates operations of the SWP and CVP under different hydrologic conditions. The model was developed jointly by DWR and U.S. Bureau of Reclamation.

CalSim 3 uses linear programming on monthly timesteps to make water allocation and management decisions.²⁰ The 94 years of historical hydrology from 1921 to 2015, including unimpaired inflows and rainfall runoff, water demands, return flows, and groundwater recharge from precipitation and irrigation, are used to simulate a distribution of outputs, including river and streamflows, reservoir storage, Delta channel flows, exports, and project deliveries. The water supply and quality measures for Delta exports are of particular interest in analyzing the benefits of DCP.

The simulation of future SWP deliveries under both no-project and with project conditions is shown in Figure 2, below. Without DCP, the SWP deliveries range from 150 thousand acre-feet (TAF) to more than 4,000 TAF. The highly variable deliveries are a result of the variable climate conditions of California, characterized by interchanging drought and wet years. The average delivery under the 2070 median climate scenario, with 1.8 feet of sea-level rise without DCP, is 1,990 TAF.

With DCP, the average additional deliveries would be around 403 TAF per year (TAF/yr) compared to a no-project scenario. The additional water deliveries would be substantial during below normal and above-normal water years. However, during extreme drought and the wettest water years, DCP would not substantially increase SWP deliveries. As shown in Figure 2, in the bottom 10th percentile and above the 95th percentile, project deliveries are almost identical to no-project baseline scenarios.

²⁰ DCP EIR, Appendix 5B.

Figure 2: Total State Water Project Deliveries with and without DCP

Sources and Notes: Based on CalSim 3 simulations of SWP deliveries to all contractors under the 2070 median climate change scenario, with 1.8 feet of sea-level rise and 94 simulations of historical hydrology.

2.5. FRAMEWORK FOR ESTIMATION OF WELFARE BENEFITS

Two approaches are commonly used to estimate benefits: those based on market prices and those based on estimating consumers' willingness to pay (WTP). The DWR Economic Analysis Guidebook and the federal PR&Gs identify both approaches as appropriate methodologies for economic analysis, depending on the context.

In a market-based approach, estimates of benefits are based on market prices; this is frequently considered the gold standard in economics because the estimates are a straightforward way to measure and reflect actual market activity. However, markets may not exist or prices might not be observable for benefits in many settings. For example, during droughts and seismic events, utilities typically do not increase prices to ration the water supply, instead relying on unpriced conservation programs and rationing. Furthermore, because extreme droughts and major earthquakes are rare, data may not be available to identify market prices in such contexts. Furthermore, WTP is typically highest during extreme shortages resulting from such rare events. Similarly, water quality is typically not priced in the market but has significant implications for consumer welfare. Finally, many environmental impacts, such as reduced air quality or increased noise and traffic impacts, are not explicitly priced in the market. In these cases, instead of adopting a market approach, benefits are estimated by calculating a consumer's hypothetical WTP, the maximum price the consumer would be willing to pay for a good or service. In these situations, WTP can be estimated by observing behavior in adjacent markets or estimating an economic model of consumer demand.

2.6. SENSITIVITY ANALYSES

To evaluate the robustness of the DCP's economic benefits provided by the DCP under uncertain climate trajectories, a sensitivity analysis is performed under different assumptions of future climate scenarios. Three time periods are considered: 2040 median, 2040 central tendency (CT), and 2070 median.

The two 2040 climate assumptions differ mainly in the ensemble of general circulation models that were used to represent climate change in 2040.²¹ For the 2040 CT scenario, 20 GCM projections are selected by the DWR Climate Change Technical Advisory Group, consisting of 10 GCMs that each consider two future emission scenarios, or Representative Concentration Pathways (RCPs). The 2040 median scenario consists of 10 GCM projections selected by the DWR Climate Change Program. Both 2040 climate scenarios show similar flow patterns, as flow in December–March increases and in April–July decreases consistently. Both 2040 scenarios also assume 1.8 feet of sea-level rise, which has a probability of occurrence of less than 0.5%.

Because DCP becomes operational only after 2040, and benefits unfold for the next 100 years, the 2070 climate scenarios are more relevant for analyzing the benefits. For 2070, the analysis considers both the median climate scenario of 1.8 feet, which has a probability of occurrence of 66%, and the extreme scenario of 3.5 feet, which has a probability of occurrence of less than 0.5%. In addition, further operational assumptions and scenarios with adaptation measures are included to avoid operational constraints associated with conveyance and the operation of the system's major reservoirs.²²

Table 2 compares the deliveries across all seven scenarios considered. The incremental deliveries from the DCP are robust to a wide range of climate assumptions, showing that the project is robust to differing degrees of assumed climate change. Furthermore, deliveries in the 2070 project scenario are similar to non-project deliveries in 2020. As such, the project can be viewed as mitigating 50 years of future climate change by bringing future levels of water supply reliability closer to current levels.

²¹ DCP EIR, Appendix 30A.

²² California Department of Water Resources. n.d. *CalSim 3 Results for 2070 Climate Change and Sea Level Projections and Sensitivity Analysis*.

Table 2: Scenarios Considered in Sensitivity Analyses

Scenario	Main Scenario	Sensitivity Analyses					Existing Conditions
		1	2	3	4	5	2020 EC
		2070 Median w. 1.8' SLR & Adaptation	2070 Median w. 3.5' SLR	2070 Median w. 3.5' SLR & Adaptation	2040 Median w. 1.8' SLR	2040 Central Tendency w. 1.8' SLR	
		[TAF / Yr]					
No Project	1,990	2,019	1,876	1,920	2,098	2,314	2,560
Project	2,393	2,416	2,281	2,315	2,505	2,751	3,014
Difference	403	397	404	395	406	437	454

Sources and Notes: All modeled deliveries are measured in thousand acre-feet and averaged over 94 simulations with historical hydrology. In 2070, analysis is conducted under the median climate scenario along with multiple sea-level rise scenarios and whether adaptation measures are adopted. In 2040, both the median climate scenario and central tendency are considered for analysis. The 2020 EC scenario represents estimated deliveries under existing climate conditions.

3. Urban Water Supply Benefits

A key benefit of the DCP is the increase in water supply reliability for the SWP's urban customers. The SWP supplies water to urban customers in Southern California, the Central Coast, the Central Valley, and the Bay Area.²³ The reliability of the urban water supply has critical implications for public health and safety in urban areas, ensuring consistent access to clean water for drinking, cooking, and sanitation. Water is also critical for daily business operations in the state's commercial and industrial sectors; water supplied south of the Delta by the SWP services an area that accounts for more than half of California's GDP. Business interruptions from disruptions in water supply, if significantly large and sustained, can affect the growth and stability of the local economy.²⁴

The DCP will provide additional water supply that will increase reliability by reducing the frequency and magnitude of shortages during dry periods. This section gives an overview of our approach to estimating the economic benefits of reduced water shortage welfare losses for urban customers resulting from the construction of the DCP. Further details on our approach are provided in Appendix B. For each SWP contractor with urban customers, we estimate urban water supply reliability benefits using the following steps:

1. The level of demand and price sensitivity are forecast for different types of urban water supply customers, including residential, commercial, and industrial customers.
2. Future shortages are forecast for each type of urban customers with and without the DCP.
3. The economic cost of future shortages is estimated for each type of urban customers with and without the DCP.
4. The reliability benefits of the DCP are based on the difference in the economic cost of future shortages with and without the project.

3.1. DEMAND FORECASTS FOR URBAN CUSTOMERS

Our estimates of the benefits of improved urban water supply reliability are based on forecasts of water demand and water conservation for each State Water Contractor. These forecasts are based on each contractor's Urban Water Management Plan (UWMP) or, in the case of Metropolitan Water District (MWD), its Integrated Resource Plan (IRP). Agencies are required to produce these plans every five years to ensure

²³ There are currently 17 participants in the Agreement in Principle: Alameda Zone 7, Alameda County WD, Santa Clara Valley, Empire West Side ID, Kern County WA, SLO FCWCD, Antelope Valley-East Kern, Santa Clarita Valley, Coachella Valley, Crestline Lake Arrowhead, Desert WA, MWDSC, Mojave, Palmdale, San Bernadino Valley, San Gabriel, San Geronio Pass, Ventura County.

²⁴ Boarnet, Marlon, Wallace Walrod, David L. Sunding, Oliver R. Browne. 2022. *The Economic Impacts of Water Shortages in Orange County*. July 2022.

adequate water supplies are available to meet existing and future water needs under California's 2009 Water Conservation Act (SB X7-7). Demand and conservation forecasts are based on various economic, demographic, and climatic characteristics and produced following best management practices under consultation with local communities. Different agencies take different approaches to forecasting future demand; however, these approaches cover the full spectrum of urban water use, including residential, commercial, industrial, institutional, and unmetered water uses.²⁵

In the 2020 UWMPs and MWD's 2020 IRP, agencies project water demands out to 2045. For our analysis, we use these agency-produced forecasts for 2045 and assume no growth in demand during the period for which we simulate DCP operations, 2045 to 2145.

3.2. SHORTAGE ESTIMATES FOR URBAN CUSTOMERS

For urban customers, we define water shortages as the difference between a baseline level of demand, as forecast in urban water management plans, and the actual volume of water made available to customers, based on the realized hydrology in a particular year. In this sense, any reductions in demand relative to the forecast baseline are considered a shortage. The term "shortage" is used to include reductions in consumer demand during drought conditions, including voluntary reductions in response to media campaigns, along with savings from management policies that restrict the scope of when and how water can be used; responses to drought surcharges; and other forms of demand curtailment.

Shortages are estimated using reliability models provided by State Water Contractors, principally an extended version of MWD's IRP Simulation Model (IRPSIM), a supply-and-demand mass balance simulation model that was developed for MWD as a basis for its IRP. IRPSIM forecasts demand using a sales model and simulates supply according to local supplies and imports, SWP supplies, Colorado River Aqueduct supplies, and MWD's storage portfolio. Outputs from the CalSim 3 model are used as inputs in IRPSIM to forecast SWP deliveries. The model accounts for climate change by adjusting inflows from other imported supplies. IRMSIM simulates MWD's

²⁵ Most agencies consider only a single demand scenario in forecasting their future water supply reliability; however, MWD considers four scenarios in its IRP that consider different future demand and supply assumptions. The four scenarios assume different levels of demand and imported water supply, ranging from a scenario with falling demand and stable imports to a scenario with growing demands and reduced imports. The key differences between these scenarios are assumed climate change, regulatory requirements, and economic conditions. For further details, see "2020 IRP – Regional Needs Assessment," The Metropolitan Water District of Southern California, April 2022.

In this analysis, we consider the IRP's Scenario D, which is characterized by growing demand and reduced imports. This scenario most closely comports with our other assumptions pertaining to climate change and population growth. It is described in the IRP as follows: "This scenario is driven by severe climate change impacts to both imported and local supplies during a period of population and economic growth. Demands on Metropolitan are increasing due to rapidly increasing demands and diminishing yield from local supplies. Efforts to develop new local supplies to mitigate losses underperform. Losses of regional imported supplies are equally dramatic."

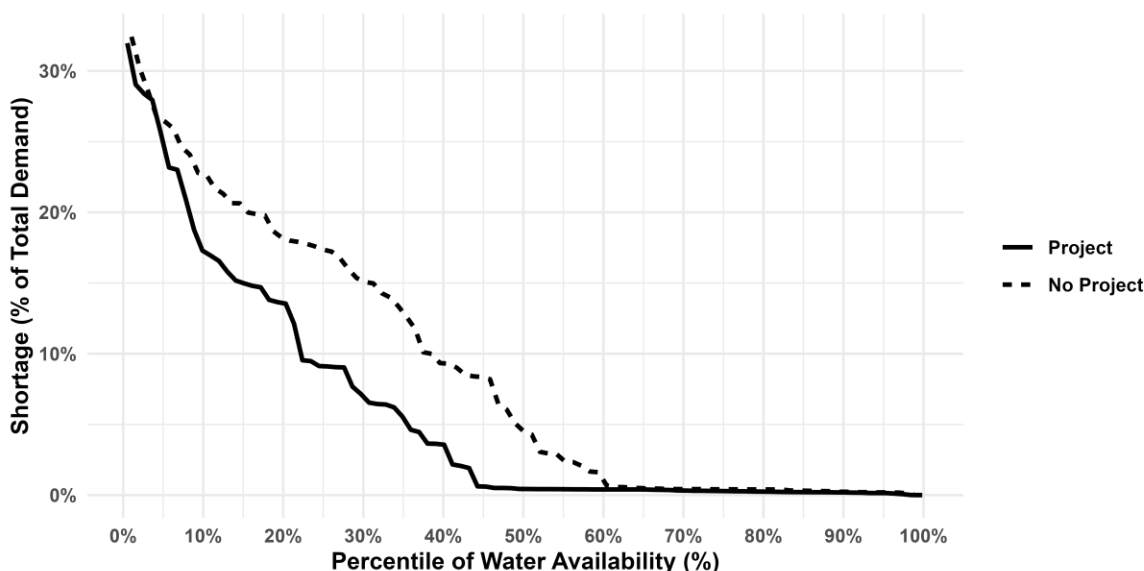
storage portfolio by considering operational constraints, put-and-take capacities, contractual arrangements, and other operational considerations.²⁶

For each year of demand, IRPSIM simulates supply, based on each year of the historic hydrologic trace, adjusted for climate change. This results in 96 trials, based on historical hydrologic data, beginning in 1922. IRPSIM then calculates a distribution of outcomes, allowing MWD to evaluate probabilities of surpluses and shortages and further forecast the magnitude and frequency of shortages. This report uses an extended version of IRPSIM that simulates supply and shortages for most urban State Water Contractors, except the Santa Clara Valley Water District, which provided separate hydrologic modeling for this report that follows a similar methodology, as described in its UWMP.²⁷ Shortages are forecast with and without the DCP, based on demand levels in 2045. Levels of reliability are assumed to remain constant for the duration of the DCPs operating life between 2045 and 2145.

Based on this modeling, the frequency and magnitude of shortages are estimated for 2070 under the median climate change scenario, with 1.8 feet of sea-level rise. Figure 3 summarizes the results. The vertical axis shows the shortages as a percentage of total demand, ranging from 0% to 32%. The horizontal axis shows the frequency of shortages by arranging simulated hydrologic years from the driest (0%) to the wettest (100%). In the no-project scenario, by 2070, there are demand shortages in 61% of all years. Construction of the DCP increases the water supply such that there are shortages in only 44% of all years. In the no-project scenario, there is an average shortage of 9% of total demand. Construction of the DCP reduces the size of the average shortage to only 5% of total demand.

²⁶ MWD 2020 IRP.

²⁷ Santa Clara Valley Water. 2021. *2020 Urban Water Management Plan*. June 2021.

Figure 3: Shortage as a Percentage of Total Urban Water Demand

Sources and Notes: Based on MWD's IRPSIM modeling. The distribution represents 96 simulated shortages under a wide range of historical hydrology and the 2070 median climate scenario with 1.8 feet of sea-level rise.

3.3. ECONOMIC COSTS OF URBAN WATER SHORTAGES

Estimates of the economic costs of urban water shortages are based on an economic model of consumers' WTP to avoid water supply interruptions. Water supply reliability benefits are estimated using a WTP-based approach rather than a market-based approach. Utilities usually rely on non-price mechanisms such as conservation campaigns and water use restrictions to manage demand rather than charging elevated drought rates during droughts. As a result, a market-based approach that estimates water supply reliability benefits only, based on customer rates, would understate the water supply benefits during droughts, which are expected to become frequent due to future climate change and significantly mitigated by construction of the proposed DCP.

To estimate district-specific price elasticities of demand, we rely on econometric models that are estimated in Buck et al. (2016).²⁸ This paper constructs a panel dataset of average monthly water consumption and average rates over five years that covers 75 urban water utilities, including State Water Contractors in the South Bay and

²⁸ Buck, Steven, Maximilian Auffhammer, Stephen Hamilton, and David Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3, No. 3 (2016): 743–778.

Southern California. The authors then perform a log-log panel regression of average monthly water use on water rates and household income. This regression also controlled for weather fluctuations, seasonal effects, and utility-specific and secular trends. The result is an estimate of how changes in price and income affect demand for water, based on relative changes across utilities over time. The paper finds that water demand is less elastic for lower-income consumers. For example, across all State Water Contractors, the average price elasticity of demand is -0.18, meaning that a 10% increase in rates would induce only about a 1.8% reduction in water use. This average estimate varies, based on income; customers in higher-income communities typically have more discretionary water uses, such as larger yards with more landscape irrigation, and so can reduce consumption in a less costly manner during drought. In contrast, lower-income consumers who depend heavily on water for basic needs such as drinking and sanitation experience larger welfare losses to reduce their consumption by a similar amount.

Based on the econometric relationships estimated in this paper, we construct an estimate of the price elasticity of demand for each urban State Water Contractor participating in the DCP and for each member agency of the MWD. The estimates presented in this paper have been updated with current water rates and household income data for each water agency.

Using an economic model described further in Appendix B, we apply a formula that estimates welfare losses based on the size of the shortage, the marginal cost of SWP deliveries, and the estimated price elasticity of demand. The derived welfare loss function exhibits a declining marginal utility of water, meaning the larger the welfare loss per unit of shortage, the larger the magnitude of the shortage. This behavior implicitly captures complexities in water consumption behavior; for example, when shortages are small, customers can reduce water use relatively cheaply by reducing outdoor irrigation, leading to relatively small unit welfare losses. However, as shortages become more severe, consumers must reduce water use in more costly ways that might directly affect daily household activities or business operations, leading to much larger unit welfare losses. This behavior is also consistent with drought management plans that utilities are required to put in place to identify the least costly way to meet different levels of conservation.

For each year we simulate, we calculate welfare losses for 96 trials, based on the historical hydrologic trace between 1922 and 2018. Average welfare losses across all simulations are then calculated separately for each district participating in the DCP using customer-specific elasticity estimates and retail water rates.²⁹ Significant costs are associated with forecast shortages due to forecast reductions in supply as a result of climate change; in the no-project scenario, more than 61% of all years are expected to have water shortages, leading to annual welfare losses of more than \$1.1 billion.

²⁹ Note that currently the reliability estimates are calculated only for Metropolitan Water District and Santa Clara Valley Water. Estimates of welfare losses are then extrapolated to all other agencies. However, the final economic analysis will incorporate water district-specific estimates that will be produced once modeling of district specific shortages becomes available.

3.4. WATER SUPPLY RELIABILITY BENEFITS

The quantified economic benefits of the DCP in terms of improved water supply reliability are based on the change in the frequency and size of water shortages between the project and no-project scenarios. As previously discussed, the costs of shortages are calculated for each State Water Contractor and MWD customer using an economic model that estimates customer welfare losses from shortages, based on the frequency and size of shortages in each district and district-specific rates and demand elasticities. The economic benefits of the DCP for urban customers are estimated as the difference in the welfare losses from shortages between the project and no-project scenarios. Using this approach, the present value of improved water supply reliability is estimated to be worth, on average, more than \$33.3 billion in 2023 dollars over the project's lifetime. These benefits amount to an average value of \$2,560 for every additional acre-foot of water supplied to urban customers from the DCP's operations. However, there is significant variability in the benefits of these deliveries, depending on the prevailing hydrologic conditions. In the driest 5% of years, additional deliveries from the DCP have an average value of between \$6,000 and \$9,000 per acre-foot.

4. Agricultural Water Supply Benefits

The DCP is estimated to deliver, on average, an additional 148.5 TAF/yr of water to agricultural contractors. Agricultural State Water Contractors may use the additional water supplied by the DCP to grow crops, to recharge or otherwise offset deficits in groundwater extraction, or to sell to other customers in urban sectors.

We take two approaches to estimating water supply benefits to agricultural users. The first approach is a demand-based approach that uses a planning model to estimate the shadow value of water in the Central Valley, based on unmet demands for water of agricultural activity in the Central Valley. The second approach is a market-based approach, based on an index of the prices for water transfers in the Central Valley.

4.1. VALUATION OF WATER USE IN AGRICULTURE – SWAP MODEL

The benefits of agricultural water supply are estimated using a WTP approach that identifies the “shadow price” of water, based on a model of agricultural production in the Central Valley. The SWAP is a multi-region, multi-input and output economic optimization model that simulates agricultural production in California.³⁰ The model is widely used for policy analysis and planning purposes by the state and federal agencies.

SWAP simulates the behavior and decisions of farmers under the assumption of profit maximization in a static competitive market subject to resource, technical, and market constraints. With 37 regions in the model, 27 of which are in the Central Valley, SWAP provides detailed data coverage and production estimates for agricultural water supply and cost changes. The SWAP model takes account of water supplies (SWP and CVP, other local supplies, and groundwater) into production cost-effectiveness optimization by adjusting the crop mix, water resource availability, and land fallowing.³¹

The SWAP model is widely used in recent studies. It is considered an appropriate and conservative approach for estimating DCP’s agricultural water supply benefits. Based on the SWAP model, the marginal value of agricultural water is \$301 per acre-foot in 2023 dollars.

³⁰ UC Davis Center for Watershed Sciences. n.d. *SWAP Model*. Available: <https://watershed.ucdavis.edu/project/swap-model>.

³¹ UC Davis Center for Watershed Sciences. n.d. *A Brief Overview of the SWAP Model*. Available: <https://watershed.ucdavis.edu/doc/water-economics-and-management-group/brief-overview-swap-model>.

4.2. VALUATION OF WATER USE IN AGRICULTURE – MARKET APPROACH

In addition to a WTP based approach for estimating the benefits of the SWP for the agricultural sector, we also adopt a market-based approach. To provide a comprehensive valuation of marginal agricultural water value, we estimate the water supply benefits of the DCP. The water transfer includes voluntary buying and selling of a quantifiable allocation between a willing seller and buyer; the price of water set in the water bidding process reflects people's perceived marginal value of water.

This analysis relied on the empirical Nasdaq Veles California Water Index. Developed in conjunction with Westwater Research and Veles Water, the index reflects the commodity value of water at the source, not accounting for transportation costs or losses.³² The price data are aggregated from the five largest and most actively traded markets in California, with Southern California being the most active market.³³ The water is priced weekly and on a per-acre-foot basis, reflecting the prevailing market price for water transactions. The Nasdaq Water Index price is a spot price that reflects the short-term value of water; to estimate a long-run value for agricultural water, we average the historical weekly prices over the entire history of the water index from September 2019 to April 2024. Using this approach, the marginal value of water use in agriculture is \$646 per acre-foot in 2023 dollars.

In the benefit-cost analysis, we assess the value of additional SWP deliveries in the agricultural sector, based on the average of the prices estimated using the WTP and the market-based approaches, a value of \$474 per acre-foot in 2023 dollars. With an average additional delivery of 148.5 TAF/yr to the agricultural water users, the estimated total benefit is \$68.5 million per year.

³² Nasdaq. 2024. *Nasdaq Veles California Water Index*. Available: <https://www.nasdaq.com/solutions/nasdaq-veles-water-index>. Accessed: December 8, 2023.

³³ Ibid.

5. Water Quality Benefits

Construction of the DCP will reduce the salinity of water supplies exported south of the Delta to customers in both the urban and agricultural sectors. This improvement in water quality will be a result of some SWP deliveries being conveyed through the proposed tunnels directly to the Banks Pumping Plant where they will be exported through the California Aqueduct rather than being conveyed through more saline parts of the Bay Delta.

Chapter 9 of the EIR quantifies the impacts of the operations of the DCP on a number of different water quality dimensions in the Delta and the Delta's export service area. Water quality is evaluated under project and no-project scenarios using Delta Simulation Model II (DSM2). Based on this modeling, construction of the DCP would reduce the average salinity of Delta exports by 22 milligrams per liter (mg/l), from 237 mg/l under the project scenario to 215 mg/l under the no-project scenario. Note that this average conceals the significant variability of the change in water quality, which is highly correlated with the volume of export volumes and seasonal flows.

The DCP's operations will improve water quality for SWP contractors on two dimensions. First, the DCP will improve the water quality of exports themselves. Secondly, it will lead to a substitution toward relatively higher-quality SWP water and away from lower-quality sources such as groundwater or water imported from the Colorado River.

5.1. WATER QUALITY FOR URBAN WATER CUSTOMERS

The benefits of improved water quality due to the DCP are estimated in the SWP's Southern California service area and evaluated using the Salinity Economic Impact Model (SEIM).³⁴ The SEIM, a product of a collaborative effort between the Bureau of Reclamation and MWD, is designed to evaluate the economic impact of salinity changes in Southern California and the broader Lower Colorado River service area.

Within Southern California, the SEIM model estimates economic impacts for each of the 15 subregions, accounting for region-specific water supply conditions and economic variables. For each subregion, estimates of salinity costs are based on demographic data, water deliveries, total dissolved solids (TDS) concentrations, and sector-specific cost relationships. To simulate the overall salinity of urban water, SEIM explicitly accounts for the distribution and blending of different water sources within each region, including local surface water and groundwater, desalinated seawater, and the water from the Colorado Aqueduct, along with water delivered through the Delta to the East and West Branch Aqueducts of the SWP. The weighted average salinity in terms of

³⁴ Metropolitan Water District of Southern California and Bureau of Reclamation. 1999. *Salinity Management Study, Final Report*.

TDS is estimated in terms of mg/l for each region. Economic impacts are calculated for different end uses of water, including residential, commercial, industrial, utilities, groundwater, recycling, and wastewater, based on region-specific demand estimates for each end use.

In the residential sector, the SEIM assesses the damage caused by salinity through its reduction in the useful life of household appliances like water heaters, faucets, and washing machines. It also models the costs of avoidance strategies, such as the installation of water softeners and the purchase of bottled water. In the commercial sector, the SEIM estimates the share of regional water use in sanitary, cooling, landscape irrigation, kitchen, laundry, and other uses; estimates of economic impacts are based on a unit price in each use category. Similarly, in the industrial sector, estimates of economic impacts are based on the total volume of water used in each sector and sector-specific estimates for the cost of demineralization and softening as well as for specific industrial applications such as cooling towers and boiler feed.

To estimate the salinity benefits from the construction of the DCP, estimates of the salinity of project water exported from the Banks Pumping Plant into the California Aqueduct from the DSM2 model are inputted into the SEIM under the project and no-project scenarios. The SEIM then estimates the salinity deliveries on the West Branch Aqueduct and East Branch Aqueduct of the SWP in Southern California.

Table 3 summarizes the annual urban water quality benefits estimated by the SEIM model. Based on this modeling, improvements in water quality as a result of DCP operations lead to an annual benefit of more than \$41 million in terms of reduced economic impacts as a result of improved water quality. These benefits are accounted for primarily by benefits to residential customers, improved quality for recycled water, and reduced impacts on groundwater resources. Note that this estimate does not include estimates of the benefits to agricultural customers, which are accounted for separately in the next section. This estimate also does not include benefits to urban customers outside of Southern California, who are not accounted for in this model.

5.2. WATER QUALITY FOR AGRICULTURAL WATER CUSTOMERS

The analysis of water quality benefits to agriculture also focuses primarily on the impact of reduced salinity on water treatment costs and yield losses. Crop production and yield are greatly affected by the salinity of the crop's root zone. High salinity in the crop's root zone creates unfavorable osmotic pressure for the plants to absorb water.³⁵ This hindered water absorption induces physiological drought within the plant, even if the soil contains abundant water.³⁶ The salinity threshold for yield losses is below 10 decisiemens per meter (dS/m) for most crops grown in the region. Some sensitive crops such as alfalfa, beans, and maize start to experience yield

³⁵ University of California Salinity Management. 2024. Crop Salinity Tolerance and Yield Function. Available: https://ucanr.edu/sites/Salinity/Salinity_Management/Effect_of_soil_salinity_on_crop_growth/Crop_salinity_tolerance_and_yield_function/.

³⁶Ibid.

losses below two dS/m.³⁷ Salt-tolerant crops such as cotton and barley also start to experience declining yields when the soil's electrical conductivity reaches eight dS/m.

Irrigation using river or groundwater that contains salts is the primary man-made cause of soil salination. After irrigation water is applied to the soil, the water gradually evaporates or absorbed by a plant, leaving the dissolved salts in the soil. To reduce the salinity level in the soil, farmers adopt a common practice of applying excess irrigation water that drains the salt downward past the root zone, called leaching. The more saline the irrigation water is, the more excess water is required for leaching the salt away from the plant's root zone.

