

AGENDA
WATER ISSUES COMMITTEE MEETING
WITH BOARD OF DIRECTORS *
ORANGE COUNTY WATER DISTRICT
18700 Ward Street, Fountain Valley, CA 92708
Wednesday, March 13, 2024 12:00 p.m., Boardroom

*The OCWD Water Issues Committee meeting is noticed as a joint meeting with the Board of Directors for the purpose of strict compliance with the Brown Act and it provides an opportunity for all Directors to hear presentations and participate in discussions. Directors receive no additional compensation or stipend as a result of simultaneously convening this meeting. Items recommended for approval at this meeting will be placed on the **March 20** Board meeting Agenda for approval.

This meeting will be held in person. As a convenience for the public, the meeting may also be accessed by Zoom Webinar and will be available by either computer or telephone audio as indicated below. Because this is an in-person meeting and the Zoom component is not required, but rather is being offered as a convenience, if there are any technical issues during the meeting, this meeting will continue and will not be suspended.

Computer Audio: Join the Zoom Webinar by clicking on the following link:
<https://ocwd.zoom.us/j/98592928069>

Webinar ID: 985 9292 8069

Telephone Audio: (213) 338 8477

Teleconference Sites:
10382 Bonnie Drive, Garden Grove
20 Civic Center Plaza, Room 813, Santa Ana
19 Cannery, Buena Park
1454 Madison Street, Tustin
8856 Citrus Avenue, Westminster

* Members of the public may attend and participate at all locations.

PLEDGE OF ALLEGIANCE

ROLL CALL

ITEMS RECEIVED TOO LATE TO BE AGENDIZED

RECOMMENDATION: Adopt resolution determining need to take immediate action on item(s) and that the need for action came to the attention of the District subsequent to the posting of the Agenda (requires two-thirds vote of the Board members present, or, if less than two-thirds of the members are present, a unanimous vote of those members present.)

VISITOR PARTICIPATION

Time has been reserved at this point in the agenda for persons wishing to comment for up to three minutes to the Board of Directors on any item that is not listed on the agenda, but within the subject matter jurisdiction of the District. By law, the Board of Directors is prohibited from taking action on such public comments. As appropriate, matters raised in these public comments will be referred to District staff or placed on the agenda of an upcoming Board meeting.

At this time, members of the public may also offer public comment for up to three minutes on any item on the Consent Calendar. While members of the public may not remove an item from the Consent Calendar for separate discussion, a Director may do so at the request of a member of the public.

CONSENT CALENDAR (ITEMS NO. 1 – 5)

All matters on the Consent Calendar are to be approved by one motion, without separate discussion on these items, unless a Board member or District staff request that specific items be removed from the Consent Calendar for separate consideration.

1. MINUTES OF WATER ISSUES COMMITTEE MEETING HELD FEBRUARY 14, 2024

RECOMMENDATION: Approve minutes as presented

2. AMENDMENTS TO AGREEMENTS FOR EMERGENCY ON-CALL REPAIR SERVICES

RECOMMENDATION: Agendize for March 20 Board Meeting:

- 1) Authorize issuance of Amendments to Agreements 1450, 1451 and 1452 with Doty Bros. Equipment Company, Inc.; W.A. Rasic Construction Company, Inc.; and TE Roberts, Inc., respectively, for Emergency On-Call Repair Services for a three-year term commencing April 1, 2024; and
- 2) Authorize the General Manager to initiate emergency repairs with the on-call firms for an amount not to exceed \$150,000 per emergency occurrence with Board ratification after the work is complete

3. RATIFY AND AUTHORIZE CHANGE ORDER TO CONTRACT NO. IRWD-2021-1 AND AUTHORIZE BUDGET INCREASE

RECOMMENDATION: Agendize for March 20 Board meeting:

- 1) Ratify issuance of Change Order Nos. 4-7,
- 2) Authorize issuance of Change Order No. 8; and,
- 3) Increase project budget by \$369,000 for a total project budget of \$7,176,000

4. AWARD CONTRACT SG-2024-1 CONSTRUCTION OF OCWD-BS29 MONITORING WELL CLUSTER TO BC2 ENVIRONMENTAL, LLC AND AUTHORIZE AGREEMENT TO WOOD RODGERS FOR INSPECTION SERVICES

RECOMMENDATION: Agendize for March 20 Board meeting:

- 1) Receive and file Affidavit of Publication of Notice Inviting Bids for Contract SG-2024-1;
- 2) Accept bid and award Contract No. SG-2024-1 to BC2 Environmental, LLC for an amount not to exceed \$352,605; and