For the salinity benefit to agricultural water users, we calculated the amount of irrigation water savings from leaching due to reduced salinity with the DCP project alternative. Detailed crop coverage data are obtained from the U.S. Department of Agriculture (USDA). For each crop, the irrigation requirements and leaching fractions to lower the salinity level below yield loss thresholds are used to calculate the annual leaching savings in each water district benefiting from the DCP. Overall agricultural irrigation water use would be reduced by nearly 6,000 acre-feet annually. Along with the agricultural water cost estimates produced by the SWAP model and the water transfer market, the annual savings on irrigation water amounts to more than \$3 million. The breakdown of agricultural water quality benefits is summarized in Table 3, below. The San Joaquin Valley benefits the most from agricultural water quality improvement, at nearly \$2.9 million annually, while Southern California's annual benefit is nearly \$300,000.

Because the EIR assessment predicted a slight increase in salinity in the Delta, we also estimate the costs of increased salinity on agricultural water users in the Delta. The CalSim 3 model predicts an increase in electrical conductivity of 0.008 dS/m on average across the Delta. Although deemed "less than significant" in the EIR, we still quantified the costs of increased Delta salinity and incorporated them in the analysis of remaining environmental impacts after mitigation. Overall, the benefits of improved salinity to downstream agricultural water contractors significantly outweigh the cost of the small increase in salinity in the Delta region.

Similar to the urban water quality analysis, this water quality analysis provides a conservative estimate of total DCP water quality benefits. Because this analysis focuses only on salinity improvement, it does not explicitly price many other measures of water quality improvements, such as reductions in pollutants, pathogens, and man-made chemicals that pose health risks.

³⁷Ibid.

Table 3: Water Quality Benefits

Urban Water Quality Benefits	Millions of 2023 \$
Residential	\$12.0
Commercial	\$4.3
Industrial	\$0.6
Utilities	\$0.1
Groundwater	\$15.8
Recycled Water	\$8.4
Total	\$41.2
Agricultural Water Quality Benefits	
Southern California	\$0.3
San Joaquin Valley	\$2.9
Total	\$3.2
Total Annual Water Quality Benefits	\$44.4

Sources and Notes: Urban water quality benefits based on SEIM model simulations.

Agricultural water quality benefits based on soil leaching water savings analysis.

5.3. WATER QUALITY IN THE DELTA

The EIR evaluates construction and operation of the project on a number of dimensions of water quality, including on boron, mercury, nutrients, organic carbon, dissolved oxygen, selenium, pesticides, trace metals, and total suspended solids and turbidity relative to existing conditions and concludes that the impact on water quality from construction of the project alternatives would be less than significant.³⁸ Operation of the proposed project facilities has the potential to affect water quality through differences in Delta inflows from the Sacramento River, relative to existing conditions, resulting in increased proportions of the other Delta inflow waters (such as eastside tributaries, the San Francisco Bay, and the San Joaquin River) in some regions of the Delta.³⁹ The EIR concludes that changes in bromide, chloride, and electrical conductivity (EC) would be less than significant.

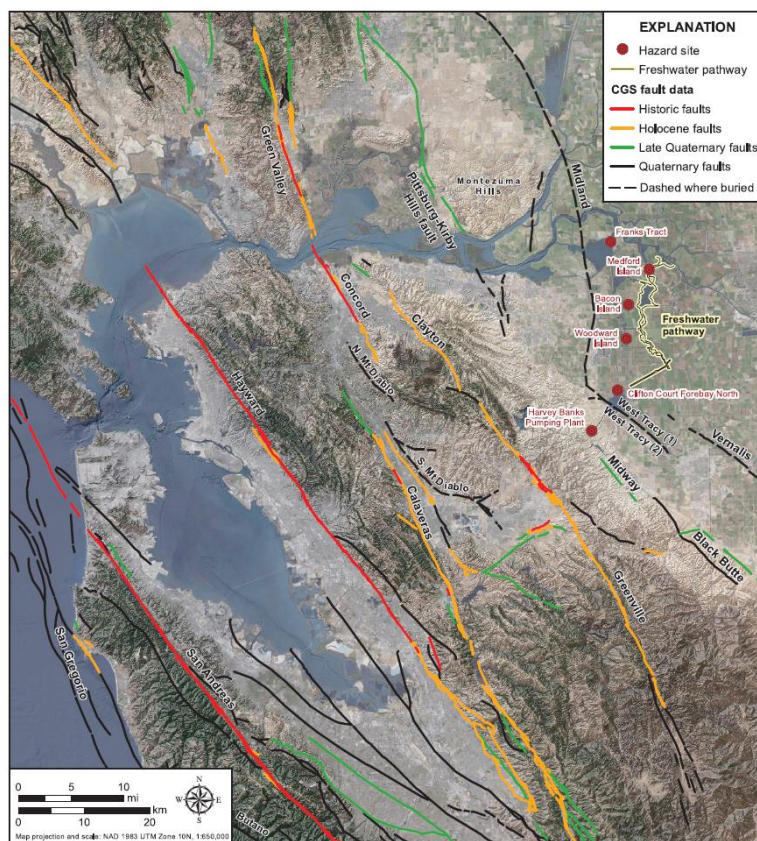
³⁸ DCP EIR, Chapter 9.

³⁹ Ibid.

6. Improvements to the Seismic Reliability of the SWP

A key objective of the DCP is to mitigate the impact of seismic events on the Delta's water conveyance infrastructure. By adding redundancy to the current conveyance infrastructure, DCP will help mitigate the impact of seismic events on the quantity and quality of water delivered south of the Delta. Therefore, it would minimize the potential for adverse public health and safety impacts from a major earthquake.

Figure 4: Major Fault Lines near the Delta



Sources and Notes: “Delta Flood Emergency Management Plan – Supplement C, “ California Department of Water Resources, October 2018.

There are many active faults surrounding the Delta. Figure 4 displays active faults and historical seismicity near the Delta. The USGS analyzed the earthquake potential of the faults in the Bay Area. The Hayward-Rodgers Creek fault poses the highest probability of generating an earthquake of magnitude 6.7 or greater in the following 30 years, at 27%. The estimates of maximum magnitude range from 6.5 to 7.3. Other than the Hayward-Rodgers Creek fault, there are a couple of smaller faults adjacent to or below the Delta. The West Tracy fault, passing beneath the Clifton Court Forebay at the southwestern part of the Delta, is estimated to

have a maximum magnitude of 6.25 to 6.75. The Midland fault that passes beneath the western margin of the Delta has the potential to produce an earthquake of magnitude 7.1. The Greenville fault, the easternmost part of the San Andreas fault system and located southwest of the Banks Pumping Plant, has the potential to generate earthquakes ranging from 6.6 to 7.2.⁴⁰

Active faults, along with land subsidence and poor, highly organic soils that are subject to liquefaction and settlement, make earthquakes the greatest risk associated with flooding. A large earthquake in the San Francisco Bay Area could cause levees in the Delta to breach, leading to an inundation of brackish water in areas where existing SWP and CVP pumping plants operate in the southern Delta. Historically, levee failure and breaches have occurred for various reasons. In the past century, there were 161 breaches of Delta levees. Despite there being few breaches since the 2000s, the Upper Jones Tract levee failure in 2004 demonstrated that there are still significant breach risks.⁴¹

In any major seismic event with significant brackish water invasion, conveyance through the Delta will most likely be impossible for an extended period. A major seismic event could also damage the SWP and CVP conveyance infrastructure in the Delta. Cessation of conveyance through the Delta for any extended period of time would pose major reliability challenges to State Water Contractors south of the Delta. This could lead to shortages significantly more severe than those posed by dry-year events.

DCP project facilities are designed to withstand at least a 500-year return-period earthquake while maintaining system operational capability. For some more complex or difficult-to-repair facilities, a much higher return period event is assumed for design. Building the DCP serves as an insurance policy that would allow at least some water to continue to be delivered south of the Delta in the event of a major earthquake.

It is difficult to precisely quantify the likelihood and water supply impacts of different seismic events that may occur. These impacts will depend on the location, magnitude, and nature of the seismic event; the number and location of levee failures; and the response to repairing failed levees. Furthermore, the economic costs of water supply interruptions from a major seismic event will also depend on other factors, including the hydrologic and economic conditions that influence the water demand. Rather than attempting to provide a comprehensive analysis of the likelihood and impacts of the full range of hypothetical seismic events that could occur in the Delta region, we instead describe a hypothetical seismic scenario and estimate the impacts and economic costs associated with this scenario.

⁴⁰ Wong, Ivan G., Patricia Thomas, Nora Lewandowski, and Dennis Majors. 2021. Seismic Hazard Analyses of the Metropolitan Water District Emergency Freshwater Pathway, California. In *Earthquake Spectra*, Volume 38(2), 981–1020, 2022, DOI: 10.1177/87552930211047608.

⁴¹ California Department of Water Resources. 2018. *Supplement C – Water Project Export Disruptions for Multiple-Island Breach Scenarios Using the Delta Emergency Response Tool*. May 2018.

The Delta Emergency Response Tool (ERT) is used to simulate Delta levee failures and help forecast impacts and develop response mitigation strategies. The ERT allows a user to test various response strategies to each simulated scenario and helps support decision-making. The ERT simulated 11 base scenarios, ranging from four to 20 breached islands, of which Scenario 1 represents a 500-year earthquake. Scenario 1 simulated a 20 island/ 50 breach event, with a total flooded volume of 1,296 TAF.⁴² Figure 5 shows the specific breach locations. Export disruption and water quality are modeled under a range of hydrologic conditions, including specific scenarios involving severe flood and drought conditions. Eight different response strategies were simulated in an incremental approach, and for each strategy, ERT modeled the distribution of export disruption time, Delta recovery time, and response cost across 20 hydrologic simulations for each response strategy. Out of the eight responses, the Middle River Corridor Strategy results in a shorter disruption time than the basic strategy and a lower cost compared to the cumulative strategy.⁴³ The cost of restoring the seismic damage consists of three parts: breach repair cost, island dewatering cost, and barrier repair cost. For the Middle River Corridor Strategy, the costs are \$1.4 billion, \$35 million, and \$31 million, respectively.⁴⁴

The Middle River Corridor Strategy attempts to construct a freshwater pathway from the northern Delta to the pumps in the southern Delta. It accomplishes this by prioritizing the repair of levees along the Middle River and installing channel barriers to isolate the corridor from the rest of the Delta. Without the DCP, under the Middle River Corridor Strategy, the export disruption ranges from six days to 448 days, with an average of 203 days. The Delta recovery time, defined as the time required for the Delta water quality to recover to the level with no breach, ranges from 11 days to 498 days, with an average of 306 days. Under the DCP alternative, we considered two scenarios for analysis: DCP operating at 6,000 cubic feet per second (cfs) capacity and DCP operating at 500 cfs health and safety levels. These scenarios reflect the maximum and minimum balance at which DCP might be able to operate under the seismic event; however, the exact operation is uncertain and affected by other infrastructure.

Table 4 outlines benefits under the DCP alternative for different disruption and DCP operation scenarios. Assuming the DCP operating at the minimum health and safety levels, the average avoided water supply disruption benefits amount to \$2.36 billion, and the improved water quality benefits amount to \$2.65 million. Assuming the DCP operating at capacity during an earthquake event, the average avoided water supply disruption benefits amount to \$28.4 billion, and improved water quality benefits amount to \$31.6 million. Assuming a 500-year return period, the net present value of the DCP is estimated to be \$1.8 billion when it operates at capacity and \$152 million when it operates at health and safety levels. The overall seismic benefit

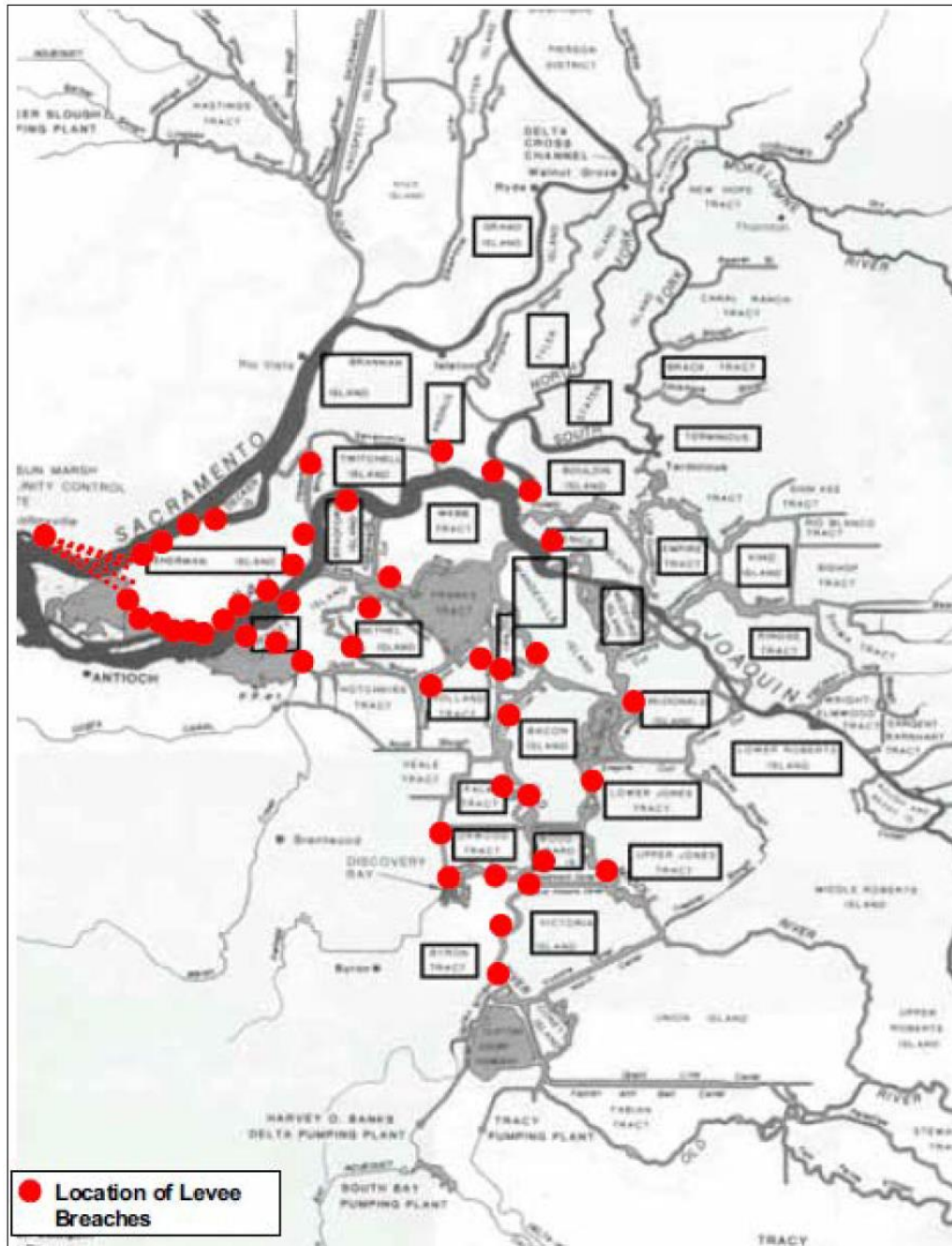
⁴² Ibid.

⁴³ The assumptions of the seismic analysis, based on the ERT, is significantly more conservative compared to an economic analysis this team previously produced for the WaterFix project. The previous analysis assumed more breaches and islands flooded and a significantly more probable earthquake event with a 100-year return period.

⁴⁴ Ibid.

estimate takes into account the full range of scenarios by averaging the net present-value estimates under various export disruption, Delta recovery duration, and DCP operating scenarios.

Figure 5: Seismic Scenario Levee Locations



Sources and Notes: Seismic scenario with 50 levee breaches and 20 flooded islands. "Delta Flood Emergency Management Plan – Supplement C, "California Department of Water Resources, October 2018.

Table 4: Benefit Summary under Seismic Disruption Scenarios

Scenario	Export Disruption Days	Delta Recovery Days	Benefits during Seismic Event		Net Present Value w. 500-year Return Period	
			\$ millions, 2023		\$ millions, 2023	
			Water Supply Benefits	Water Quality Benefits	Water Supply Benefits	Water Quality Benefits
DCP Operates at Health & Saftey Levels (500 CFS)						
Minimum Disruption	6	11	\$63.3	\$0.5	\$4.1	\$0.2
Average Disruption	203	306	\$2,141.3	\$5.3	\$138.1	\$0.3
Maximum Disruption	448	498	\$4,725.6	\$10.9	\$304.9	\$0.7
Average			\$2,310.1	\$5.6	\$149.0	\$0.4
DCP Operates at Capacity (6,000 CFS)						
Minimum Disruption	6	11	\$759.5	\$6.3	\$49.0	\$0.4
Average Disruption	203	306	\$25,695.7	\$63.3	\$1,657.8	\$4.1
Maximum Disruption	448	498	\$56,707.7	\$130.4	\$3,658.5	\$8.4
Average			\$27,721.0	\$66.7	\$1,788.4	\$4.3

Sources and Notes: Benefits calculated under the 20 island / 50 breach scenario with the Middle River Corridor response strategy.

All benefits valued in millions of 2023 dollars.

7. Other Benefits not Explicitly Valued

The analysis of benefits in the previous four sections concentrates solely on those that can be reliably measured and quantified. However, the DCP is expected to yield additional benefits that are not included in this analysis, primarily because the necessary data to quantify them are unavailable.

- The DCP creates **redundancy in the Delta conveyance** that will enhance short-term operational flexibility in the Delta. At certain times, this additional flexibility may allow short-term actions to be undertaken to either increase SWP deliveries (e.g., Article 21 water) or improve water quality. However, this benefit-cost analysis relies on CalSim 3 modeling that has a monthly time step and therefore lacks the granularity to quantify these short-term operational benefits. Therefore, these benefits are underestimated in our current modeling analysis. For example, if the DCP had been operational between January 1 and March 9, 2024, DWR estimates that an additional 909 TAF of water could have been captured by the DCP due to fishery-related regulatory constraints in the South Delta. These constraints are not reflected in our current modeling, resulting in an understatement of program benefits.⁴⁵
- The costs estimate for the DCP includes a **Community Benefits Program**,⁴⁶ which is anticipated to fund a variety of specific local projects such as enhancing public safety, improving water and air quality, and developing educational programs and recreational facilities like parks and walking trails. However, this analysis has not attempted to quantify any benefits arising from these investments.
- The DCP could play a role in the **conservation of groundwater resources** in the Central Valley and other parts of California. The increase in SWP deliveries will be a substitute for groundwater in the SWP service area. To the extent that the DCP leads to a reduction in groundwater demand, it will help agencies achieve the goals under the Sustainable Groundwater Management Act (SGMA). A reduction in groundwater demand could also lead to higher groundwater levels and consequently reduced pumping costs. These benefits have not been quantified in this analysis.

⁴⁵ See California Department of Water Resources. 2024. *Missed Opportunity*. March 2024. Available: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Delta-Conveyance/Public-Information/DCP_Missed-Opportunity.pdf.

⁴⁶ California Department of Water Resources. 2022. *Community Benefits Program Overview*. June 2022.

8. Project Costs

The DCA has produced two cost estimates for the DCP. The primary cost estimate, based on the project's specifications outlined in the EIR, projects the total design and construction cost at approximately \$20.1 billion in undiscounted 2023 dollars. A secondary estimate, referred to as the “project-wide innovations and savings estimate,” considers potential cost reductions through design, construction, and management innovations that do not alter the core project specifications. These innovations lower construction costs by \$1.2 billion, bringing the estimate to \$18.9 billion. These cost estimates are broken down in Table 5, below.⁴⁷

The cost estimates cover various phases and components of the project. Construction costs, which include major works on tunnels, aqueducts, intakes, and a pumping plant, are detailed in both estimates. For example, in the primary estimate, construction costs include \$1.7 billion for two 3,000 cfs intakes, \$6.4 billion for tunnels and shafts, and \$3.2 billion for the pumping plant and related structures, with a 30% contingency adding another \$3.5 billion. The secondary estimate slightly reduces these costs due to the anticipated innovations.

In addition to construction costs, other significant expenses include design, planning, and management, which total \$3.3 billion in the primary estimate and \$3.1 billion in the secondary cost estimate with project-wide innovations.

Other costs, totaling \$1.78 billion, are the same in both the primary and secondary cost estimates. These expenses cover land acquisition, environmental mitigation, power, a settlement agreement with the Contra Costa Water District, and a community benefits program. Further details on the environmental mitigation and community benefits programs are provided in the sections below.

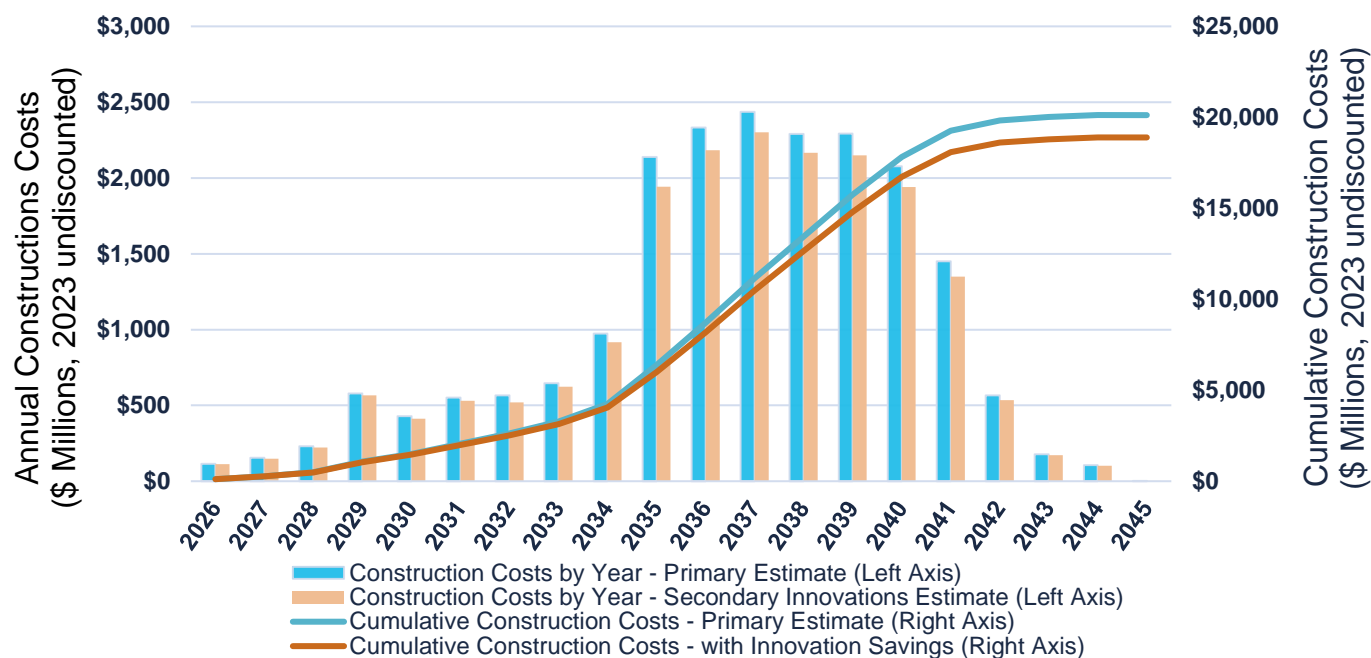
Construction is scheduled to take place between 2029 and 2044, with the highest rate of spending focusing on the tunnels and aqueducts occurring between 2035 and 2040. Before 2029, expenditures are mainly for project design, planning, and land acquisitions. The project's cumulative cost trajectory is displayed in Figure 6 below.

⁴⁷ Note that these are undiscounted and not directly comparable to the costs presented in Table 1 and Table 8.

Table 5: Project Construction Costs

Cost Category	Primary Cost Estimate	Costs w. Project-wide Innovations & Savings
Construction	\$ Millions, 2023	
Intakes	\$1,714	\$1,678
Main Tunnels	\$6,353	\$6,130
Pumping Plant & Surge Basin	\$2,536	\$2,160
Aqueduct Pipe & Tunnels	\$563	\$485
Discharge Structure	\$99	\$58
Access Logistics & Early Works	\$253	\$234
Communication	\$13	\$13
Restoration	\$17	\$17
Construction Subtotal	\$11,548	\$10,775
Contingency (30%)	\$3,464	\$3,233
Total Construction Cost	\$15,012	\$14,008
Other Project Costs		
DCO Oversight	\$426	\$398
Program Management Office	668	\$623
Engineering/ Design /Construction Management	\$2,167	\$2,022
Permitting and Agency Coordination	\$67	\$63
Total Planning/Design/Construction Management	\$3,328	\$3,106
Land	\$158	\$158
DWR Mitigation	\$960	\$960
Power	\$415	\$415
CCWD Settlement Agreement	\$ 47	\$47
Community Benefits Program	\$200	\$200
Total Other Costs	\$1,780	\$1,780
Grand Total	\$20,120	\$18,894

Sources and Notes: Costs measured in millions of undiscounted 2023 dollars and not escalated to the time of construction. For the secondary cost estimate, the planning, design, and construction management costs are assumed to be the same percentage of construction as the primary cost estimate. Cost estimate provided by the DCA.

Figure 6: Construction Costs by Year

Sources and Notes: DCA Cost Estimate, March 2024

8.1 ENVIRONMENTAL MITIGATION COSTS

The design and construction of the DCP incorporate environmental commitments and best management practices to minimize the environmental impacts of the project's construction and operation, as required under the California Environmental Quality Act (CEQA). The project's EIR evaluates its environmental and socio-economic impacts on more than 20 different areas. The report proposes mitigation measures to meet requirements under CEQA (i.e., the project adopts feasible mitigation measures where available to reduce significant impacts to a "less-than-significant" level). The DCA budgets \$960 million for proposed mitigation measures to meet these requirements. These costs include items for tribal monitoring, mitigation plan development, habitat mitigation (including compensatory mitigation), and other significant mitigation, as described in the EIR.

For some environmental impacts identified in the EIR, it is not feasible to mitigate impacts to less-than-significant levels. In these cases, compensatory measures and resource specific mitigation are considered.⁴⁸ The

⁴⁸ DCP EIR.

costs associated with remaining environmental impacts that cannot be mitigated to less-than-significant levels are estimated in Section 10 and Appendix C and incorporated into the benefit-cost analysis.

8.2 COMMUNITY BENEFITS PROGRAM

The proposed DCP includes a \$200 million Community Benefits Program to support local communities affected by the project, beyond what's required by CEQA and other laws. This program will collaboratively provide resources to those most affected, including tribal groups, local residents, government agencies, non-governmental organizations, and other Delta stakeholders.⁴⁹

The program consists of two main parts:

- The **Delta Community Fund** aims to finance projects that preserve and enhance the Delta's cultural, historical, recreational, agricultural, and economic aspects through community-led initiatives. It will support projects related to water and air quality, public safety, recreation, habitat conservation, cultural celebrations, economic growth, transport and communication infrastructure, agriculture, education, and levee maintenance.
- The **Economic Development and Integrated Benefits Program** will focus on economic growth by hiring locally and involving businesses in construction of the DCP. It also includes plans to build or repurpose construction features for community use.

⁴⁹ EIR, Appendix 3G, California Department of Water Resources.

9. Operation and Maintenance Costs

The DCP's annual operations and maintenance (O&M) costs were estimated by the DCA and DWR to be approximately \$52.6 million per year in undiscounted 2023 dollars. This estimate includes DWR's O&M labor, materials, equipment refurbishments and replacements, power, and restoration sites during the first 100-year lifespan of the proposed project.⁵⁰ Table 6 breaks down the annual DCP O&M costs for each component listed in the formula above.

The facility O&M cost is calculated with the labor rates of relevant civil engineers, mechanical engineers, electrical engineers, and hydroelectric plant technicians and contractors. The material costs include periodic activities such as sediment removal and disposal, repaving, and sealing roadways and parking lots. The power cost associated with moving water through the DCP system is estimated using CalSim 3 monthly modeling, averaging over all water year types, including critical and dry years. The O&M costs associated with restoration sites, including farmland, levee, channel margin, tidal, and other habitats, consist of ground and vegetation management, access work, monitoring, and other restoration needs.

Table 6: Operation and Maintenance Costs

Category	Annual O&M Costs
	\$ Millions, 2023
Water Facility Costs	
Facility O&M	\$17.5
Material Cost	\$0.5
Power Cost	\$2.7
Capital Equipment Refurbishment	\$4.8
Capital Equipment Replacement	\$18.7
Restoration sites Costs	
Restoration sites O&M Cost	\$84
Total Annual O&M Costs	\$52.6

Sources and Notes: Average annual power cost only includes the energy needed to convey 621,266 AF of water through the tunnel from the North Delta Intake to an average South Delta elevation. It does not include the energy needed to move additional water through the entire SWP system. From DWR's O&M annual cost estimate basis for Bethany reservoir alternative memorandum.

⁵⁰ California Department of Water Resources. 2024. *O&M Annual Cost Estimate Basis for Bethany Reservoir Alternative*. April 2024.

10. Remaining Environmental Impacts after Mitigation

This section provides a brief overview of the estimation of the costs associated with environmental impacts identified as being “significant” or “significant and unavoidable” after mitigation in the project’s EIR. Additional details on these impacts and the process for estimating the associated costs is provided in Appendix C. Of the 223 areas for environmental and socio-economic impacts reviewed in the EIR, impacts on eight of these areas are identified as being “significant and unavoidable” after proposed mitigation measures. For four of these areas, aesthetic, cultural, paleontological, and tribal impacts, we do not attempt to assign any costs to the remaining economic impacts because there is not a generally accepted economic best practice for valuing costs of those nature. In four remaining areas, we estimate the costs of remaining environmental impacts following best practices from the economics literature:

- Lost agricultural land in the Delta
- Construction-related air quality impacts
- Construction-related noise impacts
- Construction-related transportation impacts

To ensure our assessment considers all salinity impacts of the DCP, including both benefits and costs, this section also quantifies the costs related to increased salinity for agricultural water users in the Delta, even though the EIR found this increase to be insignificant.

In terms of lost agricultural land, the construction of the DCP will result in both permanent and temporary effects on certain land parcels in the Delta. To value the loss of farmland, we rely on average market or rental prices by county and crop type. In present-value terms, the total cost of the farmland conversion is estimated to be \$22.6 million, of which \$2.9 million is associated with temporary farmland conversion and the remaining \$19.7 million is associated with permanent farmland conversion. Of the permanent impacts, the crop types with the highest value of converted land are alfalfa, grapes, and almonds.

Project construction will increase airborne emissions across three California air districts: Sacramento Metropolitan Air Quality Management District (SMAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and the Bay Area Air Quality Management District (BAAQMD). These increased emissions will impose social costs to affected areas, which we quantify using estimates published by the U.S. Environmental Protection Agency (EPA). Applying these social cost metrics to total estimated pollution emissions attributable to the DCP, we estimate a total social cost of \$48.7 million in present-value terms. Note that this section does not estimate the impacts of greenhouse gas emissions associated with construction and operation of the DCP because these emissions will be offset by a proposed mitigation program that is included in the project’s costs.

DCP construction is also expected to create noise nuisance in the local areas surrounding construction sites. The impact of construction noise on residents can best be quantified using the hedonic pricing method. Based on a review of relevant literature, we assume a temporary 14% drop in residential home prices for approximately 800

homes affected by project noise for the duration of the noise impacts.⁵¹ This temporary price drop is applied to average housing values in the relevant property and rental markets. In present-value terms, we estimate a total of \$6 million in remaining noise impacts across the construction period after mitigation measures are undertaken. This estimate does not include the cost of the mitigation measures, such as window replacement and temporary relocation, whose costs are accounted for as part of the project's environmental mitigation costs.

Finally, DCP construction will most likely affect 120 road segments. To calculate the economic impact of the travel delays on these road segments, we consider historical traffic data and each roadway's speed limit. Then, by approximating the average speed of travel on a congested roadway, we obtain the increased travel time resulting from DCP construction. Multiplying this by a range of opportunity costs for time lost due to traffic, we estimate the social cost to be \$78.8 to \$105.3 million, with a midpoint of \$84.7 million in present-value terms.

The estimated impact of increased salinity on Delta yields, calculated in present-value terms, is \$68.53 million due to the higher demand for irrigation water. Modeling from the EIR indicates this increase to be an average change in EC of 0.008 dS/m across the Delta. Although this change in salinity is deemed "less than significant" in the EIR, these costs are still incorporated into our analysis. Similar to cost discussion in Section 5.2, the costs of increased salinity are based on the additional water requirements to leach soils and manage salinity levels. Using detailed crop coverage data from the USDA, the calculation included the irrigation requirements and leaching fractions necessary to maintain salinity below the thresholds that cause yield loss.

Table 7, below, summarizes the total cost of the remaining environmental costs after mitigation quantified in this report. The total cost of these impacts after mitigation is \$248 million in present-value terms, or \$167 million in discounted terms.

Table 7: Costs of Remaining Environmental Impacts after Mitigation

Total Costs	\$ Millions, 2023
Agriculture	\$25.9
Air Quality	\$61.3
Noise	\$7.7
Transportation	\$84.7
Delta Salinity	\$68.5
Total	\$248.1

Sources and Notes: All costs measured in millions of 2023 undiscounted dollars. See Appendix C for cost breakdown within each category.

⁵¹ We use the low end of the 14% to 18% range estimated by a 2016 study on housing price impacts from railroad noise.

11. Benefit-Cost Ratio and Sensitivity Analysis

11.1. BENEFIT-COST RATIO ESTIMATE

Table 1, shown in the executive summary, presents the results from our main benefit-cost scenario. The primary estimate, based on a 2070 median climate scenario with 1.8 feet of sea-level rise, shows an overall benefit of \$38.0 billion, measured in discounted 2023 dollars. The majority of this benefit comes from urban water supply, valued at \$33.3 billion (87%). Agricultural water supply benefits, the second-largest component, are valued at \$2.3 billion. The DCP also significantly enhances water quality, providing \$1.3 billion in benefits for urban customers and \$90 million for agricultural customers. In addition, by adding redundancy to the existing water supply infrastructure, the expected benefits for a 500-year earthquake include \$969 million for reduced water supply disruption and \$2 million for improved water quality.

On the cost side, two scenarios are considered: the primary scenario, based on the costs of building the project as currently described in the EIR, and a secondary scenario, incorporating project-wide innovations and savings. When discounted to present values, the total costs in the primary scenario, including construction, other project costs, the Community Benefit Program, environmental mitigation, O&M costs, and the costs of remaining environmental impacts, amount to \$17.3 billion. The secondary scenario, with project-wide innovations and savings, the total costs amount to \$16.3 billion. The levelized cost of water from the DCP is calculated by discounting the total costs of the project over its lifetime and then dividing this by the discounted total volume of water deliveries. In the primary scenario, this results in a cost of \$1,327 per acre-foot, while in the secondary scenario, which includes project-wide innovations and savings, the cost is \$1,255 per acre-foot.⁵²

The benefit-cost ratio is calculated by dividing the present value of total benefits by the present value of total costs. In the primary scenario, we find a benefit-cost ratio of 2.20, and in the secondary scenario, the ratio is 2.33. This means that for every dollar spent on the DCP, the expected benefits are worth \$2.20 in the primary scenario and \$2.33 in the secondary scenario. Under either cost estimate, the benefits of the project significantly exceed the costs.

⁵² Levelized cost of water is calculated with the formula $LCOW = \frac{\sum_{t=1}^n \frac{C_t}{(1+r_t)^t}}{\sum_{t=1}^n \frac{Q_t}{(1+r_t)^t}}$ where C_t is the cost associated with the DCP at time t , Q_t is the volume of additional SWP deliveries as a result of the DCP at time t , and r_t is the discount rate at time t .

This methodology is described in more detail here:

Fane, Simon, J. Robinson, and S. White. 2003. The Use of Levelized Cost in Comparing Supply and Demand Side Options. In *Water Science and Technology: Water Supply* 3, No. 3 (2003):185–192.

11.2. SENSITIVITY ANALYSES

Table 8 compares the results from the main benefit-cost scenario to five sensitivity scenarios. The primary estimate, as discussed in Section 2.3, is based on a 2070 median climate scenario with 1.8 feet of sea-level rise. The sensitivity analyses compare benefits of the project under various climate, sea-level rise, and adaptation scenarios.

Sensitivity analysis 1, which incorporates adaptation measures into the main scenario, estimates total benefits and a benefit-cost ratio of \$38.0 billion and 2.20, respectively. The adaptation assumptions in Scenario 1 include improved SWP operations. However, their impact on contractors is mixed (i.e., relaxed water quality standards and the fallowing policy enhance water supply reliability, while Delta export restrictions diminish it). Overall, benefits still exceed costs, and the net impact of the adaptation assumptions is nearly zero.

Sensitivity analyses 2 and 3 assume an extreme sea-level rise of 3.5 feet and find higher benefits due to the low DCP deliveries and water supply reliability in the no-project scenario. Scenario 2 has benefits of \$45.4 billion and a benefit-cost ratio of 2.63. Scenario 3, which adds the adaptation assumptions, has benefits of \$42.3 billion and a benefit-cost ratio of 2.45.

Sensitivity analyses 4 and 5 are based on 2040 climate scenarios and therefore reflect less severe climate change and water scarcity. Analysis 4, using a median ensemble of climate models, finds benefits of \$30.6 billion and a benefit-cost ratio of 1.78, while Analysis 5, using a CT ensemble, finds benefits of \$26.6 billion and a benefit-cost ratio of 1.54.

Across all scenarios, the benefits of the DCP range from \$26.5 billion to \$45.4 billion, consistently exceeding costs and passing the benefit-cost ratio test. The DCP is economically viable and robust under various future climate scenarios, with the greatest benefits seen in the extreme 2070 median scenario, with a 3.5-foot sea-level rise. Even in the 2040 scenarios, the benefits still outweigh the costs.

Table 8: Sensitivity Analysis

	Main Scenario	Sensitivity Analyses				
		1	2	3	4	5
		2070 Median w. 1.8' SLR	2070 Median w. 1.8' SLR & Adaptation	2070 Median w. 3.5' SLR	2070 Median w. 3.5' SLR & Adaptation	2040 Central Tendency w. 1.8' SLR
\$ Millions, 2023	Benefits					
Urban Water Supply and Reliability	\$33,300	\$33,395	\$40,847	\$37,729	\$25,940	\$21,642
Agricultural Water Supply and Reliability	\$ 2,268	\$ 2,221	\$2,211	\$2,165	\$2,317	\$2,520
Urban Water Quality	\$ 1,330	\$ 1,330	\$1,330	\$1,330	\$1,330	\$1,330
Agricultural Water Quality	\$ 90	\$ 90	\$90	\$90	\$90	\$90
Seismic Reliability Benefits (Water Supply)	\$969	\$969	\$969	\$969	\$969	\$969
Seismic Reliability Benefits (Water Quality)	\$ 2	\$ 2	\$2	\$2	\$2	\$2
Total Benefits	\$37,960	\$38,008	\$45,449	\$42,285	\$30,648	\$26,553
	Costs					
Construction Costs	\$11,486	\$11,486	\$11,486	\$11,486	\$11,486	\$11,486
Other Project Costs	\$ 3,021	\$ 3,021	\$3,021	\$3,021	\$3,021	\$3,021
Community Benefit Program	\$153	\$153	\$153	\$153	\$153	\$153
Environmental Mitigation	\$735	\$735	\$735	\$735	\$735	\$735
O&M Costs	\$ 1,697	\$ 1,697	\$1,697	\$1,697	\$1,697	\$1,697
Environmental Impacts after Mitigation	\$167	\$167	\$167	\$167	\$167	\$167
Total Costs	\$17,259	\$17,259	\$17,259	\$17,259	\$17,259	\$17,259
Benefit-Cost Ratio	2.20	2.20	2.63	2.45	1.78	1.54

Sources and Notes: All benefits and costs are measured in millions of discounted 2023 \$. A declining discount rate is used from 2% to 1.4%, consistent with guidance from OMB. The primary estimate considers the 2070 median climate with 1.8 feet of sea-level rise. The sensitivity analyses vary in terms of climate assumptions, sea-level rise, adaptation measures introduced to reduce operational risks for the State Water Project

12. Conclusions

This report has conducted a benefit-cost analysis of the proposed DCP. The project's benefits are estimated in terms of water supply reliability and water quality, in light of anticipated climate change, future sea-level rise, and seismic risks. The project's costs are estimated in terms of capital and O&M costs as well as the costs of mitigated and unavoidable environmental impacts. We consider the difference in the total benefits and costs between a scenario in which the proposed project is built and a no-project scenario. We estimate a benefit-cost ratio of 2.20.

In addition to the primary estimate of the benefit-cost ratio, a number of sensitivity analyses are conducted that consider various scenarios for climate and sea-level rise. The additional deliveries under the project scenario relative to the no-project scenario are similar across all sensitivity analyses, and consequently, the benefit-cost ratio remains above 1.5 in all scenarios. The DCP's benefits tend to increase in scenarios with more extreme climate change, assuming the project continues to deliver similar incremental water supplies.

Appendix A: Works Cited

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Appendix B: Additional Details on Estimation of Urban Water Supply Reliability Benefits

This appendix provides additional details on the methodology that is used to estimate the urban water supply reliability benefits. These benefits are estimated using a framework that is described in several peer-reviewed academic papers including Brozovic et al. (2007), Buck et al. (2016), and Buck et al. (2023) and the text in this appendix has been closely adapted from those works.⁵³

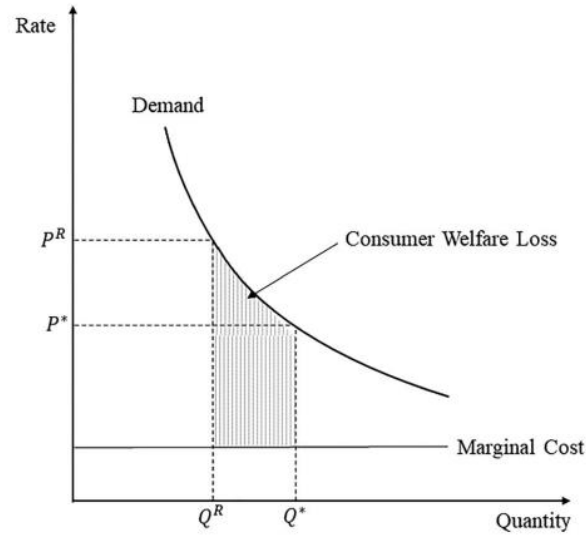
B.1. FRAMEWORK FOR CONSUMER WELFARE LOSS ANALYSIS

Urban consumers are evaluated using a measure of willingness to pay to avoid observed water supply reductions. This same approach is adopted in other works in the recent peer-reviewed literature including Brozovic et al. (2007), Buck et al. (2016), and Buck et al. (2023). Under this approach, welfare losses are measured as the area under an estimated demand curve and above estimated marginal costs. Figure B-1 shows a visual illustration of this area representing the consumer welfare losses experienced in response to water supply disruptions. The demand curve in Figure B - 1 depicts a constant-elasticity demand curve, a curve in which a one percentage change in water prices leads to a constant percentage change in consumption of water at any baseline level of consumption. In this figure the welfare loss from a reduction in water supply from Q^* to Q^R is equal to the area shaded in grey. This welfare loss has two components: 1) a consumer welfare loss equal to the triangle that is shown with an arrow on the figure and 2) a loss in revenue for the utility that is equal to the square below the triangle or $P^*(Q^* - Q^R)$. The remainder of this sub-section uses economic theory to formalize this approach to estimating consumer welfare losses.

⁵³ Brozović, Nicholas, David L. Sunding, and David Zilberman. 2007. Estimating Business and Residential Water Supply Interruption Losses from Catastrophic Events. In *Water Resources Research*, 43, No. 8 (2007).

Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

Buck, Steven, Mehdi Nemati, and David Sunding. 2023. Consumer Welfare Consequences of the California Drought Conservation Mandate. In *Applied Economic Perspectives and Policy*, 45, No. 1 (2023):510–533.

Figure B - 1: Depiction of Welfare Losses under Demand Curve

Source: Buck, Steven, Mehdi Nemati, and David Sunding. "Consumer Welfare Consequences of the California Drought Conservation Mandate." *Applied Economic Perspectives and Policy* 45, no. 1 (2023): 513.

The severity of the water supply disruption in region i at time t is denoted as $z_{it} \in [0; 1]$, where $z_{it} = 0$ corresponds to a complete outage and $z_{it} = 1$ corresponds to the baseline level of service. Let $f_{it}(z_{it})$ represent the probability density function of residential water disruption z_{it} in region i at time t and let $W_i(z_{it})$ denote consumer willingness to pay to avoid a supply disruption z_{it} in region i at time t . For a period of duration T until baseline water service is reestablished, consumer willingness to pay to avoid a cumulative service disruption across sectors I regions and T periods is given by:

$$W = \sum_{t=1}^T \sum_{i=1}^I \int_0^1 W_i(x) f_{it}(x) dx$$

with x as the variable denoting the values z_{it} can assume. For a given region and time, the computation of $W_i(z_{it})$ involves integrating the area under a demand curve for a supply disruption level of z_{it} . Specifically, willingness to pay to avoid a supply disruption of magnitude z_{it} in region i at time t can be defined as:

$$W_i(z_{it}) = \int_{Q_i(z_{it})}^{Q_i^*} P_i(x) dx,$$

where $P_i(Q_i)$ is the (inverse) demand function for residential water in region i , $Q_i^* = Q_i(z_{it} = 1)$ is the baseline quantity of water delivered to residences in region i prior to a supply disruption, and $Q_i(z_{it})$ is the quantity of supply available after a water supply disruption in region i at time t .

Consumer willingness to pay to avoid a (contemporaneous) water supply disruption of a given magnitude i is calculated for each region by constructing an aggregate demand curve to represent the residential water segment. For utilities with a uniform pricing structure, $P_i^* = P_i(Q_i^*)$ is the volumetric rate paid by residential homeowners under baseline conditions prior to the water supply disruption in region i . For regions with an increasing block pricing (IBP) structure, P_i is the marginal rate paid by a representative residential consumer in region i corresponding to the tier on which the last unit of household water consumption occurred.

Ratepayer welfare losses that result from water supply disruption in a given market are mitigated to the extent that delivering a smaller quantity of water reduces the system-wide cost of water service. The ratepayer welfare loss that occurs in region i following a water supply disruption is therefore the difference between the measure in the first equation and the avoided cost of service. If water service is characterized by constant unit cost at the prevailing baseline price level, P_i , then the avoided cost of service is $P_i^*(Q_i^* - Q(z_{it}))$, and the ratepayer welfare loss following a water supply disruption of a given magnitude reduces to the usual consumer surplus triangle.

Let $c_i(z_{it})$ denote the avoided unit cost of service in region i at time t . Accordingly, the contemporaneous ratepayer welfare loss in region i of a given magnitude water supply disruption is given by:

$$L_i(z_{it}) = \int_{Q_i(z_{it})}^{Q_i^*} P_i(x) - c_i(x) dx$$

Once again, notice that the contemporaneous welfare loss in this equation corresponds with a consumer surplus measure in the case where $c_i(z_{it}) = P_i^*$. In this case, the equation reduces to:

$$L_i(z_{it}) = \int_{Q_i(z_{it})}^{Q_i^*} P_i(x) dx - P_i^*(Q_i^* - Q(z_{it}))$$

The expression for losses in the above equation is a lower bound on the economic loss experienced by ratepayers and corresponds to the case of marginal cost pricing. For a period of duration T until baseline water service is reestablished, the ratepayer welfare loss in the residential (R) sector resulting from a cumulative service disruption across I regions and T periods is given by:

$$L^R = \sum_{t=1}^T \sum_{i=1}^I \int_0^1 L_i(x) f_{it}(x) dx$$

where $L_i(z_{it})$ is defined in the previous equation. We note that L^R represents aggregate expected losses across I regions between the current period and period T , which reflects the value of a perfectly reliable supply.

B.2. ECONOMETRIC MODEL OF WATER DEMAND

To operationalize the theory in Section B.1, we need to estimate the function $P_i(Q_i)$. A key parameter in estimating $P_i(Q_i)$ is the price-elasticity of demand. We rely on estimates of demand elasticity produced in Buck et al. (2016).⁵⁴ This paper estimates utility-specific demand elasticities from a panel of utility service area level water price and consumption data. The main challenge in this estimation is avoiding simultaneity bias, typically addressed by including year fixed effects and considering utility fixed effects to control for unobserved time-invariant characteristics. The study avoids the endogeneity issue, common with increasing block price schedules, by using the median tier price of each utility's tiered pricing schedule and instrumenting this price with lagged prices. Additionally, the research considers different pricing structures, like uniform pricing and increasing block pricing (IBP), as they may affect the estimated price elasticity of demand. The study addresses the complications introduced by increasing block pricing by using an instrumental variables approach where price tiers are used as instruments for the median price.

The authors estimate a regression consumer demand on water rates using the following equation:

$$\ln(q_{it}) = \beta_1 \ln(\widetilde{p_{it}}) + \beta_2 \ln(\widetilde{p_{it}}) \ln(y_{it}) + \mu_i + \tau_t + \xi_{it}$$

Where q_{it} is average consumption in utility i at time t . $\ln(\widetilde{p_{it}})$ is an instrumented measure of median rates, y_{it} is median household income within the utility service area, μ_i are utility fixed effects, τ_t are year and month fixed effects and ξ_{it} are controls for weather. Using this approach, the authors produce the regression estimates shown below in Table B - 1.

In the paper, these estimated coefficients are subjected to a number of robustness checks regarding impact of increasing block pricing, drought, and other omitted variables and found to be reliable. Since the data in this paper is dated, in the next section we recalculate utility-specific demand elasticity estimates based off of the most recent data on each utility's rates, income, and demand.

⁵⁴ Buck, S., M. Auffhammer, S. Hamilton, and D. Sunding. 2016. Measuring Welfare Losses from Urban Water Supply Disruptions. In *Journal of the Association of Environmental and Resource Economists*, 3(3), 743–778.

Table B - 1: Econometric Estimate of Water Demand from Buck et al. (2016)

	OLS (1)	OLS (2)	IV (3)	OLS (4)	IV (5)
ln(Price)	0.173 (0.120)	-0.100*** (0.033)	-0.143*** (0.046)	-0.591*** (0.194)	-0.637*** (0.242)
ln(Price) x ln(Income)				0.110** (0.041)	0.113** (0.050)
Observations	453	453	453	453	453
Weather controls	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Utility fixed effects	No	Yes	Yes	Yes	Yes

Note.—Standard errors clustered at the water utility level reported in parentheses.

* p < .10.

** p < .05.

*** p < .01.

Source: Buck, S., Auffhammer, M., Hamilton, S., & Sunding, D. (2016). "Measuring Welfare Losses from Urban Water Supply Disruptions," *Journal of the Association of Environmental and Resource Economists*, 3(3), 743-778.

B.3. ESTIMATION OF WELFARE LOSSES

This subsection describes the derivation of the function that is used to estimate welfare losses from water shortages. This derivation is presented in more detail in Buck et al. (2016). We assume a constant elasticity of demand specification:

$$P_i = A_i Q_i^{1/\varepsilon_i}$$

for $i = 1 \dots n$, where ε_i is the price elasticity of water demand in region i and A_i is a constant. Let P_i and Q_i , respectively, denote the retail water price and quantity of water consumed by residential households in region i under baseline conditions. For a given water supply disruption with an available level of water given by $Q_i(z_{it}) < Q_i^*$, it is helpful to define the relationship between these quantities in terms of the percentage of water rationed in region i at time t , r_{it} , as

$$Q_i(z_{it}) = (1 - r_{it})Q_i^*.$$

Based on the preceding equations, the welfare loss following a supply disruption of magnitude z_{it} in region i at time t can be calculated as:

$$L_i(z_{it}) = \frac{\varepsilon_i}{1+\varepsilon_i} P_i^* Q_i^* \left[1 - (1 - r)^{\frac{1+\varepsilon_i}{\varepsilon_i}} \right] - \int_{Q_i(z_{it})}^{Q_i^*} c_i(x) dx.$$

Under the assumption of a flat marginal cost curve, we can rewrite this equation in terms of average loss per unit of shortage:

$$\frac{L_i}{Q_i^* r_{it}} = \frac{\varepsilon_i}{1+\varepsilon_i} P_i^* \left[1 - (1 - r_{it})^{\frac{1+\varepsilon_i}{\varepsilon_i}} \right] / r_{it} - c_i,$$

where c_i is a constant per unit marginal cost. This makes clear that conditioned on a supply disruption r_i , the welfare implications of a supply disruption in a particular region depends on heterogeneity in (i) price elasticities, (ii) initial prices, and (iii) the variable cost of water service, where ii and iii provide insight into the extent to which fixed costs are bundled into volumetric rates.

Using the above equations, we calculate welfare losses from shortages for State Water Contractors and Metropolitan Water District customers under both the project and no-project scenarios. In our calculations, P_i is each districts' median-tier water rate. Where possible we rely on forecast rates for the year 2045 that are produced as part of the district's planning process. Otherwise, current rates are used based on the most recent available data. It is assumed that there is no increase in real rates for the duration of our estimate. Where a State Water Contractor is a wholesaler that serves multiple retailers, a median rate is calculated across all retailers. Baseline Demand, Q_{it}^* , is based on each demand forecast produced by each district as part of their resource planning process. Shortages, r_{it} , are calculated based on district specific reliability modeling. Long-run variable costs for water deliveries, c_i , are calculated based on data reported in the State Water Project's Bulletin 132-19.⁵⁵

Due to the constant elasticity of demand assumption, welfare losses in our model are unbounded as shortages become increasingly large. In the model, we have limited consumer welfare losses at a marginal value of \$10,000 per acre-foot, which is approximately equal to the costs of providing emergency water supplies to residential and commercial customers via truck.⁵⁶

⁵⁵ California Department of Water Resources. n.d. *Bulletin 132, Management of the California State Water Project*.

⁵⁶ Brozović, Nicholas, David L. Sunding, and David Zilberman. 2007. Estimating Business and Residential Water Supply Interruption Losses from Catastrophic Events. In *Water Resources Research*, 43, No. 8 (2007).

Appendix C: Additional Details on Costs of Remaining Environmental Impacts after Mitigation

This appendix provides further details on the estimation of the costs of remaining environmental impacts after mitigation provided in Section 10 of the report. The Environmental Impact Report is a comprehensive study that identifies the significant environmental and social impacts associated with the construction of the Delta Conveyance Project. It assesses impacts in over twenty areas and identifies mitigation measures to offset them. After mitigation, remaining environmental impacts are quantified or identified as ‘Less than Significant.’ The proposed mitigation project will be financed by the environmental mitigation costs discussed in Section 0 and incorporated into the DCA’s cost estimates. Several environmental impacts are still identified as being significant after mitigation efforts, particularly in terms of lost agricultural land in the delta region and construction-related air quality, noise, and transportation impacts.

C.1. LOST AGRICULTURAL LAND IN THE DELTA

The EIR identifies parcels of land that would be affected by construction of DCP and categorizes impacts to them as either permanent or temporary. Permanent impacts are described as “resulting from the physical footprint of project facilities” and as “land that cannot be returned to farmland.”⁵⁷ Impacts that would last for the duration of construction, but for which there also exists post-construction uncertainty were additionally designated as permanent. Temporary impacts are those which would be “largely limited to the duration of construction activities at a given site but could be returned to active farmland after cessation of construction activities.”⁵⁸

To value permanent loss of farmland, we rely on the average market prices for farmland by county and crop type. Temporary loss of farmland is valued using the annual rental price by county and crop type. Non-agricultural land impacted by construction, such as seasonal wetlands and miscellaneous grasses, are excluded from the analysis. To value affected cropland, we rely on appraisal values calculated in the “Trend in Agricultural Land and Lease Values” report provided by the California chapter of the American Society of Farm Managers and Rural Appraiser, the largest professional association for rural property land experts. If an appraisal value was not available for an affected crop type and county, we rely on the average value of Delta farmland. In the case of almond croplands, we rely on the mean value per acre across irrigated and well-watered almond cropland. Appraisal values for relevant croplands are presented in Table C-1 below.

⁵⁷ DCP EIR, 15–25.

⁵⁸ Ibid.

Table C-1: Value of Cropland in Project Area

Crop Type	County	Low Value (\$ per Acre)	High Value (\$ per Acre)	Mid Value (\$ per Acre)
[A]	[B]	[C]	[D]	[E]
Almonds	San Joaquin, Contra Costa, Sacramento	\$19,145	\$58,499	\$38,822
Rangeland Grazing Only	San Joaquin, Contra Costa, Sacramento	\$638	\$ 3,191	\$1,915
Rangeland (perm plant potential)	San Joaquin, Contra Costa, Sacramento	\$5,318	\$ 9,573	\$7,445
Walnuts	San Joaquin, Contra Costa, Sacramento	\$19,145	\$37,227	\$28,186
Wine Grapes	San Joaquin, Contra Costa, Sacramento	\$23,400	\$42,545	\$32,972
Cherries	San Joaquin, Contra Costa, Sacramento	\$26,591	\$38,290	\$32,440
Delta	San Joaquin, Contra Costa, Sacramento	\$15,954	\$19,145	\$17,550
Row Crops	Santa Clara	\$26,591	\$63,817	\$45,204

Sources and Notes:

[A]: These are the crop types with available information in the 2022 ASFMRA report, and values converted to 2023 dollars.

[B]: Note that ASFMRA combines counties into agricultural regions. San Joaquin, Contra Costa, and Sacramento fall into the Northern San Joaquin region, whereas Alameda County is placed in the Central Coast region.

[C] – [D]: The ASFMRA lists a high and a low value for each type of farmland.

[E]: The mid value is just the average of the high and low values listed in the 2022 ASFMRA report.

To value the cost of temporary impacts, we rely on rent values provided by the United States Department of Food and Agriculture’s National Agricultural Statistics Service (NASS). NASS rent values are characterized as irrigated and non-irrigated; we calculate a mean across both types. Rental prices are presented below in Table C-2. We calculate the cost of temporary impacts as the product of rental value per acre and the total temporary affected acreage by county. We assume all temporarily affected fields are affected for the entire duration of construction, thereby potentially overestimating the cost of lost farmland.

Table C - 2: Summary of Rent by County for Irrigated and Non-Irrigated Farmland

	Irrigated Land Rent	Non-Irrigated Land Rent	Average Land Rent
County	(\$ per Acre)	(\$ per Acre)	(\$ per Acre)
[A]	[B]	[C]	[D]
Alameda	1,414.62	21.27	717.94
Contra Costa	344.61	19.15	181.88
Sacramento	264.84	40.95	152.90
San Joaquin	447.78	36.69	242.24

Sources and Notes:

All rent measured in 2023 dollars.

[A]: Affected counties as described in DCP EIR.

[B],[C]: From the United States Department of Agriculture National Agricultural Statistics Service.

[D]: $([B] + [C]) / 2$.

We assume all permanent impacts begin in the first year of construction. Due to discounting, this assumption yields a relatively high estimate of total costs. Acreage impacted is inclusive of the farmland that will be affected by construction of mitigation measures such as on Bouldin Island and within I-5 Ponds 6, 7, and 8.

Using the mean value for the appraisal of farmland and the average value between the rent prices of irrigated and non-irrigated farmland in the four counties, the total undiscounted cost of the farmland conversion is estimated to be \$25.94 million, as shown in Table C-3. Of this total, \$3.99 million is associated with temporary farmland conversion and \$21.96 million are associated with permanent farmland conversion. Of the permanent impacts, the crop types with the highest value of converted land are alfalfa, grapes, and almonds.

Table C - 3: Summary of Costs Associated with Conversion of Farmland

Construction Year	Cost of Temporary Acres Impacted	Cost of Permanent Acres Impacted	Total Cost
(\$ millions, 2023)			
CY1	\$0.249	\$21.950	\$22.199
CY2	\$0.249	\$0.000	\$0.249
CY3	\$0.249	\$0.000	\$0.249
CY4	\$0.249	\$0.000	\$0.249
CY5	\$0.249	\$0.000	\$0.249
CY6	\$0.249	\$0.000	\$0.249
CY7	\$0.249	\$0.000	\$0.249
CY8	\$0.249	\$0.000	\$0.249
CY9	\$0.249	\$0.000	\$0.249
CY10	\$0.249	\$0.000	\$0.249
CY11	\$0.249	\$0.000	\$0.249
CY12	\$0.249	\$0.000	\$0.249
CY13	\$0.249	\$0.000	\$0.249
CY14	\$0.249	\$0.000	\$0.249
CY15	\$0.249	\$0.000	\$0.249
CY16	\$0.249	\$0.000	\$0.249
Total	\$3.991	\$21.950	\$25.941

C.2. CONSTRUCTION-RELATED AIR QUALITY IMPACTS

This section evaluates the social cost of construction with respect to four pollutants: reactive organic gases (ROG), nitrogen oxides (NO_x), particulate matter less than 10 microns in diameter (PM₁₀), and particulate matter less than 2.5 microns in diameter (PM_{2.5}). Project construction will increase emissions across three districts: Sacramento Metropolitan Air Quality Management District (SMAQMD), San Joaquin Valley Air Pollution Control District (SJVAPCD), and the Bay Area Air Quality Management District (BAAQMD). In particular, construction will increase PM₁₀ in excess of SMAQMD and SJVAPCD thresholds and increase NO_x emissions above thresholds set in all three districts. Note that this section does not estimate the impacts of greenhouse gas emissions associated with the construction and operation of the DCP because these emissions will be offset by a proposed mitigation programs that are included in the project's costs.

Both nitrogen oxides and particulate matter are associated with negative impacts on human health. Short-term NO_x exposure is associated with respiratory symptoms, especially in people with asthma. Longer-term exposure is associated with development of asthma.⁵⁹ In addition to its health effects, NO_x is associated with acid rain, global warming, and nutrient overload. Particulate matter refers to microscopic solids or liquid droplets which are small enough to be inhaled. Particulates less than 10 micrometers in diameter can be inhaled deep in the lungs and absorbed into the bloodstream.⁶⁰ Because smaller particulates can be absorbed more deeply into the lungs and bloodstream, PM_{2.5} poses a greater health risk than PM₁₀.

Due to the health risks posed by air pollutants, the DCP incorporates mitigation plans to reduce the impact of project-related emissions. DWR will enter into agreements with the affected air districts to provide offset fees. DWR will establish programs to fund emissions reduction projects which include but are not limited to alternative fuel school busses and transit public vehicles, diesel engine retrofits, electric vehicle rebates, and video-teleconferencing systems and telecommuting start-up costs for local businesses. DWR will additionally fund compensatory mitigation plans which restore wetlands and tidal habitats on Bouldin Island and in the North Delta Arc. A more complete discussion of mitigation plans is found in Chapter 23 of the EIR.

Table C - 4 presents baseline levels of annual pollution and the expected increase across the four studied air quality districts. Project-related pollution constitutes less than a 1% increase in pollution levels in all pollutants and counties except for a 2.2% increase in NO_x emissions in SMAQMD. No significant changes in pollution levels are predicted in Yolo-Solano Air Quality Management District for any of the studied pollutants.

⁵⁹ U.S. Environmental Protection Agency. n.d. *Basic Information about NO₂*. Available: <https://www.epa.gov/no2-pollution/basic-information-about-no2#Effects>. Accessed: December 6, 2023.

⁶⁰ U.S. Environmental Protection Agency. n.d. *Particulate Matter (PM) Basics*. Available: <https://www.epa.gov/pm-pollution/particulate-matter-pm-basics#effects>. Accessed: December 6, 2023.

Table C - 4: Annual Air Quality Changes between no project and project scenarios (Tons/Year)

		ROG	NOX	CO	PM 10 Total	PM2.5 Total	SO2
Sacramento Metropolitan Air Quality 1 Management District							
Baseline Emissions	[1]	18,849	12,676	75,887	11,779	3,927	303
Increased Emissions	[2]	21	278	603	108	24	0
Percent Increase	[3]	0.1%	2.2%	0.8%	0.9%	0.6%	0.0%
Yolo-Solano Air Quality Management District							
Baseline Emissions	[1]	8,329	6,453	21,864	12,136	2,508	164
Increased Emissions	[2]	0	0	4	0	0	0
Percent Increase	[3]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Bay Area Air Quality Management District							
Baseline Emissions	[1]	89,976	81,997	331,062	32,730	13,600	8,424
Increased Emissions	[2]	14	147	505	220	34	0
Percent Increase	[3]	0.0%	0.2%	0.2%	0.7%	0.3%	0.0%
San Joaquin Valley Air Pollution Control District							
Baseline Emissions	[1]	117,136	83,384	248,244	97,495	25,130	2,347
Increased Emissions	[2]	15	153	255	120	22	0
Percent Increase	[3]	0.0%	0.2%	0.1%	0.1%	0.1%	0.0%
Total							
Baseline Emissions	[1]	234,290	184,511	677,057	154,140	45,165	11,238
Increased Emissions	[2]	50	578	1,367	448	80	0
Percent Increase	[3]	0.0%	0.3%	0.2%	0.3%	0.2%	0.0%

Sources and Notes:

[1]: California Air Resources Board, "Emissions by Air District," accessed September 2022.

[2]: Environmental Impact Report for the Delta Conveyance Project, Chapter 23B, Table 23-22.

[3]: [2] / [1].

To quantify the social cost of increased pollutants, we apply EPA estimates of social cost per ton. The EPA estimates the social costs of air pollution using BenMAP-CE. The BenMAP-CE model first estimates health impacts using inputs from the published epidemiological literature: air quality changes, population levels, baseline incidence rates, and health effect estimates. The model calculates economic values from these estimates using cost-of-illness and willingness-to-pay metrics. Cost-of-illness reflects expenses associated with pollution-related illness, while willingness-to-pay reflects the more comprehensive toll of pollution related illness, incorporating individuals' reduction in quality of life beyond medical expenses. This analysis relies specifically on BenMAP social cost estimates in the refineries sector: values in 2023 dollars per ton are presented in Table C - 5 below.

Table C - 5: Social Cost of Pollutants

		Social Cost (\$ / ton)
ROG	[1]	\$14,556
NOX	[2]	\$102,016
PM 10	[3]	\$12,315
PM2.5	[4]	\$465,781
SO2	[5]	\$64,425

Sources and Notes:

Social cost reported in 2023 \$/ton.

[1], [2], [4], [5]: EPA BenMAP Emissions by Sector.

[3]: Regulatory Impact Analysis of the Proposed Reciprocating Internal Combustion Engines NESHA.

[3], [4]: For PM10 and PM2.5, social costs are determined using values reported for exhaust.

Applying these social cost metrics to total estimated pollution emissions attributable to the DCP, we estimate a total social cost of \$61.29 million.⁶¹ Annual social costs are presented in Table C - 6 below. This estimate is likely an upper bound for two reasons. First, the DCP EIR evaluates its emissions estimates to be an upper bound on expected emissions; if actual increased emissions are lower, then the corresponding social cost will be closer to zero. Second, EPA BenMAP social cost estimates have increased in recent years to reflect a more comprehensive account of social costs. Past EPA estimates have been only looking at the social costs of PM_{2.5} precursors, while the current estimates use both PM_{2.5} precursors and ozone precursors. This causes an increase in social costs of NO_x and ROG. In a comparable analysis conducted for an earlier version of the project in 2013, the social cost of NO_x was estimated to be \$13,691; the current social cost is more than seven times this amount.⁶² Because the total costs are driven primarily by increases in NO_x emissions, the change in estimated cost/ton explains 81% of the total social cost of increased air pollution; using the values in the 2013 report, we find a total social cost of \$7.1 million.⁶³ This comparison is not intended to trivialize the impact of air pollutants in the project air districts, but rather to give context to the magnitude of the estimated social cost.

⁶¹ Measured in undiscounted 2023 dollars and assuming preliminary field investigation year (PFIY 1) will begin 2 years from the time of this analysis.

⁶² The original input was \$11,000; the value in text is adjusted to 2023 dollars.

⁶³ The 2013 values for social cost are adjusted for inflation. As in the main analysis, we assume a 2% discount rate and that the preliminary field investigation year (PFIY 1) will begin 2 years from the time of this analysis.

Table C - 6: Total Annual Social Cost of Project-Related Air Pollution

Construction Year	Total Social Cost (\$ Millions, 2023)
PFIY1	\$0.64
PFIY2	\$0.64
PFIY3	\$0.64
CY1	\$1.22
CY2	\$0.73
CY3	\$1.14
CY4	\$4.23
CY5	\$9.40
CY6	\$10.59
CY7	\$8.86
CY8	\$6.60
CY9	\$6.59
CY10	\$6.38
CY11	\$2.80
CY12	\$0.61
CY13	\$0.22
CY14	\$0.00
Total	\$61.29

Notes:

Costs are reported in millions of undiscounted 2023

\$. PFIY 1 is assumed to begin two years from the time of this analysis.

C.3. CONSTRUCTION-RELATED NOISE IMPACTS

Construction of the Delta Conveyance Project is expected to increase noise in the local areas surrounding construction sites. The project will primarily impose noise nuisances during the construction of permanent project features over a period of 12 to 14 years. Heavy equipment noise will occur at project sites, and construction of levee improvements, bridges, and other project developments will also generate localized noise disruptions. A more complete description of expected noise impacts can be found in Chapter 24 of the EIR.

Excess noise is a nuisance to local residents. In addition to quality-of-life impacts, excess noise may incur economic costs if, for example, work from home is disrupted or outdoor recreation businesses are negatively affected. The economic value of this nuisance is challenging to quantify; two individuals may experience different burdens from the same level of noise, and the ultimate noise impact itself can depend on factors such as home insulation. To quantify the overall burden of excess noise on a locality, we depend on an econometric method called hedonic pricing. The hedonic pricing method uses the value of related market goods to estimate the value of non-market goods. More specifically, the hedonic pricing method uses statistical techniques to infer the value of environmental attributes, such as noise levels, by comparing values of properties that have a given

environmental attribute and those that do not. If houses are comparable across characteristics other than the attribute of interest (in this case, noise), then differences in the market price can be attributed to differences across this attribute.

Common sources of disruptive noise levels include roadways, general construction, airports, railroads, and industrial activity. Roadways are not a close comparison point because they primarily impose ambient noise. Typical construction projects may also be an inappropriate comparison point because the longevity of the DCP construction imposes higher costs than would short-term construction projects. While a perfect comparison is elusive, noise from railroad activity is analogous to DCP construction-related noise because both impose irregular noise impacts and are long-term nuisances. For this analysis, we thus rely on hedonic values derived from a study of housing price differences attributable to railroad proximity. Walker (2016) finds a 14% to 18% decline in residential property values in Memphis, Tennessee, if the property is exposed to sixty-five decibels or greater of railroad noise.⁶⁴ The study finds no impact on commercial property values.

Relying on this study, we assume a 14% impact on housing values due to increased noise. We apply this cost metric to average California housing values in both the property and rental markets.⁶⁵ The duration of noise disruption varies by location. Of the seventeen locations discussed in the EIR, five experience disruptions lasting five hours to one week, and an additional three locations are not located near any residences. These eight locations are excluded from the social cost analysis. Of the remaining nine locations, five experience disruptions lasting one month to 3.5 years. For these locations, we apply the cost metric to an estimated average California monthly rental price for the duration of the disruption. For the four locations experiencing nine or more years of disruptions, we apply the cost metric to the full property value.

The results of the analysis are presented in Table C - 7 below. We estimate an undiscounted cost of \$8.7 million in noise impacts. These estimates assume that disruptive noise begins in the first year of construction. Note that the EIR finds that if all eligible property owners participate in the proposed the Noise Control Plan proposed in the EIR, the impacts would be less than significant.

⁶⁴ Walker, Jay. 2016. Silence is Golden: Railroad Noise Pollution and Property Values. In *The Review of Regional Studies*, 45 (2016), 75–89.

⁶⁵ Local housing prices in the affected areas are lower than average California housing values. To conduct a socially equitable analysis, we rely on statewide averages. We assume a home value of \$788,679 and a rental value of \$7,886.79, or 1% of a home's value.

Table C - 7: Social Cost of Project-Related Noise

Location/ Site	Construction Activity	Duration	Number of Residences Daytime	Damages with Local Average House Values (\$ millions, 2023)
Intakes Construction	Pile Driving	42 Months	117	\$3.21
	Nighttime concrete pours	2 Months	147	\$0.19
	Heavy Equipment	12 years	9	\$0.59
Tunnel Shaft Construction	Lower Roberts Island Levee Improvements	1 month	19	\$0.01
	Lower Roberts Island RTM Stockpile	9 years	5	\$0.33
	Upper Jones Tract Maintenance Shaft Buildout	9 years	1	\$0.09
Bethany River Complex Construction	Bethany Reservoir Pumping Plant, Surge Basin and Aqueduct Buildout	13 years	12	\$1.70
	Bethany Reservoir Pumping Plant, Surge Basin and Aqueduct night concrete pours	2 months	0	\$0.07
Bridges, New Access Roads, Road Improvements, and Park-and-Ride Lots	Construction	1.5 months	450	\$0.79
Total				\$6.97

Notes:

Costs are reported in millions of undiscounted 2023\$. The number of residences includes both daytime and nighttime residences. Twin cities complex is shown in this table as there are no adjacent residences that might experience noise impacts.

C.4. CONSTRUCTION-RELATED TRANSPORTATION IMPACTS

This section estimates the costs associated with construction induced traffic delays associated with the construction of the DCP. The costs as estimated based on total time delays estimated in the EIR and U.S. Department of Transportation (DOT) estimates of the opportunity cost of such delays to road users.

The EIR identifies 120 road segments, ranging from local roads to interstate highways, which are likely to be impacted by DCP construction based on the regional and local travel routes of construction workers and estimated truck traffic delivering project materials to and from project features.⁶⁶

⁶⁶ Not all segments would be included in the adopted EIR project. For this project, construction access would not be allowed along SR 160 and River Road or along SR 4 between Old River and Middle River. See DCP, Appendix 20A 20A-1.

For each segment, baseline roadway traffic estimates from 6 AM to 7 PM for 2020 were developed using data collected from 2015 to 2019 and adjusted upward to estimate 2020 traffic absent Covid-19 impacts.⁶⁷ Within a road segment's range of traffic flows, we assume the upper end during rush hour (7AM to 10 AM and 4 PM to 7 PM) and the lower end during non-rush hour periods.

To estimate the economic impact of travel delays resulting from the construction of the Delta Conveyance Project, we first calculate the speed at which vehicles travel on a congested roadway using the following equation (Singh 1999):

$$\text{Congested Speed} = \frac{\text{Free Flow Speed}}{1 + 0.20\left[\left(\frac{\text{Volume}}{\text{Capacity}}\right)^{10}\right]}$$

We assume free flow speed to be the roadway's speed limit. We assume capacity corresponds to a LOS E grade.⁶⁸ We estimate baseline volume using the EIR volume estimates discussed above. Average time to traverse the segment in each hour of the day is estimated using the congested speed and length of the segment.⁶⁹ Finally, the cumulative time spent across drivers on a given segment is calculated using average time to traverse and the total estimated volume of traffic on the segment during that hour.

The EIR identifies two segments that will deteriorate below acceptable LOS standards during morning and evening commute periods because of construction in listed years. For these segments during these hours, the traffic volume increases to the threshold of LOS E. This assumption constitutes an extreme upper bound, as we assign traffic impacts to the entire year, whereas the EIR expects the maximum volume to be reached only one to two weeks per year. To account for traffic increases which do not result in deterioration below LOS acceptable standards, remaining DCP-related trips are assumed to be distributed across road segments proportionally to the share of baseline traffic on each road segment.

Using the distribution of DCP-related trips across segments and hours, we calculate congested speed with project construction and compare this value to that under the baseline scenario to find the increased travel time resulting from the construction of the Delta Conveyance Project.

⁶⁷ DCP, Appendix 20A 20A-16.

⁶⁸ The certified final EIR conducts a level-of-service (LOS) analysis to qualitatively evaluate the level of comfort and convenience associated with driving on a segment at a given time. Segments are assigned a letter grade, wherein LOS A reflects free-flow conditions and LOS F reflects stop-and-go conditions.

⁶⁹ To illustrate, if the congested speed is 60 mph and the segment is 60 miles long, then average time to traverse is one hour. This step implicitly assumes that each vehicle will be on the roadway segment for the entire length of the segment. Although this assumption might result in an overestimation of time spent on congested roadways, data are not available on how long each vehicle remains on each roadway segment. Because most segments are freeways and highways, and the average segment is relatively short (3.07 miles), this assumption is reasonable.

To estimate the economic value of increased local travel time under DCP construction, we rely on an opportunity cost methodology. The opportunity cost of a travel delay is the value of the time lost because of additional time spent in traffic. The value of this time differs depending on what the time would have been used for had it not been spent in traffic. As construction will affect both business and personal travel, the value chosen for the opportunity cost of time spent in traffic is representative of both leisure and work. The total delay time is multiplied by estimates of the opportunity cost of a traveler's time used by DOT to assign a monetary value to delay times in regulatory analyses. DOT develops and periodically updates the value of travel time to be used in analyses of proposed regulations. This value is widely used by transportation agencies to estimate the time burden of proposed regulations, including those promulgated by DOT, the Transportation Security Administration, and the U.S. Coast Guard. DOT's 'all purpose' estimate of the value of time is used in the calculation, which is a weighted average of the value of time for both business and leisure trips based on historical rates of each type of trip. DOT estimates an intercity low value of \$26.52 and a high value of \$35.45.⁷⁰

Using a high and low price for the opportunity cost of time lost in traffic, we develop a range for the total cost associated with the traffic impacts of construction. These results are presented in Table C-8 below. The additional traffic caused by construction incurs an undiscounted social cost of \$78.9 million to \$105.4 million incurred between 2024 and 2035. Annual costs stemming from traffic delays peak during year six of construction and taper off afterward due to discounting and decreased construction activity.

The estimates presented here constitute an upper bound of total transportation costs. 86.5% of the total time lost in traffic because of construction occurs on the five segments which the EIR states will experience LOS E conditions because of the project during morning and evening commute periods. We assume that these segments will experience LOS E conditions on every construction day of the affected years, but segments are likely to only be affected for a few weeks of the year.

⁷⁰ California Department of Transportation. 2016. *Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis*. Values are converted from 2016 dollars to 2023 dollars.

Table C - 8: Costs Associated with Traffic Impacts

Construction Year	Traffic Impact, Day of Construction (hours / day)	Construction Time (days)	Yearly Traffic Impact (hours)	DOT Value of Travel Time Savings (\$ / hour)			Yearly Traffic Impact (\$ millions, 2023)		
				Low	Mid	High	Low	Mid	High
[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]	[J]
1	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
2	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
3	115.64	325	37,613.03	\$26.52	\$28.47	\$35.45	\$1.00	\$1.07	\$1.33
4	161.95	325	52,675.62	\$26.52	\$28.47	\$35.45	\$1.40	\$1.50	\$1.87
5	2,394.28	325	778,740.48	\$26.52	\$28.47	\$35.45	\$20.65	\$22.17	\$27.60
6	2,451.04	325	797,200.68	\$26.52	\$28.47	\$35.45	\$21.14	\$22.70	\$28.26
7	2,394.28	325	778,740.48	\$26.52	\$28.47	\$35.45	\$20.65	\$22.17	\$27.60
8	1,348.98	325	438,754.71	\$26.52	\$28.47	\$35.45	\$11.63	\$12.49	\$15.55
9	104.07	325	33,848.93	\$26.52	\$28.47	\$35.45	\$0.90	\$0.96	\$1.20
10	80.93	325	26,322.62	\$26.52	\$28.47	\$35.45	\$0.70	\$0.75	\$0.93
11	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
12	23.11	325	7,517.66	\$26.52	\$28.47	\$35.45	\$0.20	\$0.21	\$0.27
Total							\$78.86	\$84.67	\$105.42

Sources and Notes:

All Yearly Traffic Impact costs measured in millions of undiscounted 2023 \$.

[A]: From DCP EIR Appendix 20A Figure 20A-11. Vehicle Trips per Day for DCP project alternative.

[B]: From Total Daily Time lost in Traffic by Year for each Impacted Segment.

[C]: From DCP EIR Appendix 20A, p. 30.

[D]: [B] x [C].

[E] – [G]: From Department of Transportation's 2016 Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis.

[H]: [D] x [E].

[I]: [D] x [F].

[J]: [D] x [G].

[K]: [H] / (1.02 ^ ([A] + 1)).

[L]: [I] / (1.02 ^ ([A] + 1)).

[M]: [J] / (1.02 ^ ([A] + 1)).

C.5. OTHER IMPACTS

The DCP's EIR provides a comprehensive assessment of the impacts of the construction and operation of the project on over twenty different resources. Some of these impacts are identified in the EIR as being less than significant without any mitigation measures.⁷¹ Other resources are identified having impacts from the DCP; however, these impacts are less than significant after the adoption of mitigation measures.⁷² Impacts on the following resources are identified in the EIR as being less than significant after the adoption of mitigation measures.⁷³

The following impacts are identified in the EIR as being significant and unavoidable, however they are not quantified in this report because there are not appropriate economic tools to estimate a monetary value of their impacts:

- Aesthetic and Visual Resources (Chapter 16)
- Cultural Resources (Chapter 19)
- Paleontological Resources (Chapter 29)
- Tribal and Cultural Resources (Chapter 32)

⁷¹ Specifically, these resources and their respective chapters in the EIR are:

Groundwater, Ch.8; Water Quality, Ch.9; Geology and Seismicity, Ch.10; Land Use, Ch.14; Recreation, Ch.16; Public Utilities and Services, Ch.21; Energy, Ch.22; Mineral Resources, Ch.27.

⁷² Groundwater, Ch.8 ; Water Quality, Ch.9; Geology and Seismicity, Ch.10; Land Use, Ch.14; Recreation, Ch.16; Public Utilities and Services, Ch.21; Energy, Ch.22; Mineral Resources, Ch.27.

⁷³ Flood Protection, Ch.7; Soils, Ch.11; Fish and Aquatic Resources, Ch.12; Terrestrial Biological Resources, Ch.13; Hazards, Hazardous Materials, and Wildfire, Ch.25; Public Health, Ch.26.

**Responses to Director's Questions Received Following Bay-Delta Presentation
to OWS Committee - October 2023**

1) How much levee strengthening has been done for the West and East Freshwater pathways?

There are approximately 90 miles of levees along the freshwater pathway south of the San Joaquin River. Approximately 48 miles (53%) have been improved to State Bulletin 192-82 levee compliance (i.e., 1 in 300-year event criteria). The cost for full compliance with Bulletin 192-82 along the freshwater pathway is estimated to cost \$131 million. The cost to further improve the levees up to the proposed modern levee standard (i.e., able to withstand earthquake and sea level rise) is estimated at \$400 to 700 million. (This is a conservative estimate of costs.)

2) What would be the delivery capabilities through those freshwater pathways under different conditions?

The Middle River pathway is capable of taking about 7,000 cfs under emergency conditions. The combined Middle River and Old River pathways can accommodate full CVP and SWP flows of about 11,000 cfs. DWR has indicated in the latest Delta Flood Emergency Management Plan that they will use combined Old River and Middle River pathways interactively during emergency operations, depending upon on the ground conditions.

3) What is the remaining asset value of the SWP investment?

The State Water Project (SWP) is an ongoing state-owned water system without an end life. While Metropolitan does finance the SWP, Metropolitan does not own the assets associated with it. The SWP is a user-financed water system based on beneficial use and is planned, built, operated, and maintained by the Department of Water Resources. Through 2023, Metropolitan has invested ~\$29.9B (2023 dollars), but this is not a depreciable asset.

4) What is the cost per acre-foot yield from the SWP?

The acre-foot cost of SWP supplies varies depending on the volume of supplies available. In drier years, the dollar cost per AF is much higher due to fixed costs and reduced hydroelectric generation to offset variable power costs.

- *During low allocations such as 2014, the \$/AF cost was \$1,174/AF (nominal dollars). In high allocation years such as 2019, the \$/AF cost was \$450/AF (nominal dollars).*
- *The long-term average cost of Metropolitan's SWP supplies in 2023 dollars is \$674/AF through 2023.*
- *Based on the latest Bulletin-132 report from DWR, projected forward at a 60% SWP allocation, the average \$/AF cost is \$730/AF through 2035.*



One Water & Stewardship Committee

Bay-Delta & Conveyance

Managing Risks and Water Supply Reliability

Item 6a

October 7, 2024

Item 6a
**Bay-Delta &
Conveyance:
Managing
Risks and
Water Supply
Reliability**

Subject

Update on actions to address risks to the State Water Project and Bay-Delta water supply reliability.

Purpose

Provide background information on Bay-Delta related risk factors, the Delta Conveyance Project and associated planning funding.

State Water Project

Core Component of Metropolitan's Supply Portfolio

Vital To Metropolitan

- Metropolitan's infrastructure is designed and built to benefit from the SWP

Surface Storage

- San Luis Reservoir Carryover
- Flexible Storage
- Diamond Valley Lake

SWP Groundwater Banking

- Central Valley Programs
- High Desert Water Bank

Develop New Local Supplies

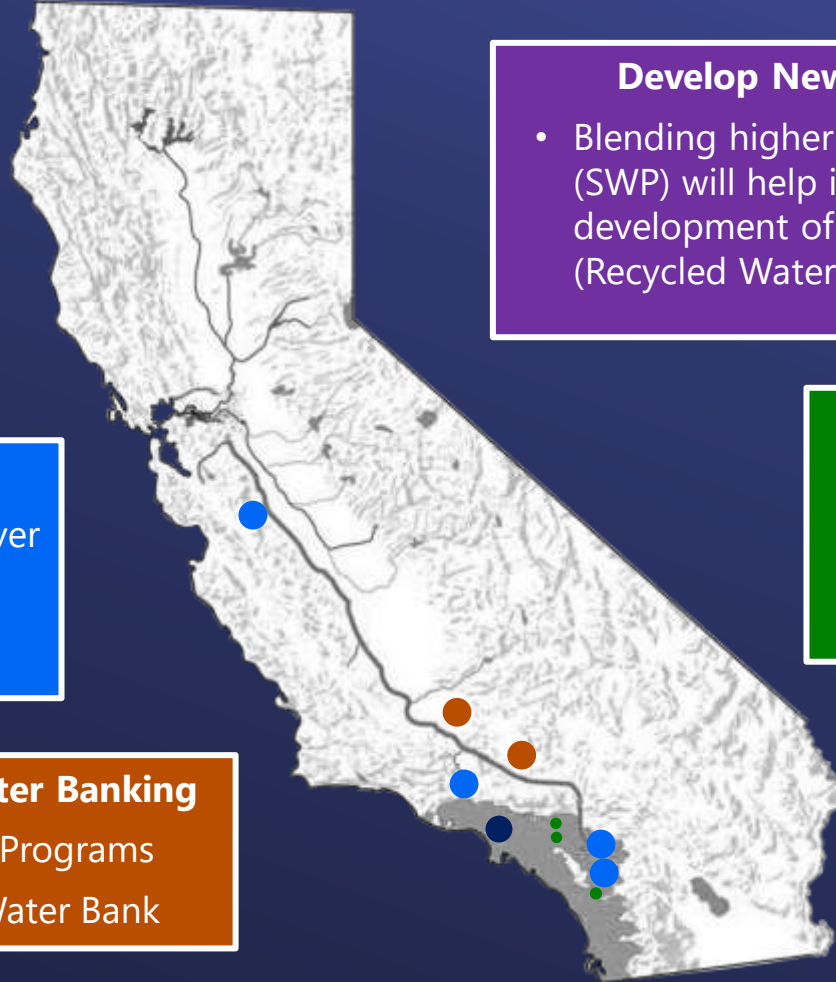
- Blending higher quality source water (SWP) will help in maintenance and development of local supplies (Recycled Water)

Water Quality at Existing Metropolitan Treatment Facilities

- Blending with Colorado River Supplies at Weymouth, Diemer, and Skinner Treatment Plants

Local Groundwater Recharge

- Supply for In-Service Area Groundwater Basins
- Conjunctive Use Programs



Risks to the Bay-Delta Water Supply Reliability



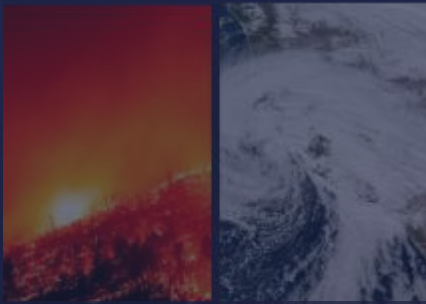
Delta Seismic Event: Seawater Intrusion and Disruption



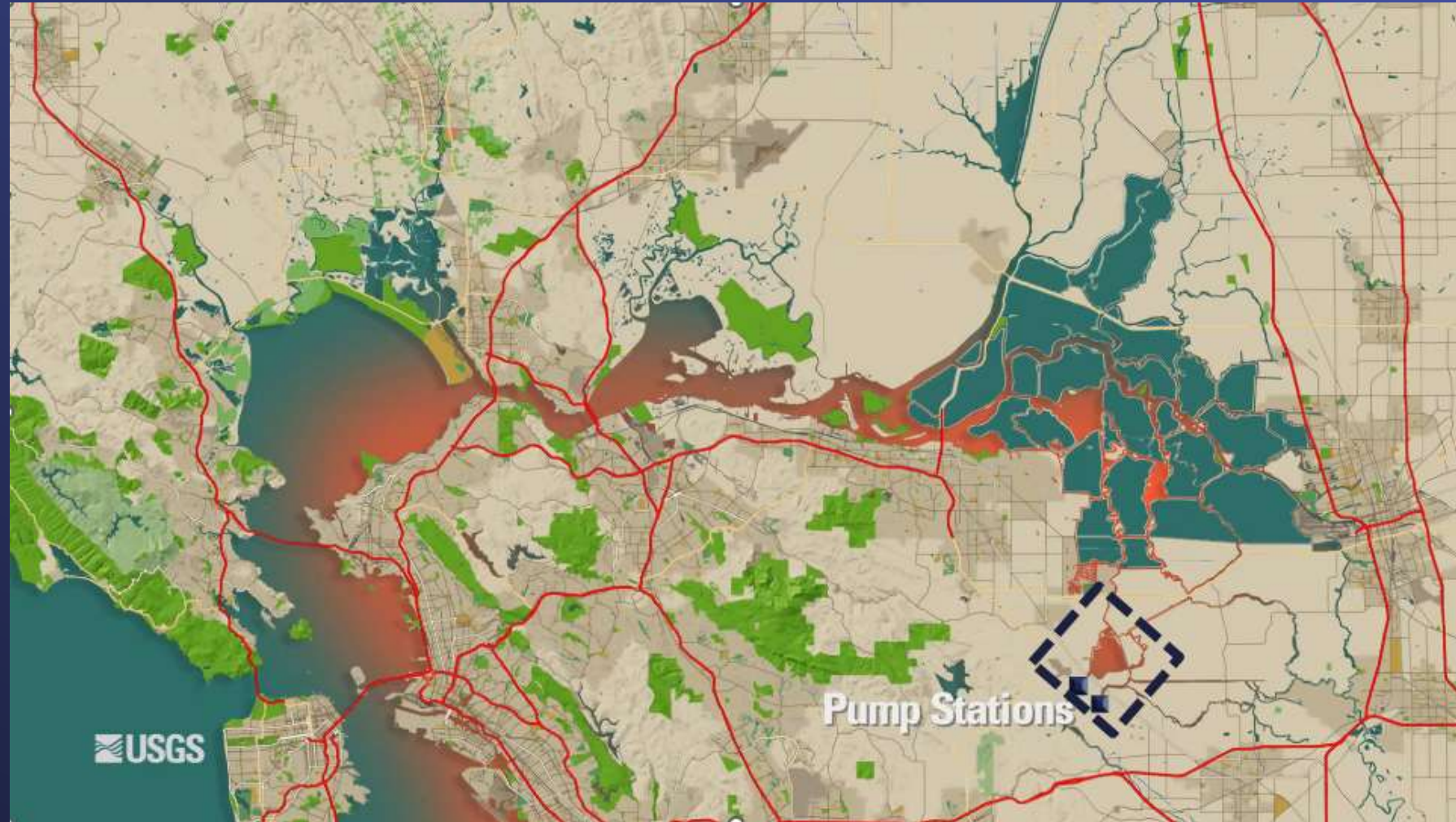
Seismic Threats



Regulatory

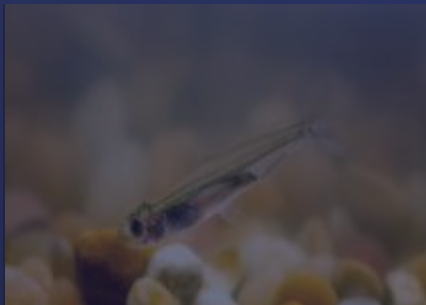


Climate Change

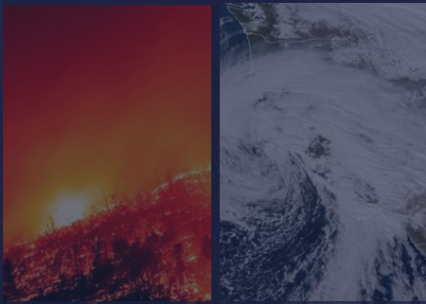




Seismic Threats



Regulatory

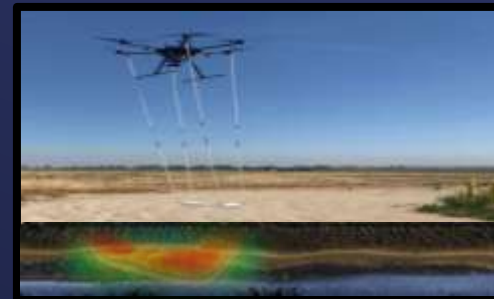
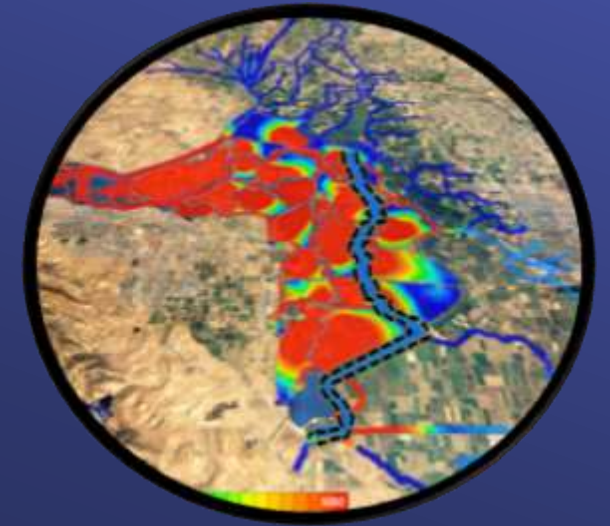


Climate Change

Actions Today:

Levee Modernization & Emergency Preparedness

- Levee Improvements and Repairs
- New Modernized Levee Design
- Void Detection Technology
- Localized Material Stockpiles
- Freshwater Pathway

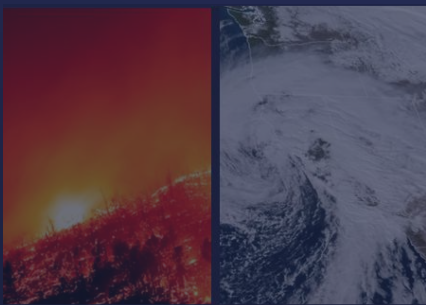




Seismic Threats



Regulatory



Climate Change

Increasing Regulation: Key Listed Species in the Delta



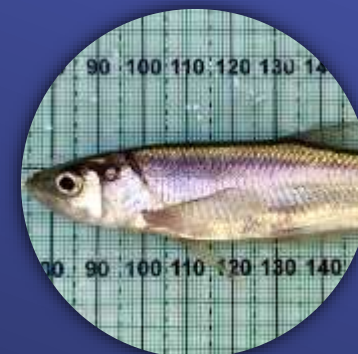
Winter-Run
Chinook Salmon



Spring-Run
Chinook Salmon



Delta
Smelt



Longfin
Smelt



Steelhead

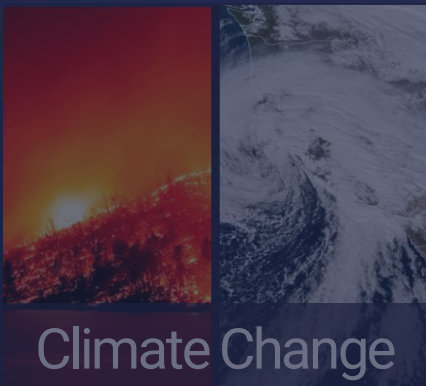
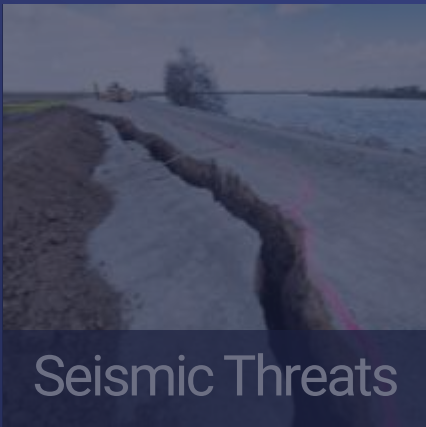


Green Sturgeon



White Sturgeon

Key: Both State & Federal-Listed Species, Federal-Listed Species, State Listing Pending



Actions Today: Bay-Delta Science Program

- Effectiveness of Management Actions (i.e. Fall X2)
- Delta Stressors and Habitat Needs
- Innovations and New Technology
- Delta Smelt Supplementation





Seismic Threats

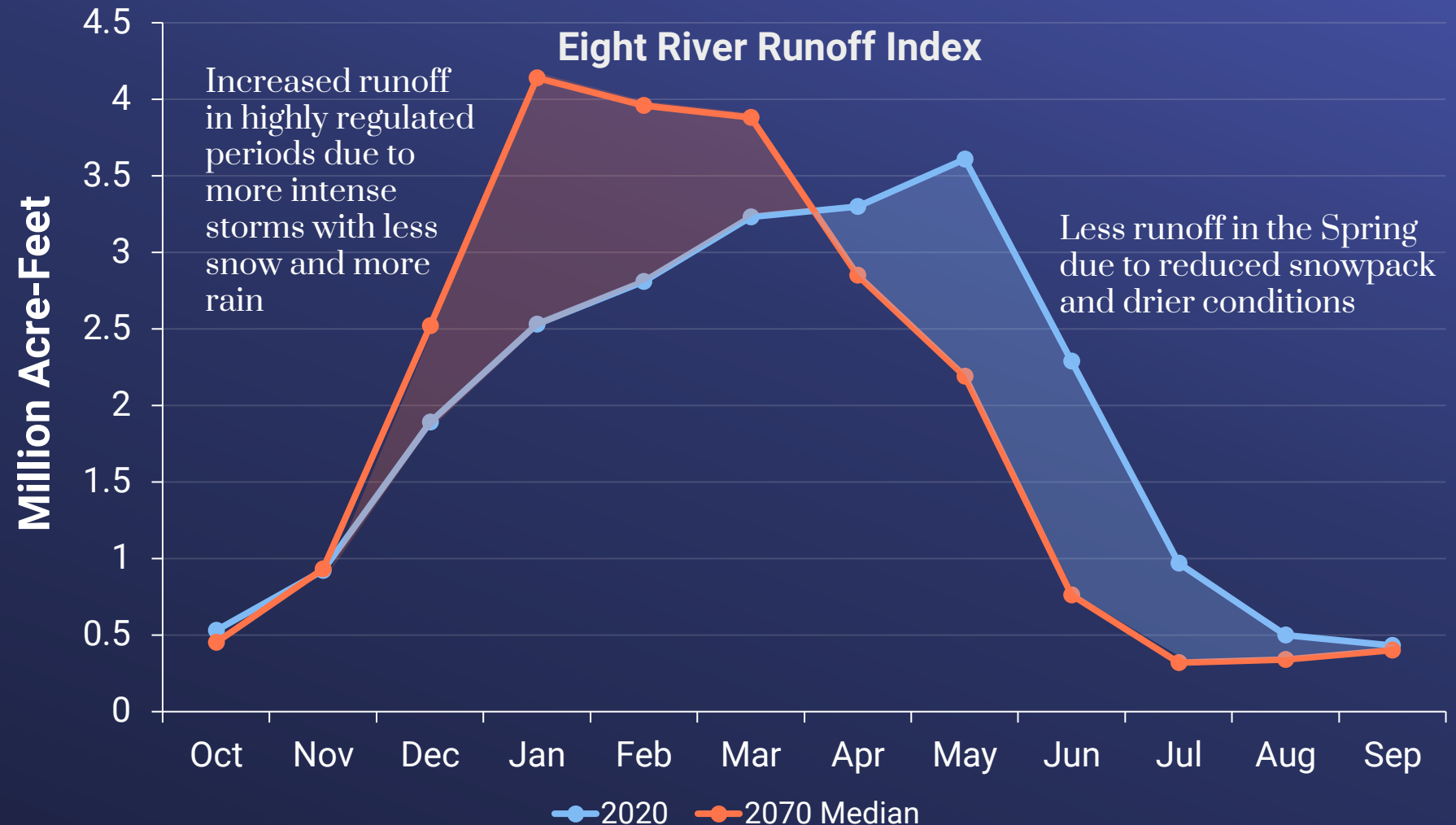


Regulatory



Climate Change

Climate Change: Shift in Historical Hydrology

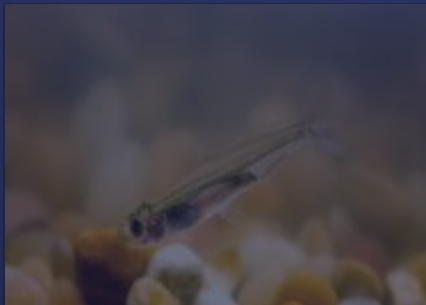


Source: Delta Conveyance Project Final EIR Appendix 4A, Table 4A-1.

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Seismic Threats



Regulatory



Climate Change

Actions Today: Evaluating **Storage and Conveyance**

- Groundwater basin studies
- Surface storage
- CAMP4W process
- Conveyance improvements

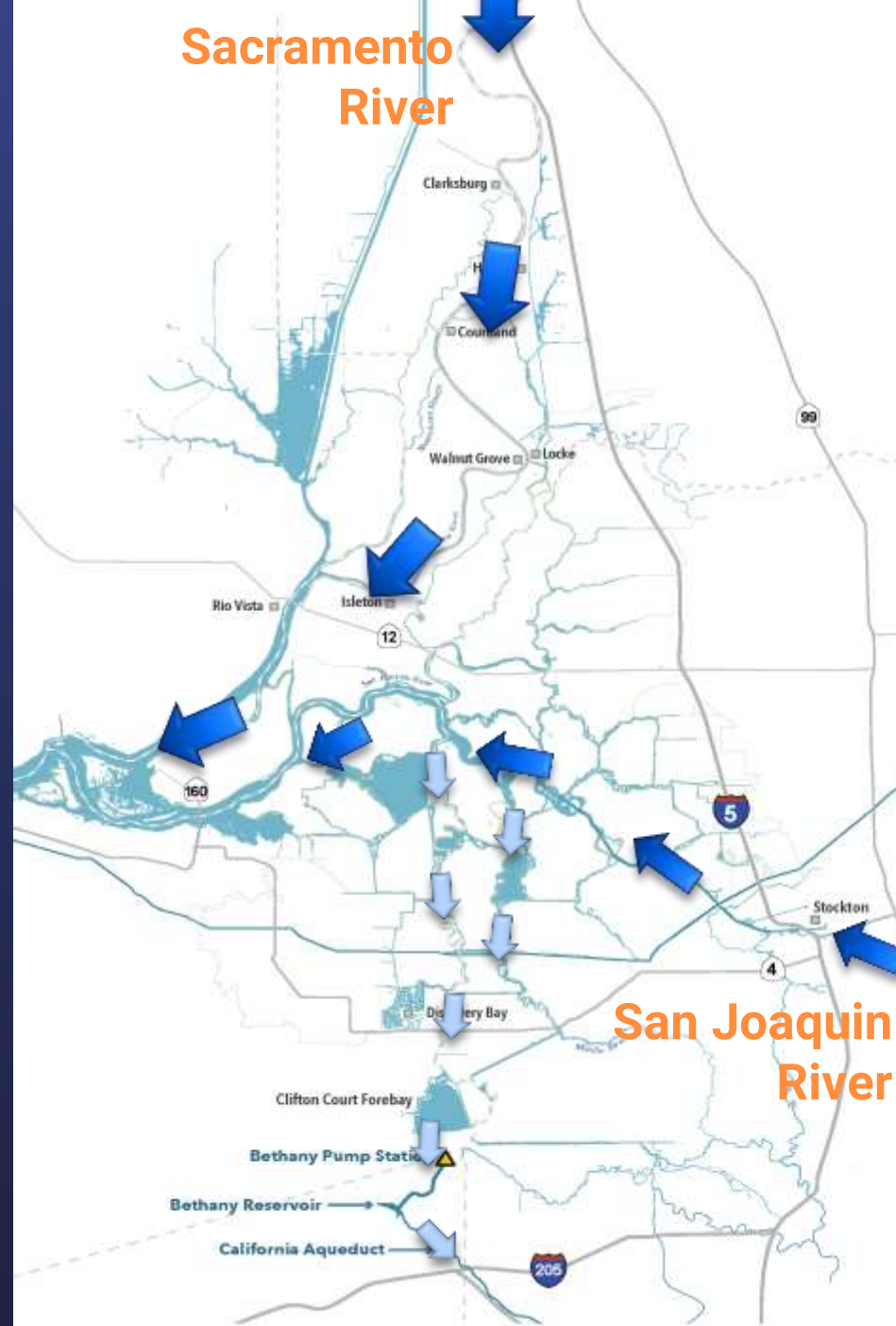




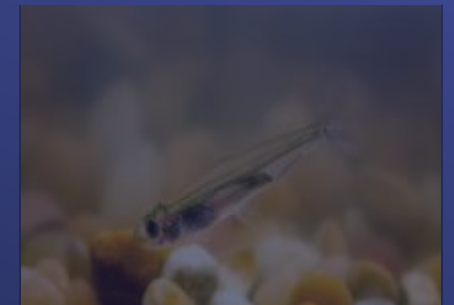
Photo Credit: DWR

Delta Conveyance

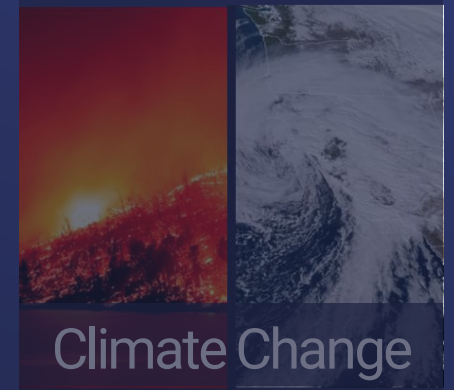
Existing Through Delta Conveyance



Seismic Threats

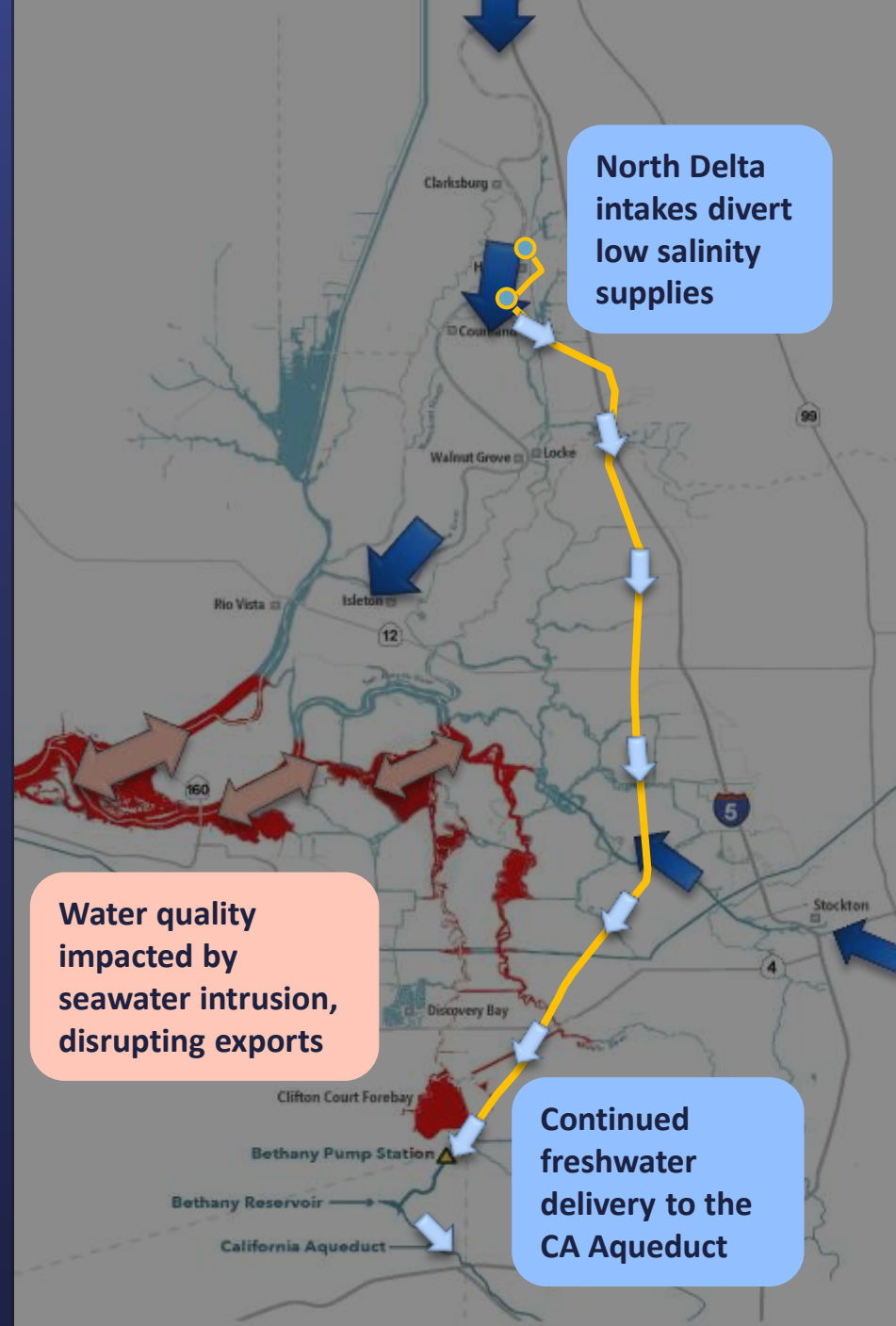


Regulatory



Climate Change

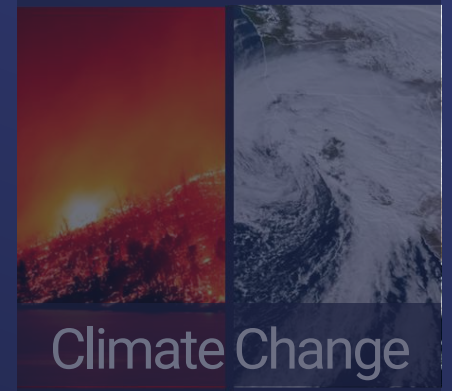
Delta Conveyance



Seismic Threats

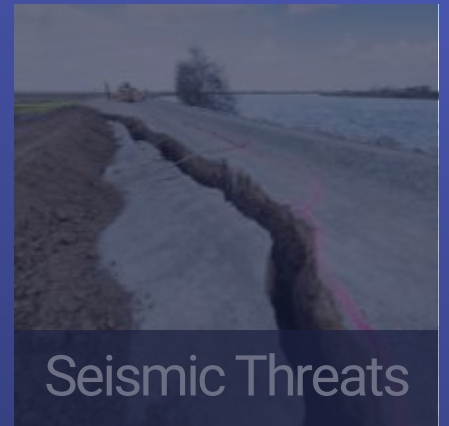
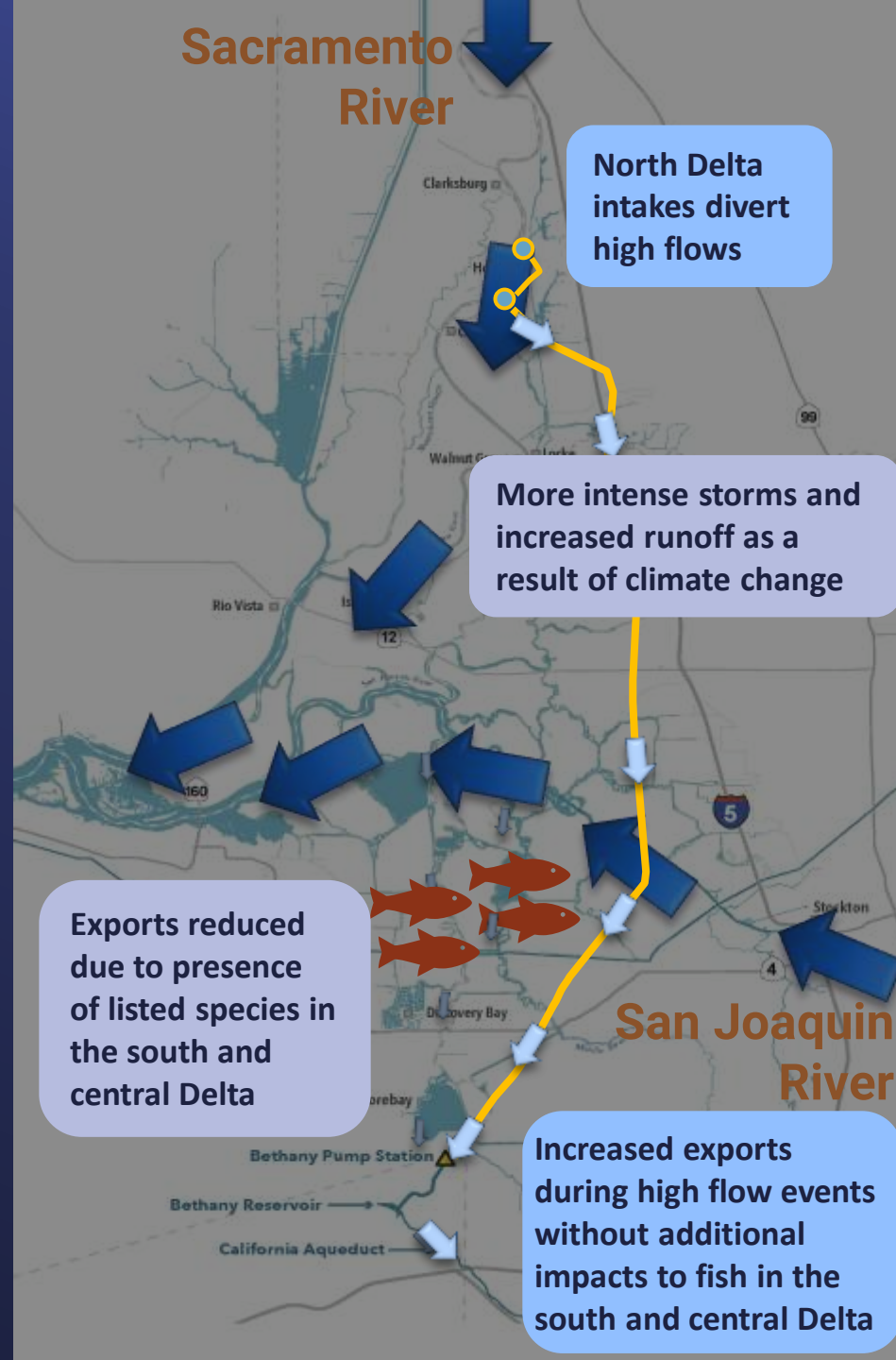


Regulatory



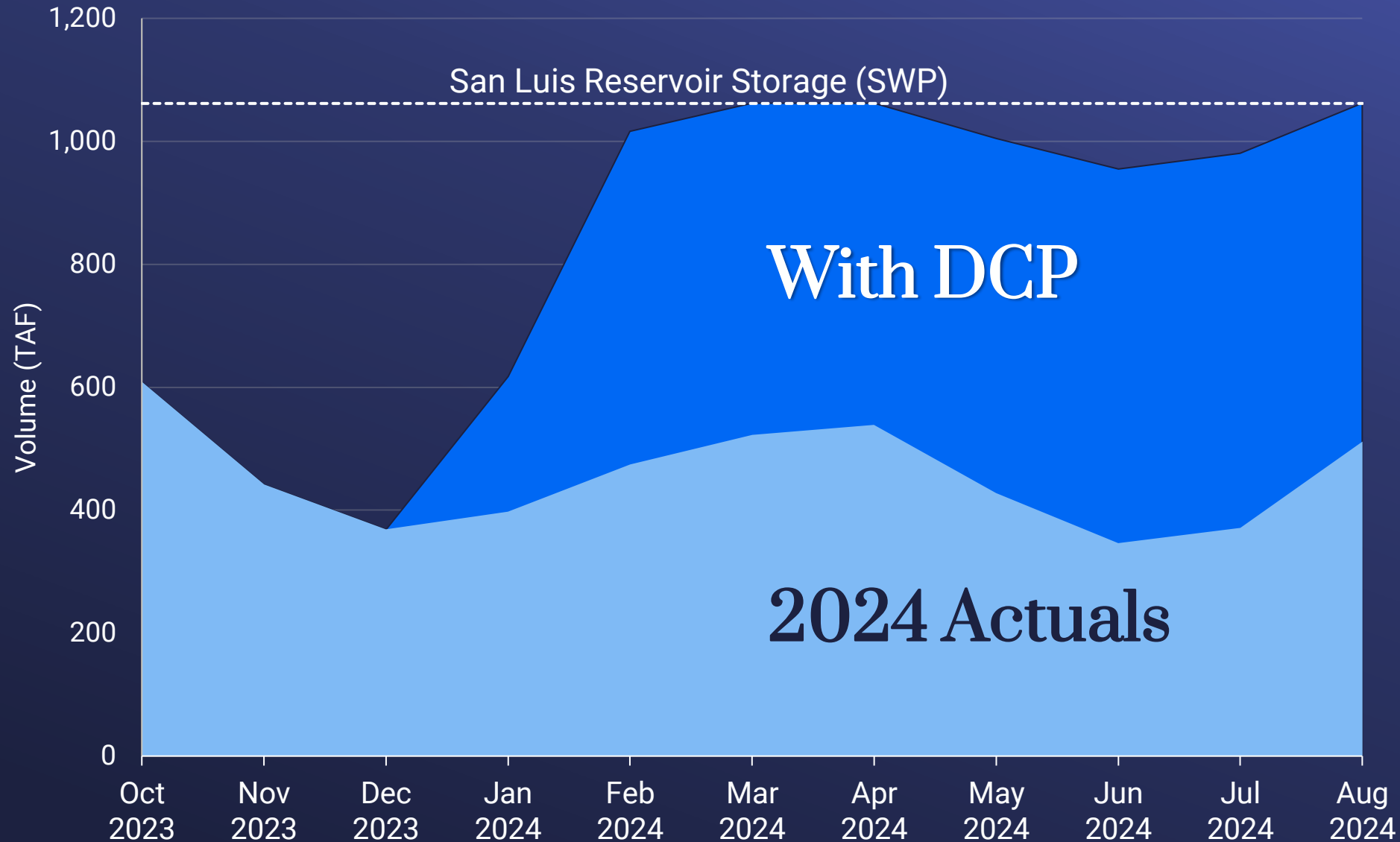
Climate Change

Delta Conveyance



Examples of SWP Performance with Delta Conveyance

Delta Conveyance & Operational Flexibility



Sources: DCP Theoretical Diversions WY 2024 (DWR), historical San Luis storage accessed from California Data Exchange Center

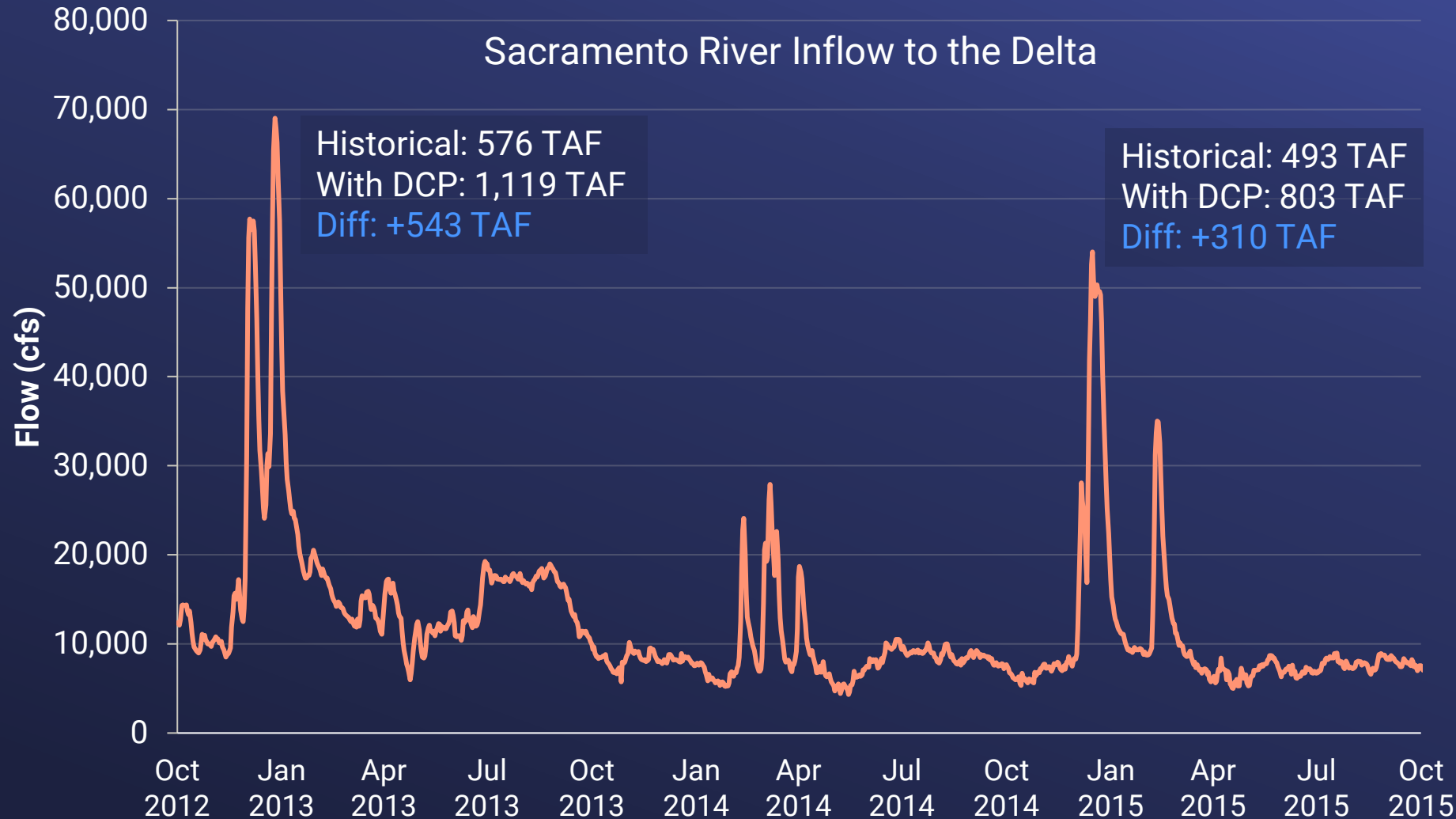
October 7, 2024

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Delta Conveyance

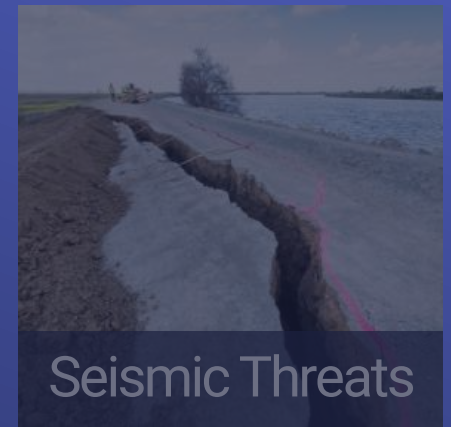
High Flow Events Amidst Drought



Sources: DWR CALSIM 3 Delta Conveyance Modeling Results, DAYFLOW historical data

October 7, 2024

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Seismic Threats



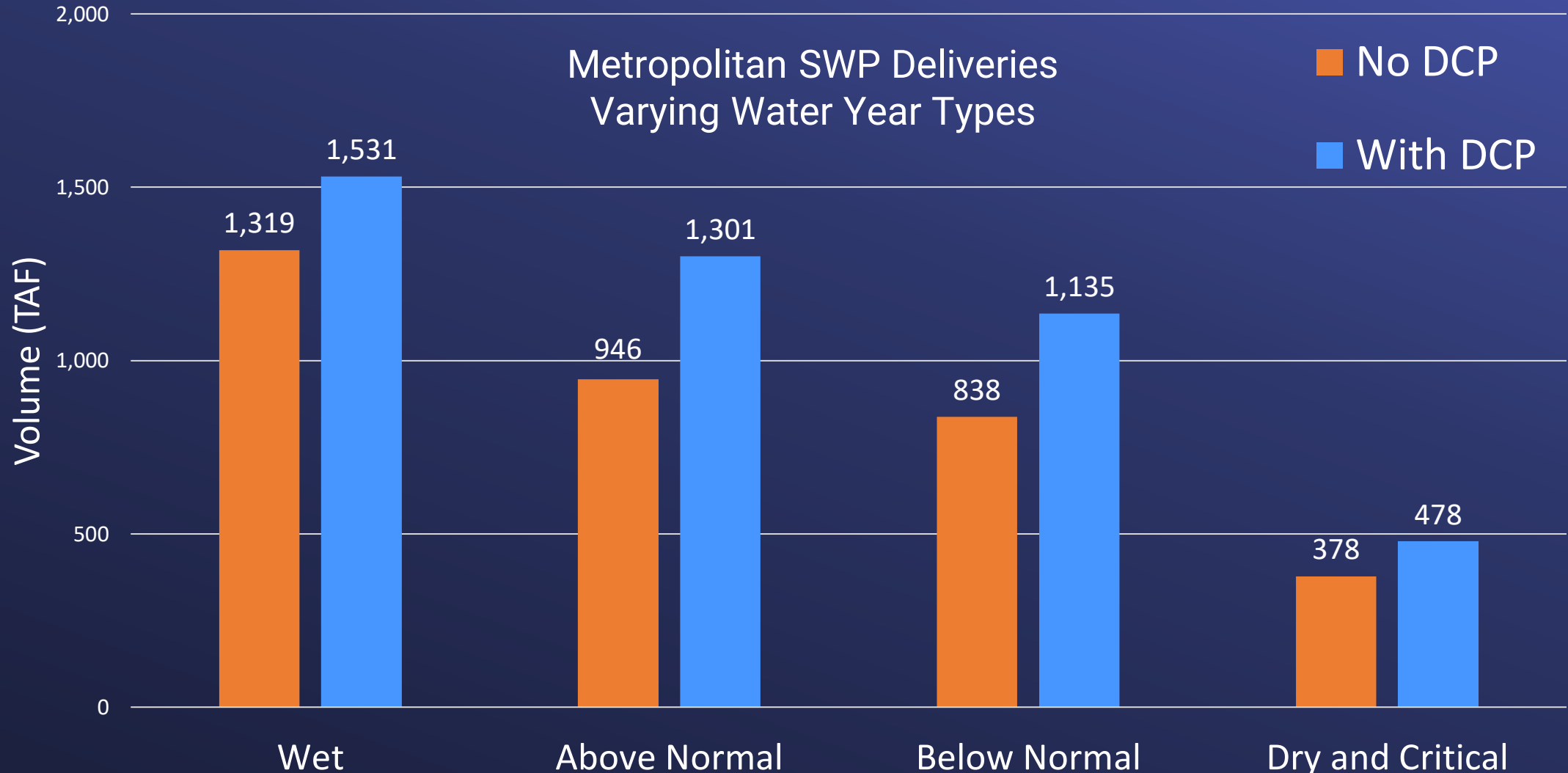
Regulatory



Climate Change

Delta Conveyance

Enhanced Reliability in Wet and Dry Conditions



Sources: DWR CALSIM 3 Delta Conveyance Modeling Results – 2070 median hydrology with 1.8 ft of SLR. Assumes 47.2% of South of Delta deliveries.



Photo Credit: DWR

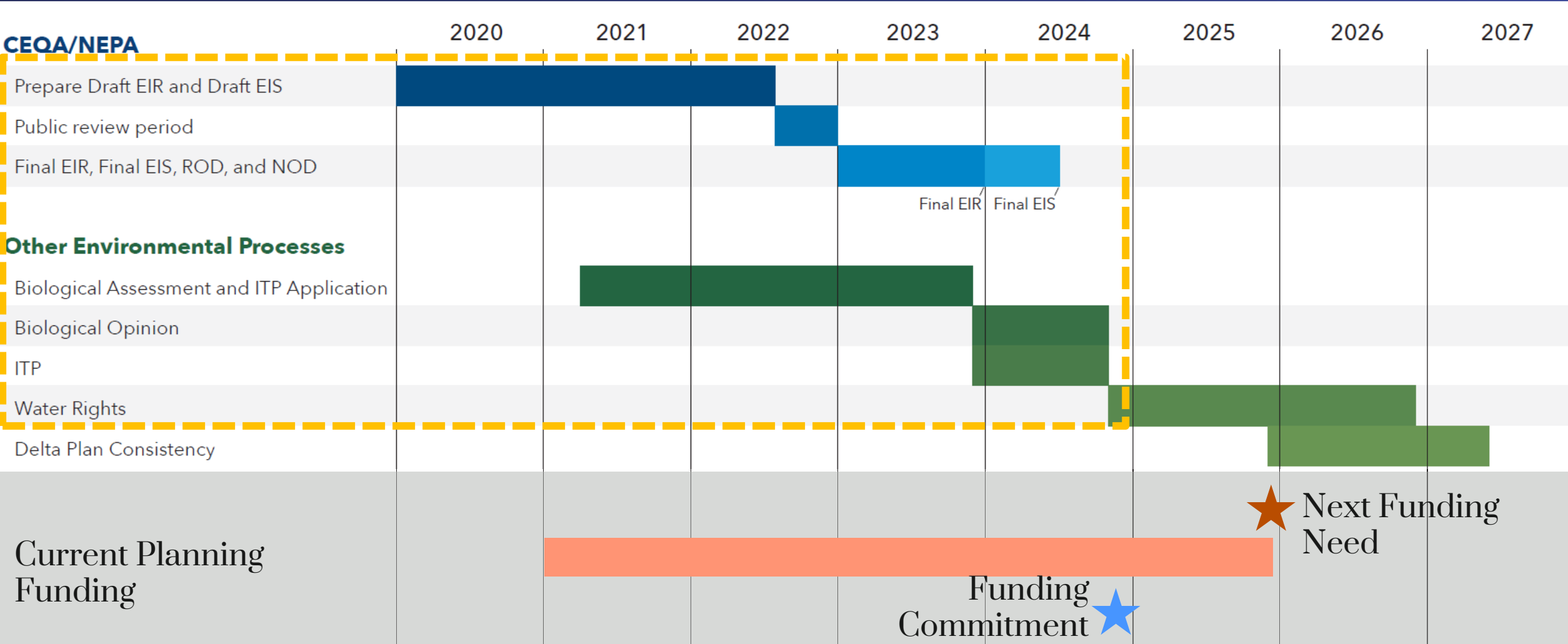
Delta Conveyance Planning Efforts

December 2020 Board Action

Delta
Conveyance
Project
Planning
Budget
(\$ millions)

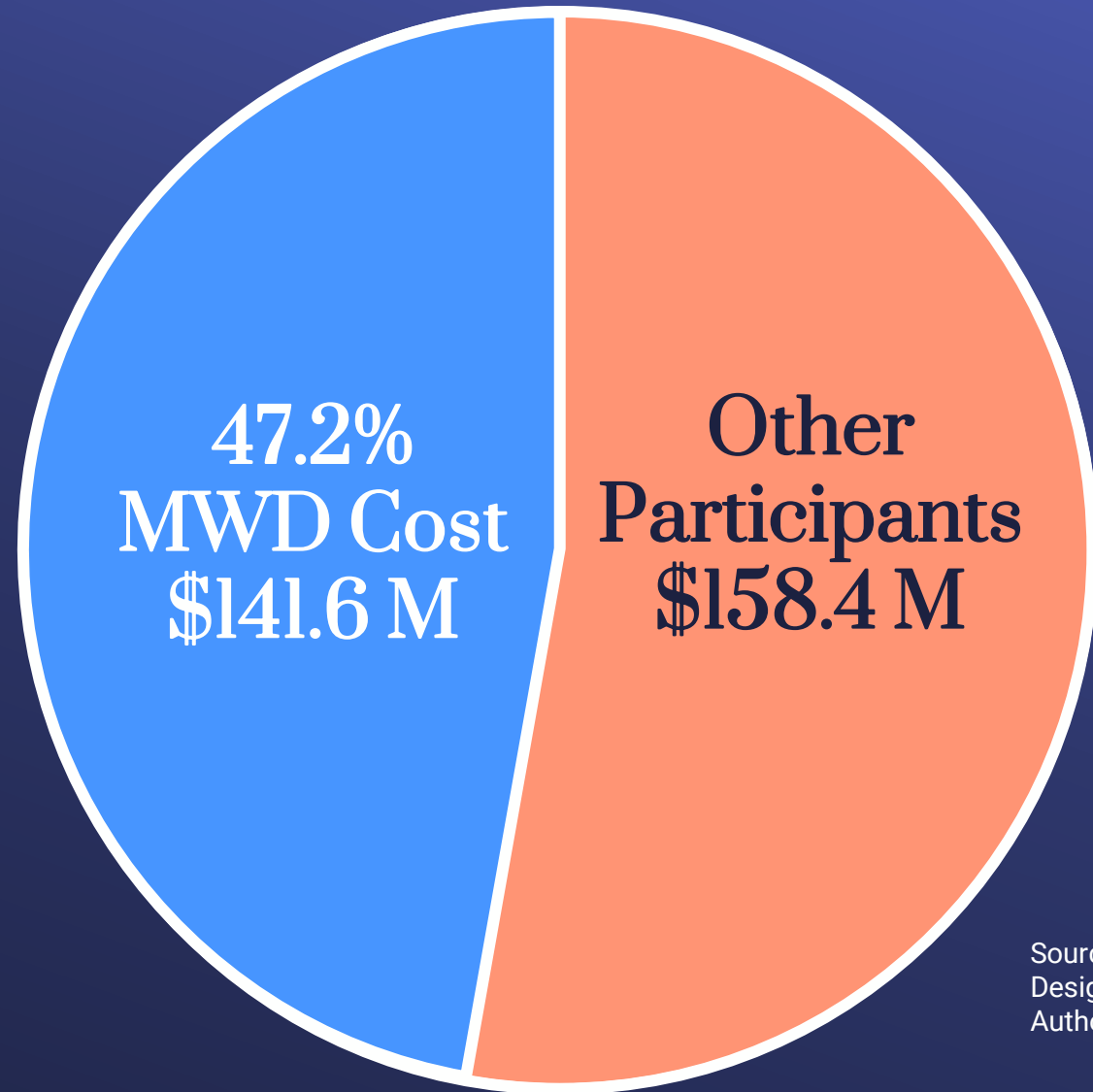
Calendar Year	Total Planning	Metropolitan Option #1 (60.2 %)	Metropolitan Option #2 (47.2 %)
2021	\$63.2	\$38.0	\$29.8
2022	\$61.7	\$37.1	\$29.1
2023	\$102.8	\$61.9	\$48.5
2024	\$113.1	\$68.1	\$53.4
Total	\$340.7	\$205.1	\$160.8

Delta Conveyance Planning Schedule



DWR Requested Planning Dollars (2026-2027)

Delta Conveyance Project Continued Planning Funding

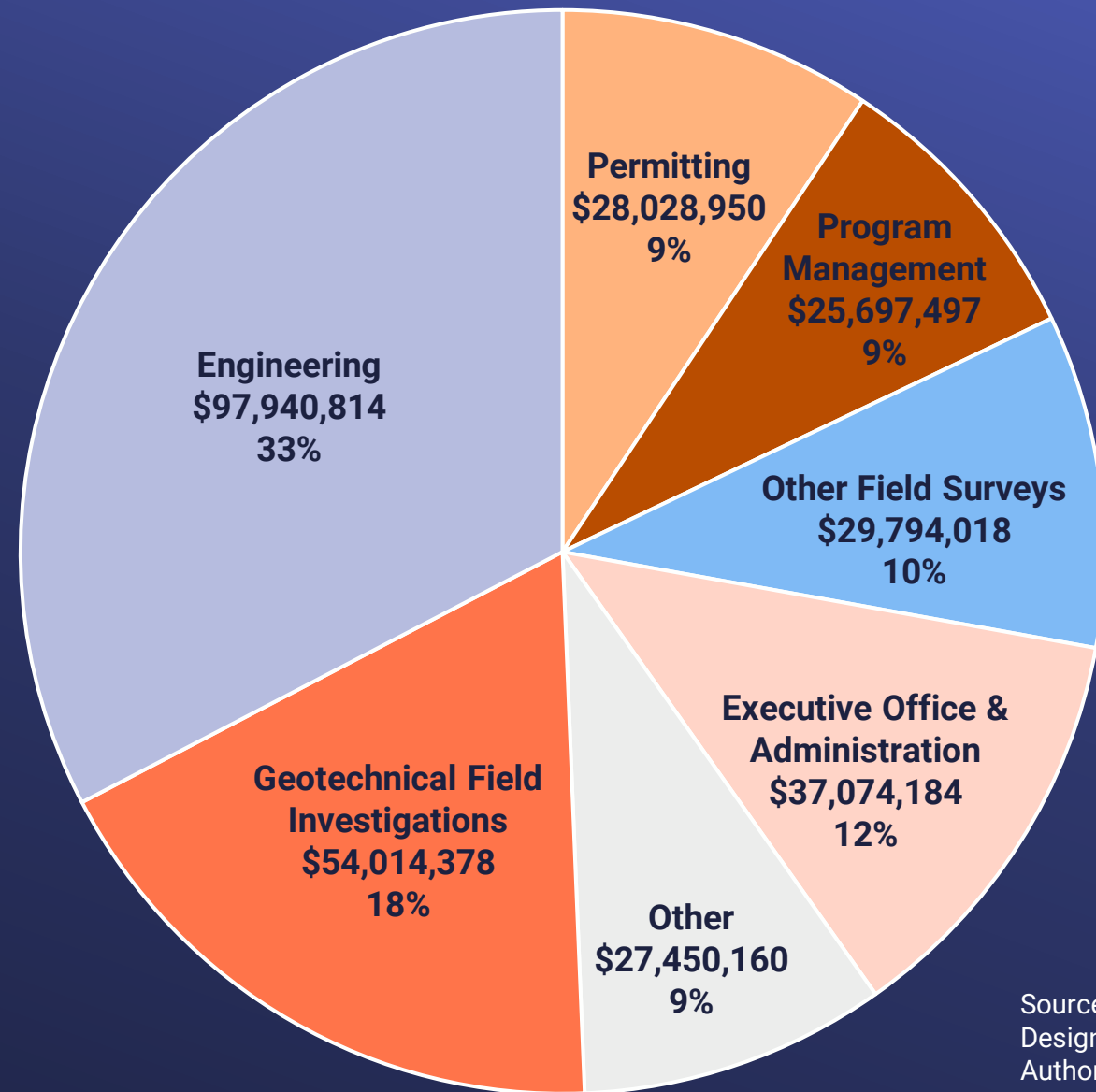


Source: Delta Conveyance
Design and Construction
Authority.

Metropolitan Costs
(Fiscal Year)

FY 25-26	FY 26-27	FY 27-28	Total
\$26 M	\$74.4 M	\$41.2 M	\$141.6 M

Delta Conveyance Project Continued Planning Funding



Source: Delta Conveyance
Design and Construction
Authority.

Note: Category "Other" includes Property and Easements (\$13M), Community Engagement/Outreach (\$7M), and Mitigation (\$7M).

DCP Participating Agencies



M&I {

Ag {

M&I {

Region	Contractors
South Bay	Alameda County FC&WCD, Zone 7 Alameda County WD Santa Clara Valley WD
San Joaquin Valley	Dudley Ridge WD Kern County WA
Central Coastal	San Luis Obispo County FC&WCD
Southern California	Antelope Valley-East Kern WA Santa Clarita Valley WA ✓ Coachella Valley WD Crestline-Lake Arrowhead WA ✓ Desert Water Agency Metropolitan Water District Mojave Water Agency Palmdale Water District San Bernardino Valley MWD ✓ San Gabriel Valley MWD San Geronio Pass WA ✓ Ventura County WPD

✓ indicates board action taken to support additional DCP planning and preconstruction activities.

Permitting, Planning & Litigation Considerations



Full Participation
Close existing funding gap

Pending Litigation
CEQA, Geotech,
Bond Validation, etc.



Delta Stewardship Council
Certification of Consistency

Water Rights Permitting
Hearing set to begin
in January 2025



2026-2027
Permitting,
Planning &
Litigation
Evaluate
Project with
All Available
Information

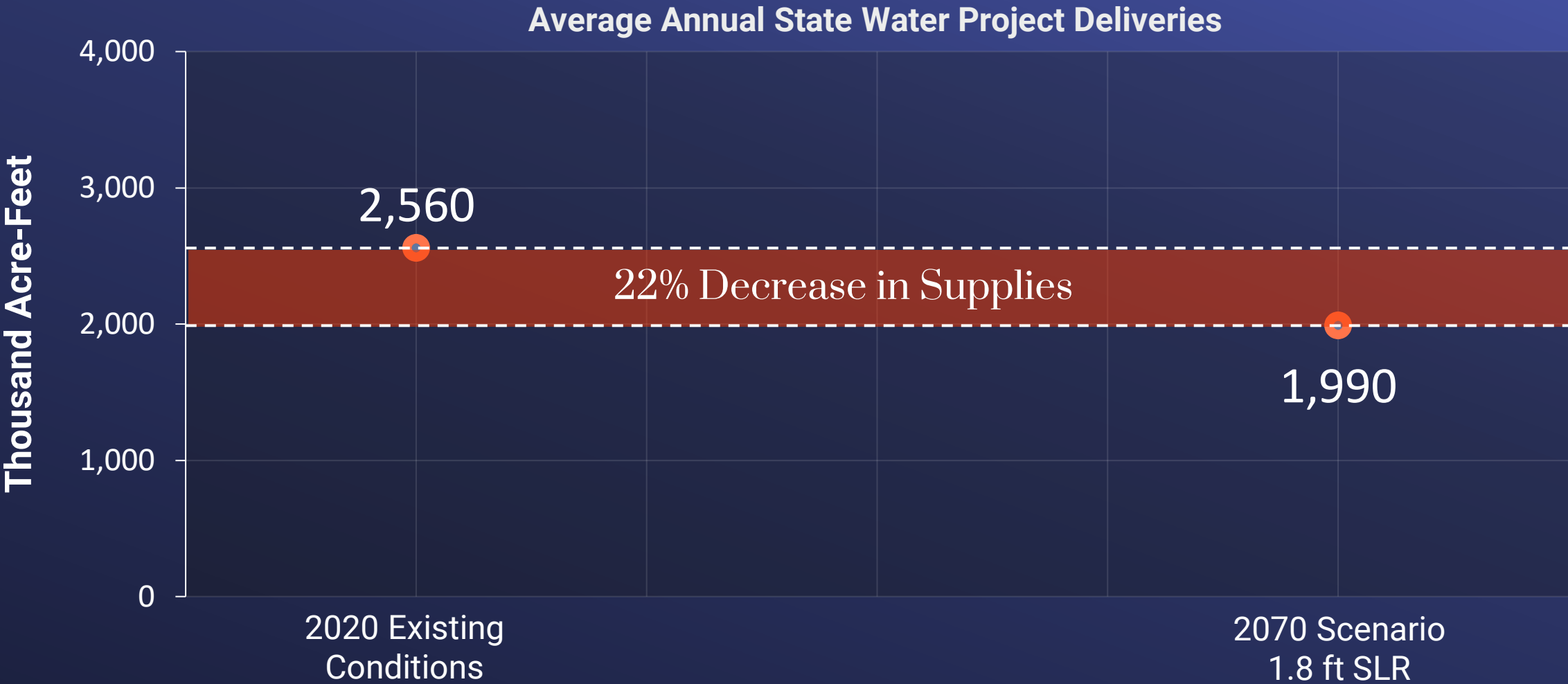




Photo Credit: DWR

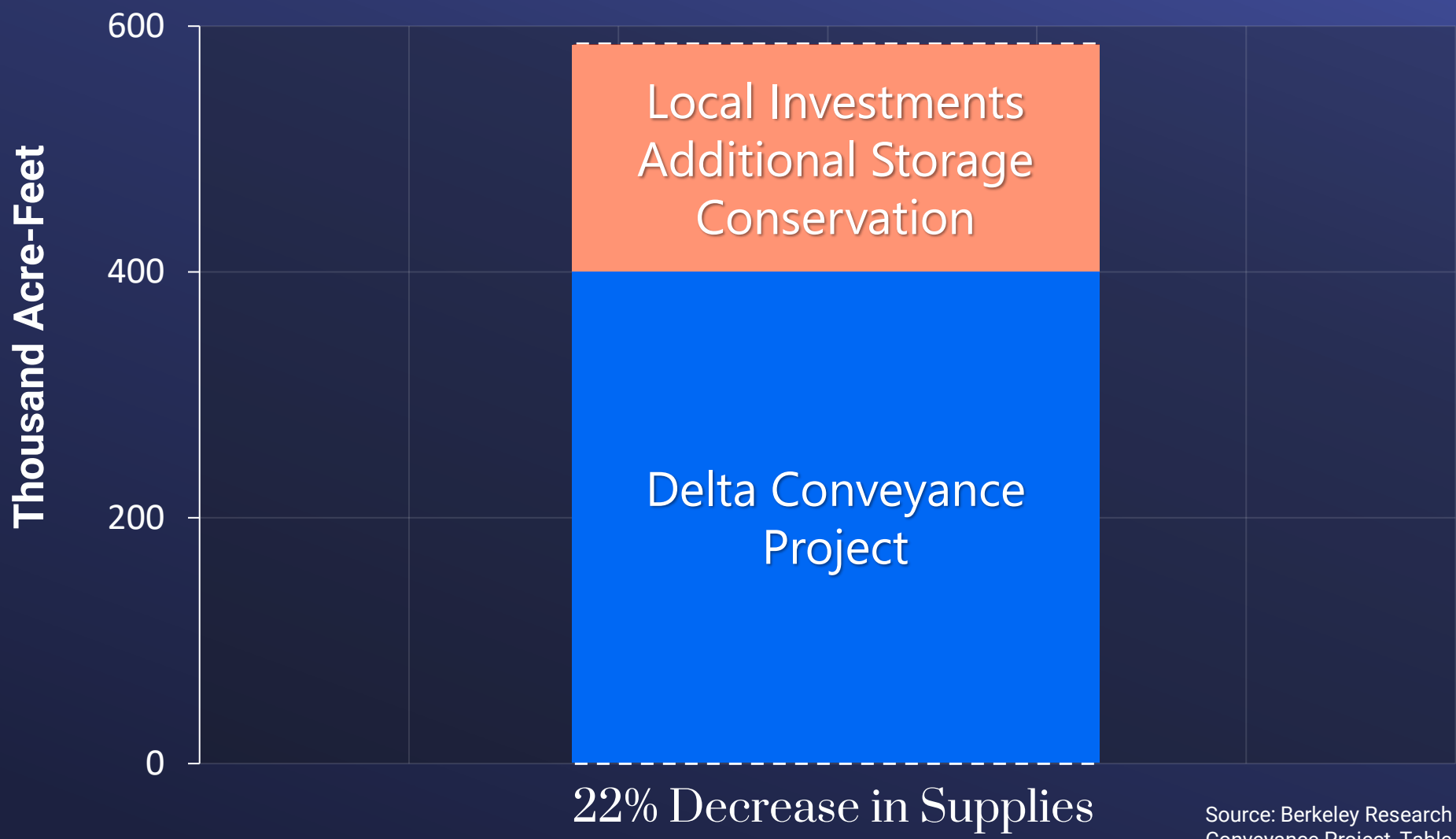
Key Takeaway Next Steps

Continued Decline Due to Climate Change



Source: Berkeley Research Group, Benefit-Cost Analysis of the Delta Conveyance Project, Table 2, Existing Conditions and Main Scenario.

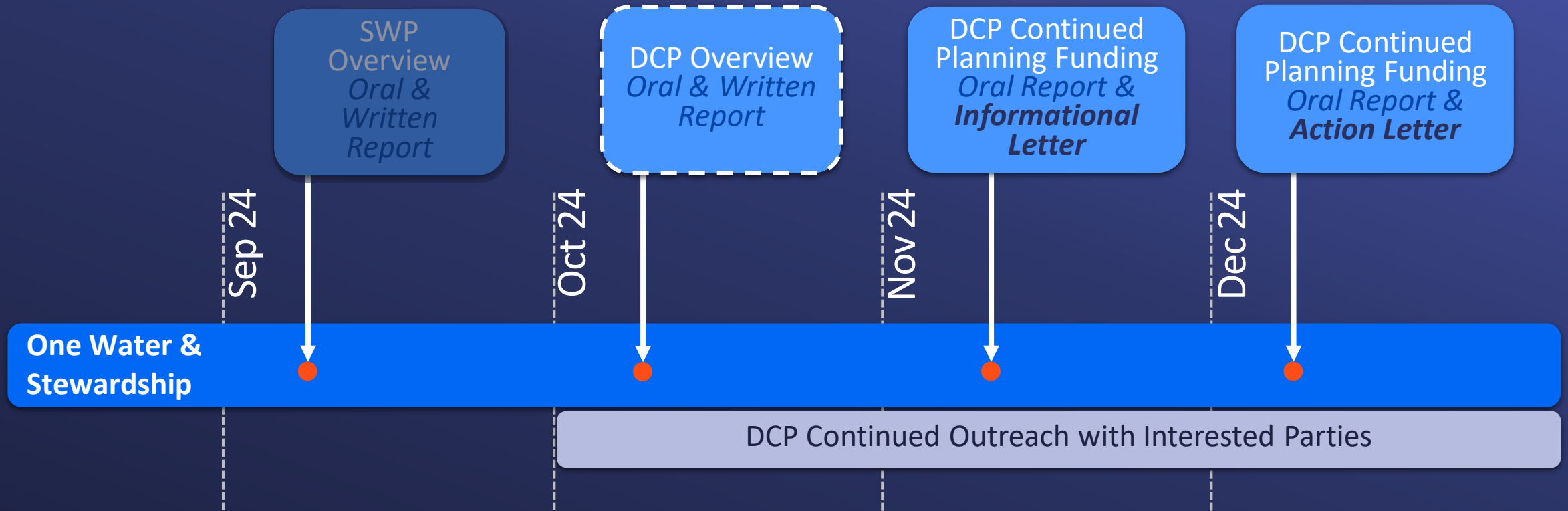
Maintaining SWP Reliability and Resilience Requires a Multi-Faceted Approach



Source: Berkeley Research Group, Benefit-Cost Analysis of the Delta Conveyance Project, Table 2, Existing Conditions and Main Scenario

Next Steps: Conveyance for the SWP

Delta Conveyance Project – MWD Updates and Deliberation for Continued Planning Efforts







One Water & Stewardship Committee

Basin States Discussions Regarding Post-2026 Operational Guidelines

Item 6b

October 7, 2024

Item 6b Update on Basin States Discussions Regarding Post- 2026 Operational Guidelines

Subject

Basin States discussions regarding development of Post-2026 Operational Guidelines for management of Colorado River system reservoirs

Purpose

Provide update on recent discussions in the development of the Post-2026 Operational Guidelines

Next Steps

Continue discussions with Federal, Basin State and California partners in development of Post-2026 Operational Guidelines and implementing agreements

Colorado River Reservoir Management

Reclamation's adoption of new operational guidelines constitutes a major federal action that requires an environmental analysis, in this case an Environmental Impact Statement (EIS)

Post-2026 Operational Guidelines

- The U.S. Bureau of Reclamation (Reclamation) is developing the Post-2026 Operational Guidelines for management of Colorado River system reservoirs
- The guidelines determine:
 - releases from Lake Powell
 - water uses/shortages in the Lower Basin
 - storage of conserved water (like Intentionally Created Surplus)

Recent EIS Development Process



Alternatives Reclamation Is Analyzing



Lower Basin States Alternative



Upper Division States Alternative



**Gila River Indian Community
Alternative**

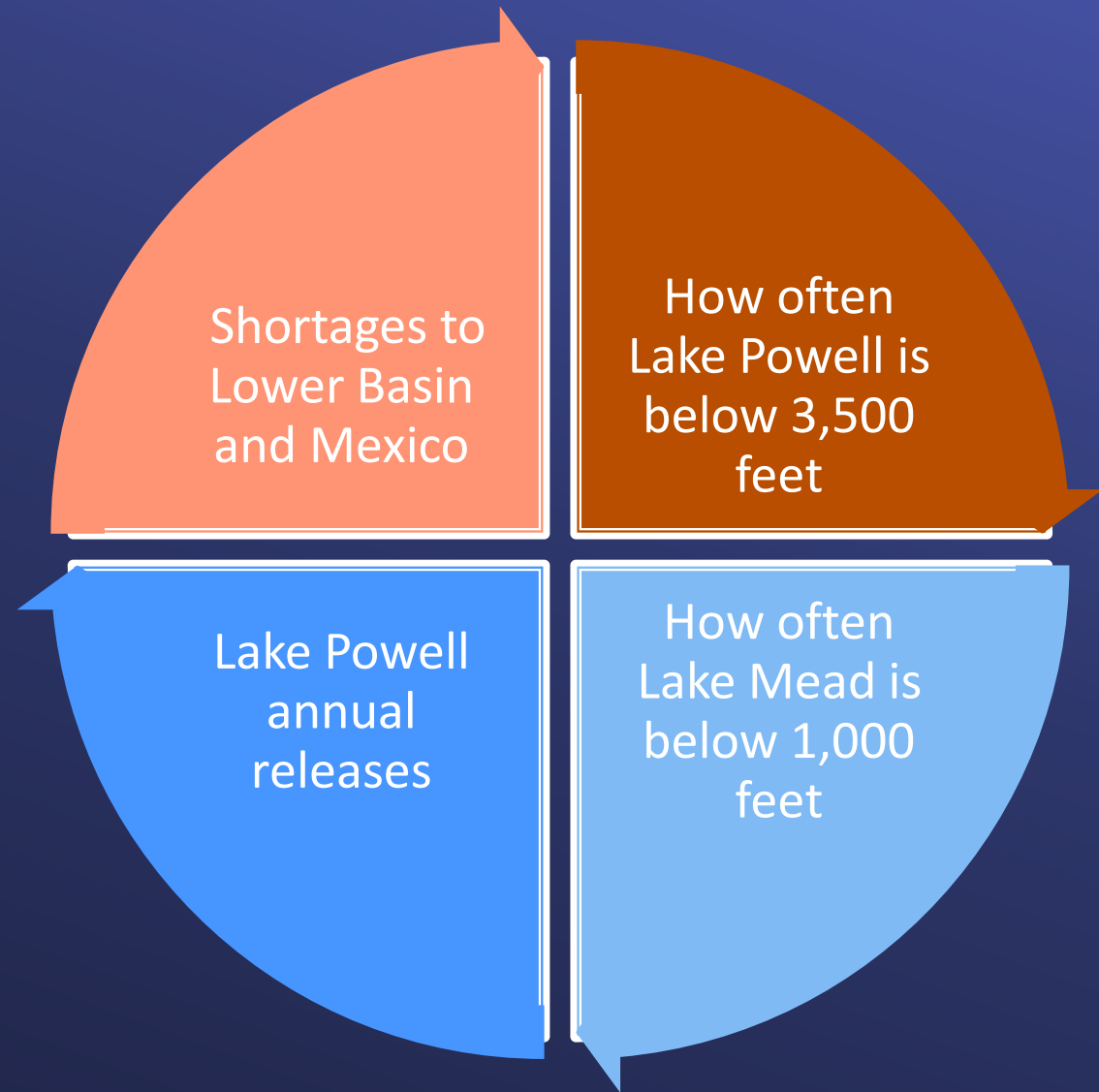
*Other alternatives: No Action, Continued Current
Strategies, other federal alternatives*



NGO Alternative

Reclamation's EIS Modeling of Alternatives

Reclamation is anticipated to evaluate how the alternatives perform in these categories, based on a set of five hydrologies that represent conditions wetter, drier, and similar to the past thirty years



Comparison of Lower and Upper Basin Alternatives

Lower Basin States Alternative

Addresses structural deficit

Operates the reservoirs based on system contents rather than elevations at Lake Powell and Lake Mead

Shares water use reductions broadly

Includes provisions for storage of conserved water

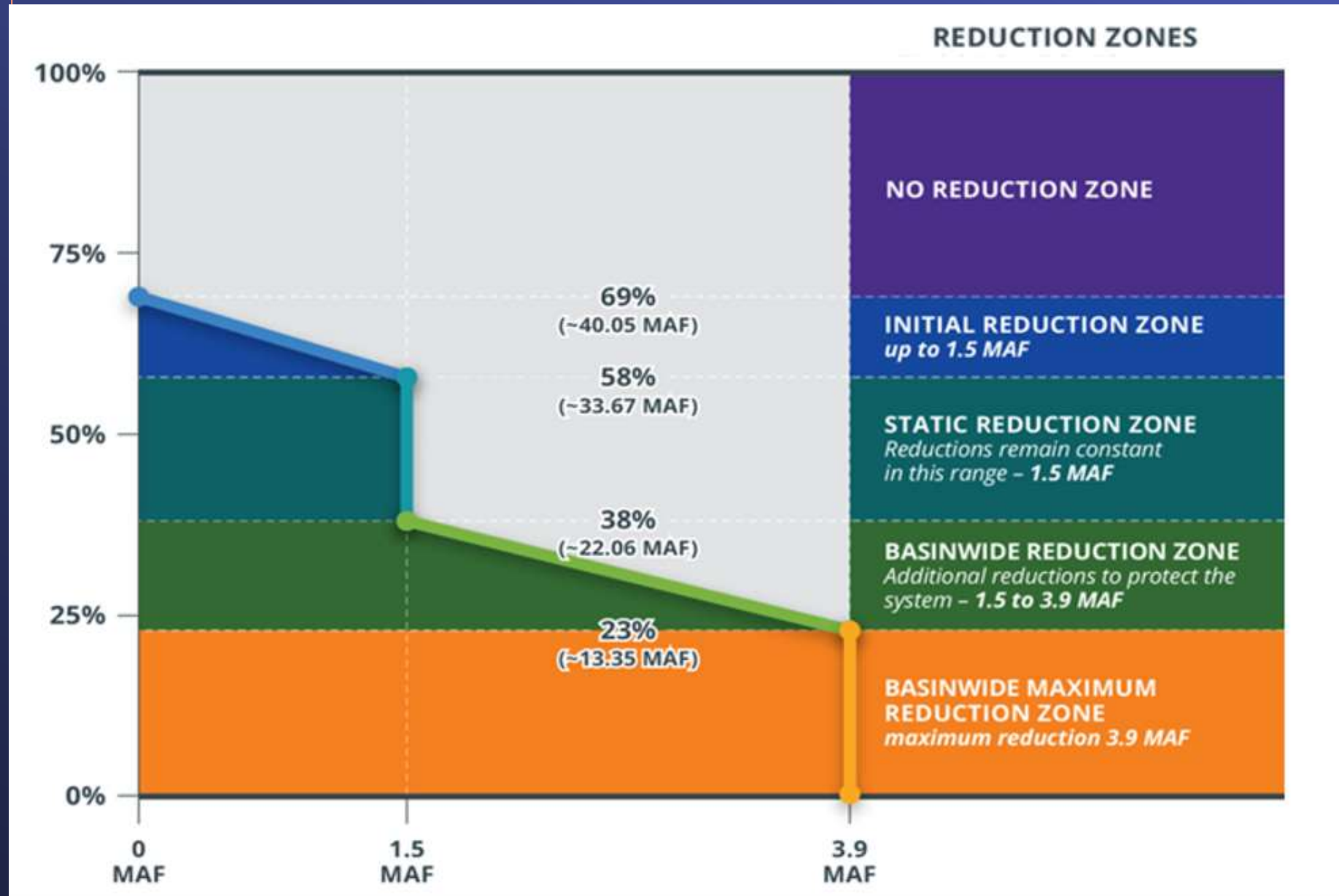
Upper Division States Alternative

Keeps Lake Powell relatively high by reducing releases to the Lower Basin and imposing shortages in the Lower Basin at higher reservoir elevations

Agrees to consider “parallel activities” related to conservation in the Upper Basin

Lower Basin Alternative

Lower Basin Reductions & Basinwide Reductions at Lowest Conditions



Share of 1.5 maf Static Reductions in Lower Basin Alternative

* The Lower Basin Alternative assumes that Mexico's reductions will be in parity with shortages in Treaty Minute 323, but Mexico's final share of reductions will be determined in a new Treaty Minute.

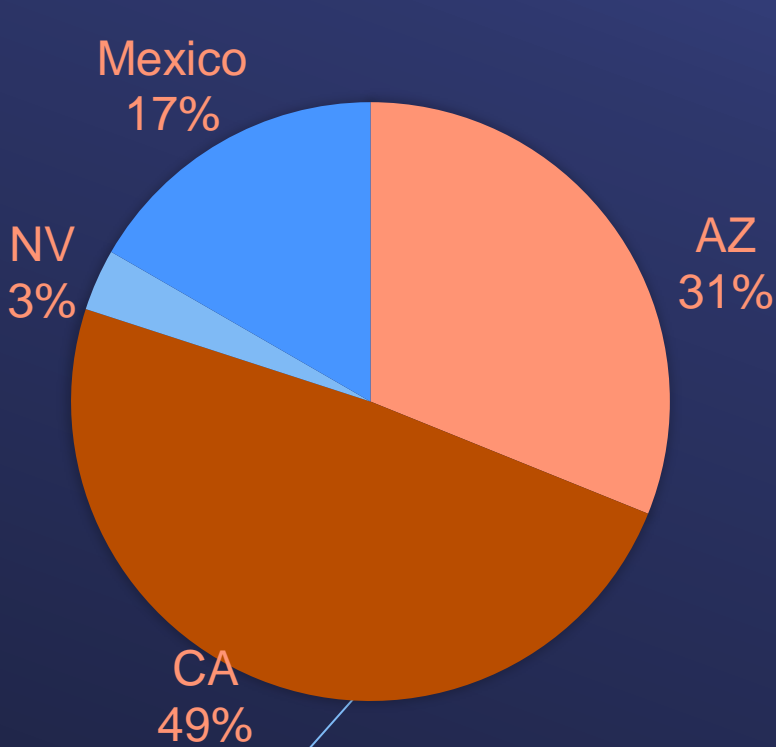
Arizona – 760,000 AF

California – 440,000 AF

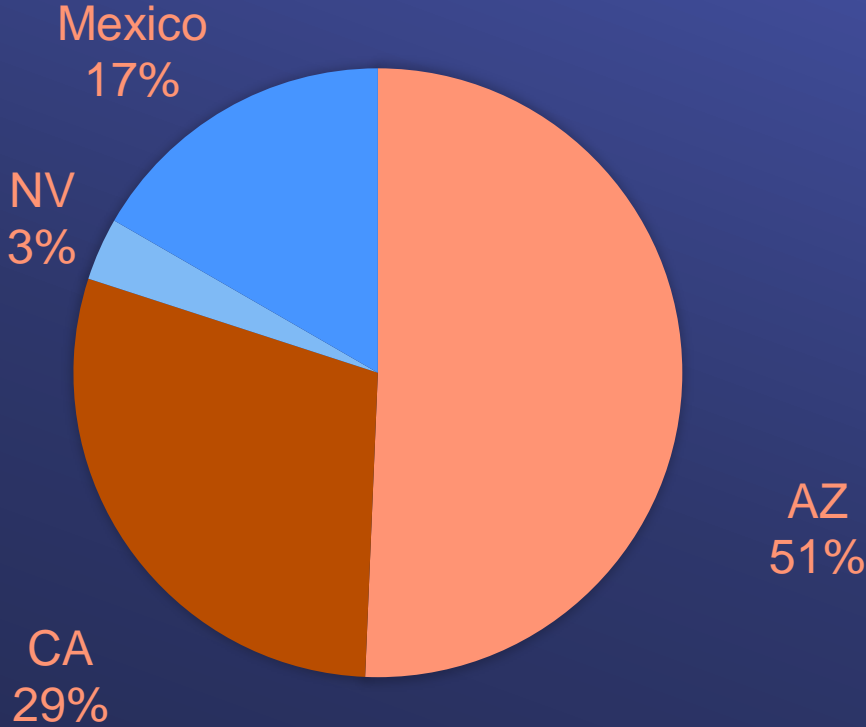
Nevada – 50,000 AF

** Mexico – 250,000 AF*

Share of Lower Basin and Mexico Allocations v. Static Reduction Cuts in Lower Basin Alternative



Lower Basin States and Mexico Normal Year Allocations



Lower Basin States and Mexico Share of Static Reduction Cuts

Post-2026 Operational Guidelines Next Steps







One Water & Stewardship Committee

Update on Conservation as a California Way of Life

Item 6c

October 7, 2024

Item 6c
Update on
Conservation
as a California
Way of Life

Subject

Update on Conservation as a California Way of Life

Purpose

Provide update on final Making Conservation a California Way of Life Regulation

History of the Regulation Rule-making Process

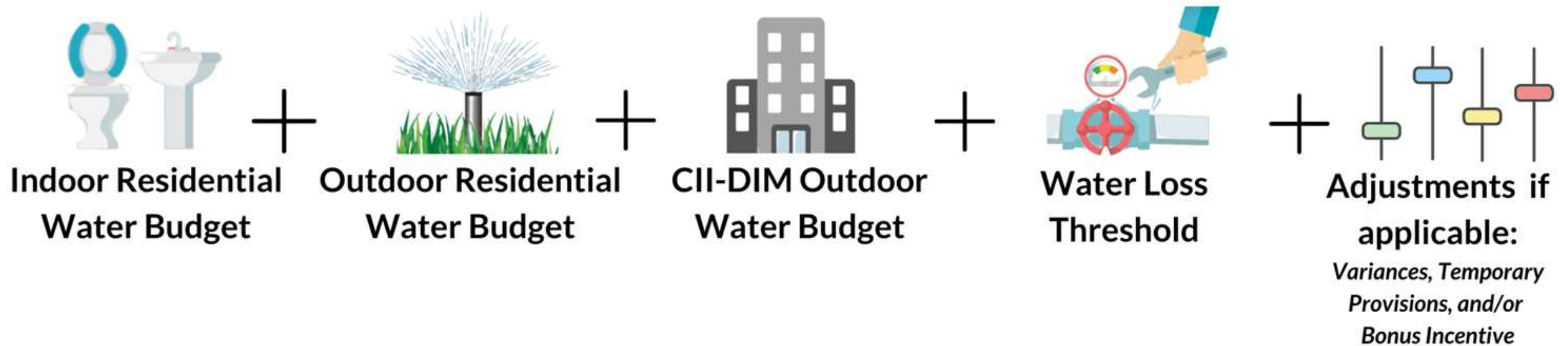
- 2018
 - SB606/AB1668 passed in 2018
- 2018-2022
 - DWR studies and working group meetings held
 - DWR recommendations to SWRCB submitted on September 29, 2022
- 2022-2024
 - SWRCB pre-rulemaking workshops and interested party working groups
 - Final regulation passed on July 3, 2024

Metropolitan Participation in Rulemaking Efforts

- Workgroup representation along with other member agency staff
 - DWR
 - SWRCB pre-rulemaking workshops
 - SWRCB interested parties working groups
- Participation and Collaboration with other industry partners
 - ACWA/CMUA
 - CUWA
 - CalWEP
 - WateReuse
- Submitted six comment letters on proposed regulation

Calculating the Urban Water Use Objective

Providers cannot exceed the SUM of the standards



*Agriculture and indoor CII not part of objective; indoor CII is covered by other BMP requirements.

Final Regulation Key Takeaways

- Outdoor standard adjustment to 0.55 LEF and 0.45 LEF changed from 2035 to 2040
- Inclusion of existing tree variance for RES and CII outdoor standard
- Alternative compliance pathway for DAC retailers facing a 20% or greater reduction in water use
- Inclusion of regional programs as qualifying performance measures and BMPs for CII standard compliance

Metropolitan Support and Next Steps

- Compliance support provided through:
 - Member Agency Administered Program
 - Regional Rebate Program
 - Water Savings Incentive Program
 - Turf Dashboard
- Next Steps
 - Metropolitan staff participation on DWR Indoor Residential End Use Studies Technical Advisory Panel
 - Monitoring of proposed SWRCB UWUO advisory groups
 - Continual review of grant funding opportunities to expand or develop new programs to meet regulation requirements





One Water and Stewardship Committee

Conservation Update

Item 6d

October 7, 2024

Item 6d Conservation Update

Subject

Conservation Update

Purpose

Provide monthly update on conservation expenditures and activity from July 1, 2022 – August 31, 2024

Current Conservation Program Expenditures FYs 2024/25 & 2025/26⁽¹⁾

	Paid ⁽²⁾	Committed ⁽³⁾
Regional Devices	-\$0.1 M ⁽⁴⁾	\$1.5 M
Member Agency Administered	\$2.7 M	\$4.4 M
Turf Replacement	\$3.1 M	\$17.4 M
Advertising	\$0.0 M	\$0.2 M
Other	\$0.3 M	\$1.2 M
TOTAL	\$6.1 M	\$24.7 M

- (1) The Conservation Program biennial expenditure authorization is \$98.2M.
- (2) Paid as of 7/1/2024 - 8/31/2024. Financial reporting on cash basis.
- (3) Committed dollars as of September 10, 2024.
- (4) \$1M in costs from the SoCalGas Direct Install Program were transferred from the Conservation budget to reimbursable grant fund account.

Current Conservation Program Activity FYs 2024/25 & 2025/26



Turf Replacement Rebates:

August: 353,225 ft² replaced

FY2024/25-FY2025/26: 1,270,892 ft² replaced



Trees (part of Turf Replacement Program):

August: 104 trees rebated

FY2024/25-FY2025/26: 395 units rebated



Toilets:

August: 1,086 units rebated

FY2024/25-FY2025/26: 3,149 units rebated

Lifetime Water Savings to be achieved by all rebates in August 2024: 2,242 AF

FY2024/25-FY2025/26: 7,469 AF lifetime water savings

Metropolitan recognized by the US Environmental Protection Agency (EPA)



2024 EPA WaterSense Excellence Award in Certification Program Growth





One Water and Stewardship Committee

Draft Climate Adaptation Master Plan for Water Policy Framework

Item 6e

October 7, 2024

Item 6d
CAMP4W
Policies,
Initiatives, and
Partnerships
Discussion

Subject

Discuss the development of a Climate Adaptation Policy Framework for Board Approval in early 2025

Purpose

Seek input from the One Water and Stewardship Committee on the value of developing a Climate Adaptation Policy Framework that translates CAMP4W thematic priorities into Policies, Initiatives and Partnerships

Next Steps

Dec/Jan – Present Climate Adaptation Policy Framework as a component of the Draft CAMP4W Master Plan

CAMP4W Task Force Charter

CAMP4W Task Force

Joint Task Force of Board Members and Member Agencies has been chartered to produce a regional plan (CAMP4W) that will develop and establish a master plan that includes:

- Climate and Growth Scenarios
- Time-bound Targets
- Framework for Climate Decision-Making and Reporting
- **Policies, Initiatives, and Partnerships**
- Business Models and Funding Strategies

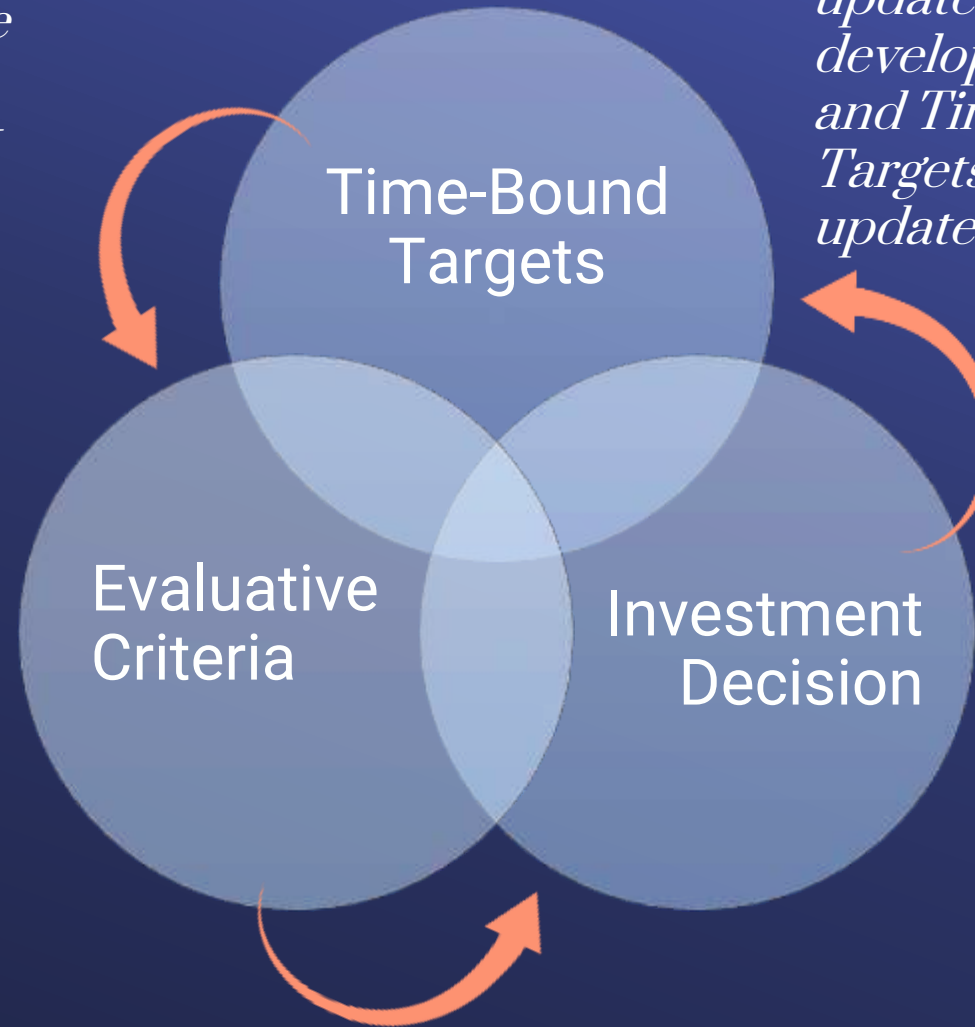


Climate Decision-Making Framework focused on Projects and Programs

Integrated Elements:
Time-Bound Targets, Evaluative Criteria and Investment Decisions function together



Time-Bound Targets guide project development and inform scoring of projects



Adaptive Management: update resource development needs and Time-Bound Targets based on updated projections

Assessments and Time-Bound Targets inform decision-making

A Policy Framework to systemically integrate Climate Adaptation

Policy Framework Objectives

1. Systemically integrate climate adaptation to increase preparedness and improve response
2. Update existing and set new policies to strengthen the role of adaptive management and climate adaptation in Metropolitan's initiatives and decision making
3. Underscore the value of the Metropolitan Member Agency cooperative and other partnerships in achieving regional climate resilience



A Policy Framework to systemically integrate Climate Adaptation

Existing Climate-Related Policies

1. Board Legislative Priorities reviewed annually to address emerging and applicable issues related to climate action and adaptation
2. Existing Board Adopted Policy Principles include limited climate-specific policies:
 - 2022 Bay-Delta Policy Framework addresses climate risks and resilience in Bay-Delta
 - 2016 Policy on incorporating climate adaptation into Watershed Management Plans
 - 2002 Policy on incorporating climate into water resources planning



DRAFT Climate Adaptation Policy Framework Structure

CAMP4W Themes

Reliability	Resilience	Financial Sustainability	Affordability	Equity
-------------	------------	--------------------------	---------------	--------

Board Policy Statements (Overarching Direction)

Policy Statement to integrate climate adaptation into water supply reliability efforts	Policy Statement to achieve climate resilience of resources and infrastructure	Policy Statement to account for financial risks associated with climate change	Policy Statement to consider cost impacts of climate adaptation planning and implementation	Policy Statement acknowledging the role and importance of communities in climate adaptation
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Initiatives (Specific Implementation Actions)

Policies, Programs, Actions, Studies, Research, Partnerships etc. to implement Climate Adaptation Policies
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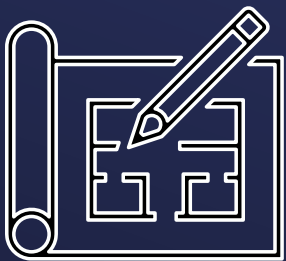
CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Statements (DRAFTS)
Reliability	➤ Long-term regional water supply reliability requires ongoing consideration of climate risks and integration of climate adaptation strategies into Metropolitan programs, policies, planning, workforce development, budgeting, land management, purchasing, and operations
Resilience	➤ Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire using the best available climate science and climate change information into planning, implementation and operations
Financial Sustainability	➤ Metropolitan will reduce short-term and long-term climate-related financial risks through its reserve policy, efforts to increase fixed revenues, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives
Affordability	➤ Metropolitan will continue to support retail user affordability efforts by pursuing cost-effective investments, new non-rate dependent revenue sources and other financial tools that support our mission to provide regional wholesale water service in the most economically responsible way
Equity	➤ Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Statements (DRAFTS)
Reliability	<ul style="list-style-type: none">➤ Long-term regional water supply reliability requires ongoing consideration of climate risks and integration of climate adaptation strategies into Metropolitan programs, policies, planning, workforce development, budgeting, land management, purchasing, and operations

Example Initiatives:



Revise design standards
to address climate risks



Strengthen local/regional
water and climate resilience
programs



Strengthen
imported supplies



Partner with Member
Agencies

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Statements (DRAFTS)
Resilience	<ul style="list-style-type: none">➤ Metropolitan will integrate climate risk and vulnerability assessments for climate-related hazards including drought, extreme heat and precipitation, sea level rise, flooding, and wildfire using the best available climate science and climate change information into planning, implementation and operations

Example Initiatives:



Manage vulnerabilities to power infrastructure



Collect and track latest climate data



Review workforce safety measures for climate risks



Maintain updated fire management plans for critical facilities

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Statements (DRAFTS)
Financial Sustainability	<ul style="list-style-type: none">➤ Metropolitan will reduce short-term and long-term climate-related financial risks through its reserve policy, efforts to increase fixed revenues, active monitoring and managing of financial conditions, and by maintaining flexible financing alternatives

Example Initiatives:



Identify partnership opportunities to share costs and benefits of adaptation strategies

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Statements (DRAFTS)
Affordability	<ul style="list-style-type: none">➤ Metropolitan will continue to support retail user affordability efforts by pursuing cost-effective investments, new non-rate dependent revenue sources and other financial tools that support our mission to provide regional wholesale waters service in the most economically responsible way

Example Initiatives:



Develop water conservation rebates and incentives to reduce financial impacts of climate adaptation efforts on retail water users, including in DACs



Work with Member Agencies to identify funds for statewide low-income rate assistance

CAMP4W Themes Inform Policy Framework and Initiatives

Themes	Policy Statements (DRAFTS)
Equity	➤ Metropolitan will engage with the diverse communities we serve to listen, communicate transparently, and co-create solutions for greater equity in climate adaptation planning and implementation

Example Initiatives:

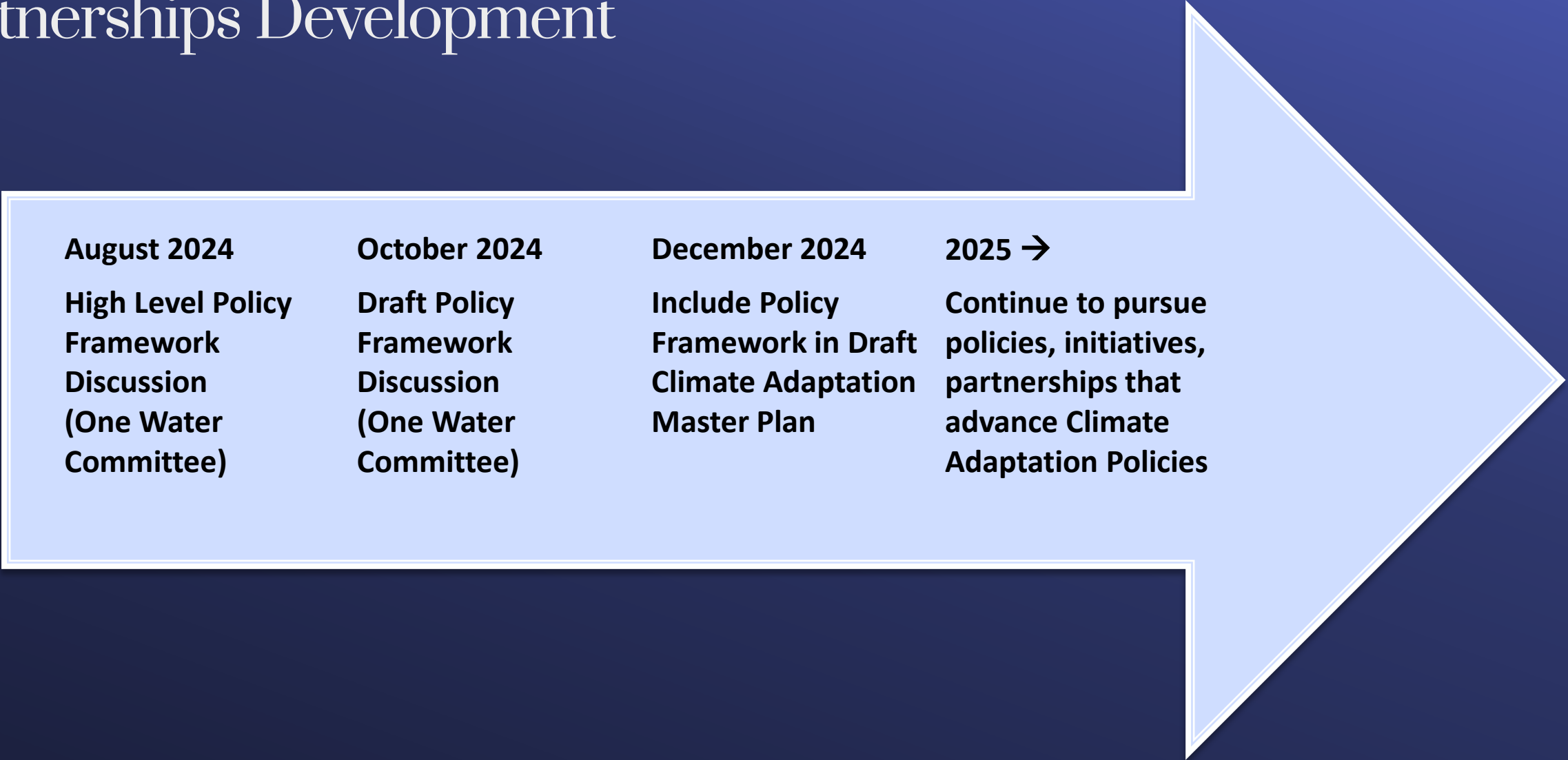


Develop environmental justice
and community benefits policy



Develop community
engagement standards

Process for Climate Adaptation Policy, Initiatives, and Partnerships Development



2024 Schedule of CAMP4W and Business Model Discussions

rev. Sept. '24







Bay-Delta Resources

• Bay-Delta Management Report

Summary

This report provides a summary of activities related to the Bay-Delta for September 2024.

Purpose

Informational

Detailed Report

Long-Term Delta Actions

Sites Reservoir

Staff presented information to the State Water Resource Control Board related to Sites Reservoir's water rights hearing. Staff presented the CalSim modeling framework used to evaluate the effects of the Sites Reservoir Project. Additionally, staff addressed questions about model results and the appropriate use of models during cross-examination.

On September 20, the Third District Court of Appeal released an opinion upholding the decision by the Superior Court of Yolo County in the *Friends of the River v. Sites Project Authority* case. The Yolo County Superior Court and now the Court of Appeal have found in the Sites Project Authority's favor in every claim asserted by the environmental organizations challenging the sufficiency of the Final Environmental Impact Report, concluding that the Authority fully complied with the California Environmental Quality Act in its review of the Sites Project.

Near-Term Delta Actions

Regulatory and Science Update

Staff presented twice at the 154th Annual American Fisheries Society Annual Meeting. Staff produced the final report for the Collaborative Science and Adaptive Management Program Structured Decision Making. This report will be used to inform the management of Delta smelt. Summary findings support actions related to food and turbidity.

Delta Islands

Staff updated the One Water and Stewardship Committee about progress on the Webb Tract Wetland Restoration and Rice Development Projects. Staff provided an update to the OWS committee on an upcoming board action for rice farming on Webb Tract. The recruitment period for a limited-term, principal environmental specialist has closed.

Staff began participation in an ACWA California Endangered Species Act (CESA) Streamlining Working Group to address regulatory inefficiency in the CESA permitting process. Staff received \$500,000 in funding from California Department of Water Resources for design of a levee improvement project on Bouldin Island.



Colorado River Resources

• Colorado River Management Report

Summary

This report provides a summary of activities related to management of Metropolitan's Colorado River resources for September 2024.

Purpose

Informational

Detailed Report

Implementation of Metropolitan-San Diego County Water Authority-Imperial Irrigation District Agreement Update

Following board authorization on August 20, 2024, staff moved forward with entering into an implementing agreement with Imperial Irrigation District (IID) and San Diego County Water Authority (SDCWA) for joint participation in IID's System Conservation Implementation Agreement with the United States Bureau of Reclamation (Reclamation). Under this implementing agreement, 50,000 acre-feet (AF) of conserved water that was otherwise intended for transfer to the SDCWA and exchanged with Metropolitan under the Exchange Agreement will be left in Lake Mead as system water. Additionally, under the implementing agreement, SDCWA will purchase an additional 50,000 AF of Metropolitan supplies by the end of this calendar year. This implementing agreement also provides for additional flexibility if all parties mutually agree that it would be beneficial to increase this amount based on future conditions and updated estimates of IID conservation yields, up to a total combined volume of 75,000 AF. Metropolitan staff will effect this change through its billing to SDCWA and will submit a revised water order to the Bureau of Reclamation (Reclamation) that is inclusive of this change. This implementing agreement was signed on September 6, and is expected to take effect as of the August 2024 billing cycle.

Land Acquisition for Lower Colorado River Multi-Species Conservation Program

The state of California took title to 1,971 acres of land in the Palo Verde Valley that will be used to establish crucial aquatic habitat for the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). The lands were purchased from the Gabrych family with funding from the LCR MSCP and the State Wildlife Conservation Board. The California Department of Fish and Wildlife will hold title and the lands will be used by Reclamation to construct and manage marsh and backwater areas for native fish and bird species. The purchase culminates years of effort to acquire the lands by Metropolitan, the state, and environmental groups.

The newly acquired lands are located within the Palo Verde Irrigation District with frontage on the Colorado River. The location, size, and topography of the lands make them suitable to complete the remaining areas of aquatic habitat required by the federal and California incidental take permits issued to LCR MSCP participants. The importance of the lands is reflected in the commitment of \$25.5 million in LCR MSCP funds towards the purchase price. The state of California paid the balance of \$10 million. The LCR MSCP anticipates spending an additional \$80 million to excavate and plant the marsh and backwater areas.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Board Report

Sustainability, Resilience, and Innovation Group

• Sustainability, Resilience, and Innovation GM Monthly Report

Summary

Sustainability, Resilience, and Innovation Office September 2024 Monthly Activities

Purpose

Informational

Attachments

None

Detailed Report

SRI Core Activities

SRI continued to lead development of the Climate Adaptation Master Plan for Water, working with Member Agencies and inviting the public to provide their priorities and ideas. Staff presented CAMP4W to local leaders at the San Gabriel Valley Council of Governments Energy, Environment and Natural Resources Committee. On September 12, SRI collaborated with External Affairs to conduct a hybrid public forum on CAMP4W with over 75 participants. Chair Ortega provided a welcome and Black Women for Wellness provided the keynote presentation, sharing their work and their new “Drinking Water Guide for South Los Angeles.” Forum participants discussed their priorities for climate adaptation policies and ideas for partnerships and collaboration. The CAMP4W Core Planning Team held a second workshop with Member Agency Managers to discuss the evaluative criteria and development of a project assessment form. Chief SRI Officer Liz Crosson provided a briefing for directors on CAMP4W and Metropolitan’s Climate Action Plan.



Board Report Sustainability, Resilience, and Innovation GM Monthly Report

Sustainability and Resilience

EVs2Scale Meeting: SRI, Fleet, and Safety, Regulatory, and Training Section staff participated in the the Electric Power Research Institute's (EPRI's) EVs2Scale2030 meeting in downtown Los Angeles on September 16, 2024. EPRI is a non-profit organization of public agencies and private industry that collaborate to share data with regional utilities to reach a target goal of 50 percent fleet electrification by 2030. Meeting attendees shared how to face the challenges and barriers of the transition to zero emission vehicles, learn about power load forecasting and large-scale readiness software programs, and discuss interim power solutions.



Los Angeles County Sanitation Districts (LACSD) ZEV Tour: On September 18, 2024, SRI, SRT, and Fleet staff attended a tour of the LACSD's Materials Recovery and Transfer Station in La Puente. Metropolitan staff met with LACSD Fleet staff and management to discuss how they have overcome the obstacles and challenges faced during their electrification journey. Staff was also able to ask questions regarding their experience installing charging equipment and their uses of different types of electric vehicles including passenger and heavy duty.



Metropolitan staff discussing different types of zero emission vehicles and chargers at LACSD

Zero Emission Vehicle (ZEV) Transition Communications:

- SRI continues to work with Fleet to develop communication and training materials for employees including a ZEV handbook and vehicle quick-start guide.
- SRI collaborated with our ZEV work groups to develop a ZEV FAQ handout for managers attending Townhall meetings to address any questions raised by employees on the ZEV transition.

Sustainable Procurement: SRI and the Contracting Services Unit continue development of the Sustainable Procurement Guide. This guide will provide employees with information on products and services that are mandated or offer a more sustainable option.

Board Report Sustainability, Resilience, and Innovation GM Monthly Report

Centralized Grants Management Office

Centralized Grants staff has finalized a training series for Metropolitan staff working with or interested in working with grants. Upon completion of the training series, staff will receive a Grants Administrator certificate and will be equipped to pursue and manage grants within the federal and state guidelines. SRI and Operation Power Planning staff met with Electric Power Research Institute's (EPRI) staff to discuss Metropolitan's research and grants priorities and potential partnerships with EPRI.

Innovation, Pilots, and Emerging Technologies

On September 30, SRI staff worked with External Affairs and others to host a delegation from the Singapore Public Utilities Board (PUB). The discussion focused on climate adaptation, Pure Water Southern California and direct potable reuse – all priorities of PUB as well. The Chief SRI Officer also participated in a focused climate planning session with global agencies on an exchange under the UNESCO MegaCities Alliance project.

Environmental Planning Services

Environmental Planning Section staff prepared California Environmental Quality Act (CEQA) documentation for capital projects, including drafting addendums to the Program Environmental Impact Report (PEIR) for the PCCP Rehabilitation Program Sepulveda Feeder South Reach Relining project and the Mitigated Negative Declaration (MND) for the Lakeview Pipeline Repair project. Staff filed Notices of Determination with the Los Angeles County Clerk and State Clearinghouse for the West Valley Feeder No. 1 Stage 3 Project MND following the September Board action to adopt the document. Staff continued to prepare the draft PEIR for the Pure Water Southern California program. A pre-application consultation meeting was conducted with California Department of Fish and Wildlife staff regarding Endangered Species Act permitting for potential impacts to the state-listed San Bernardino kangaroo rat from the Inland Feeder/Foothill Pump Station Intertie project.

Critical operations and maintenance activities were supported by Environmental Planning Section staff, including providing CEQA and regulatory clearances and conducting pre-construction surveys and construction monitoring for activities throughout the service area. Staff provided legislative analysis for a proposed listing of the Santa Ana speckled dace as a threatened species under the federal Endangered Species Act and participated in an Association of California Water Agencies working group on proposed environmental permitting streamlining. In addition, staff represented Metropolitan in a meeting with other plan permittees regarding the proposed Upper Santa Ana River Habitat Conservation Plan, which is currently under development.

Environmental Planning Section continued oversight of reserve management activities to protect valuable natural resources and meet Metropolitan's mitigation obligations. Security patrols were conducted throughout both reserves to prevent trespassing, vandalism, poaching, and theft and to protect the reserves' natural and cultural resources, facilities, and equipment. Activities at the reserves included removal of non-native (invasive) plants for fire and habitat management, coordination with researchers conducting burrowing owl and Stephens' kangaroo rat studies and hosting a nature event at the Alamos Schoolhouse interpretive center.



Southern Pacific Rattlesnakes at the Southwestern Riverside County Multi-Species Reserve

Land Management

No updates for the month



Water Resource Management Group

• Water Resource Management September Activities

Summary

The Water Resource Management Group September 2024 Monthly Activities

Purpose

Informational

Detailed Report

Implement Regional Conservation Program

Staff held two Water Efficient Landscaper Dual Certification Program classes for approximately 75 attendees. A Spanish class was held in partnership with Long Beach Utilities and an English class was held in partnership with San Diego County Water Authority. (*Strategic Priority 3.2.8: "Increase outdoor water use efficiency."*)

Collaborate with Member Agencies, Water Agencies, and Associations, and Provide Leadership for Policy Development, Advocacy, Outreach, and Education

Staff participated in board meetings of the Southern California Salinity Coalition (SCSC) and CalDesal. The SCSC authorized a project to develop a salinity management toolbox featuring outreach materials on the benefits of salinity management and initiated a review of its operating bylaws. CalDesal's meeting featured initial planning for the State Water Resources Control Board (SWRCB) "Notice of Opportunity to Comment on Seawater Desalination Provisions of the California Ocean Plan" announcement. The SWRCB scheduled a public scoping meeting on the regulations for Monday, October 28, 2024, from 1:00 - 4:00 PM in Sacramento. Upcoming CalDesal events include a full Board meeting and an open mixer during the Association of California Water Agencies fall conference on Wednesday, December 4, 2024, in Palm Desert, and the annual conference which will be held on February 5 and 6, 2025, in Temecula.

On September 3, staff met with representatives from the Japanese Water Works Association to provide background on Metropolitan, as well as to discuss water supply issues within both California and Japan. (*Strategic Priority 5.1: "Grow and deepen collaboration and relationships among member agencies, interested parties, and leaders on the issues most important to them and toward mutual and/or regional benefits."*)

Position Metropolitan as a Leader in Open Water Data

Staff participated in a board meeting of the California Water Data Consortium (Consortium). The board welcomed Robyn Grimm as the Consortium's new Executive Director and discussed the strategic direction of the organization over the coming year. The board also received updates on the Consortium's projects on developing groundwater data management tools and streamlining urban water data reporting. (*Strategic Priority 3.2: "Advance the long-term reliability and resilience of the region's water sources through a One Water approach that recognizes the interconnected nature of imported and local supplies, meets both community and ecosystem needs, and adapts to a changing climate."*)

Date of Report: 10/8/2024

Board Report Water Resource Management September Activities

Explore Opportunities to Leverage Metropolitan’s SWP and Colorado River Supplies and Storage Assets

Metropolitan Directors and staff attended a ribbon-cutting for the Pasajero Groundwater Recharge Project on August 22, 2024. The Project was completed by Westlands Water District (Westlands) and includes surface recharge basins that can capture an estimated 10,800 acre-feet per year. Metropolitan is exploring partnership opportunities with Westlands per the recently approved Memorandum of Understanding between Metropolitan, Friant Water Authority, and Westlands. Hence, Metropolitan staff are currently in discussions with Westlands on the possibility of creating a Pasajero Pilot Program. The ribbon cutting provided an opportunity for Metropolitan to see the project first-hand and ask questions. *(Strategic Priority 2.2.3: “Secure Inflation Reduction Act funding that supports Colorado River water use objectives.”)*