- 3) Authorize issuance of a services agreement to Wood Rodgers for inspection services during construction of the OCWD-BS29 monitoring well cluster for an amount not to exceed \$80,646

5. GARDEN GROVE WELLS 21, 23, 28, 29 AND 30 PFAS WATER TREATMENT PLANTS:
INCREASE PROJECT BUDGET

RECOMMENDATION: Agendize for March 20 Board meeting: Authorize Budget Increase in the amount of \$492,300 for a total budget of \$24,336,000, for additional Construction Management and PFAS Treatment Vessel invoices received after the Notice of Completion

END OF CONSENT CALENDAR

INFORMATIONAL ITEMS

6. PROPOSED FISCAL YEAR 2024-25 WATER PURCHASE BUDGET
7. FORECAST INFORMED RESERVOIR OPERATIONS (FIRO) AT PRADO DAM:
COMPLETION OF FINAL VIABILITY ASSESSMENT AND IMPLEMENTATION ROADMAP

**CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR
CONSIDERATION AT THE MARCH 20 BOARD MEETING**

DIRECTORS' ANNOUNCEMENTS/REPORTS

GENERAL MANAGER'S ANNOUNCEMENTS/REPORTS

ADJOURNMENT

WATER ISSUES COMMITTEE MEMBERS

Committee Members

Bruce Whitaker - Chair
Dina Nguyen - Vice Chair
Roger Yoh
Van Tran
Erik Weigand

Alternates

Denis Bilodeau
Steve Sheldon
Natalie Meeks
Valerie Amezcua
Cathy Green

In accordance with the requirements of California Government Code Section 54954.2, this agenda has been posted at the guard shack entrance and in the main lobby of the Orange County Water District, 18700 Ward Street, Fountain Valley, CA and on the OCWD website not less than 72 hours prior to the meeting date and time above. All written materials relating to each agenda item are available for public inspection in the office of the District Secretary. Backup material for the Agenda is available at the District offices for public review and can be viewed online at the District's website: www.ocwd.com

Pursuant to the Americans with Disabilities Act, persons with a disability who require a disability-related modification or accommodation in order to participate in a meeting, including auxiliary aids or services, may request such modification or accommodation from the District Secretary at (714) 378-3234, by email at cfuller@ocwd.com by fax at (714) 378-3373. Notification 24 hours prior to the meeting will enable District staff to make reasonable arrangements to assure accessibility to the meeting.

As a general rule, agenda reports or other written documentation has been prepared or organized with respect to each item of business listed on the agenda, and can be reviewed at www.ocwd.com. Copies of these materials and other disclosable public records distributed to all or a majority of the members of the Board of Directors in connection with an open session agenda item are also on file with and available for inspection at the Office of the District Secretary, 18700 Ward Street, Fountain Valley, California, during regular business hours, 8:00 am to 5:00 pm, Monday through Friday. If such writings are distributed to members of the Board of Directors on the day of a Board meeting, the writings will be available at the entrance to the Board of Directors meeting room at the Orange County Water District office.

MINUTES OF BOARD OF DIRECTORS MEETING
WATER ISSUES COMMITTEE
ORANGE COUNTY WATER DISTRICT
February 14, 2024, @ 12:00 p.m.

Director Whitaker called the Water Issues Committee meeting to order at 12:00 p.m. in the District Boardroom. Public access was also provided via Zoom webinar. The Secretary called the roll and reported a quorum as follows:

Committee Members

Bruce Whitaker
Dina Nguyen (arrived 12:06 p.m.)
Roger Yoh
Van Tran
Erik Weigand

OCWD

John Kennedy – General Manager
Mehul Patel – Executive Director of Operations
Leticia Villarreal – Assistant District Secretary
Jeremy Jungreis – General Counsel

Alternates

Denis Bilodeau
Steve Sheldon
Valeria Amezcua
Natalie Meeks (absent)
Cathy Green

CONSENT CALENDAR

The Consent Calendar was approved upon motion by Director Weigand, seconded by Director Yoh and carried [5-0], as follows:

Ayes: *Whitaker, Yoh, Tran, Weigand, Bilodeau*

1. Minutes of Water Issues Committee Meeting

The Minutes of the Water Issues Committee meeting held January 10, 2024 were approved as presented.

2. Authorize On Call Services Agreement with VCS Environmental for Cultural Resources Records Searches and Technical Analysis

Recommended for approval at February 21 Board meeting: Authorize issuance of an on-call services agreement with VCS Environmental for as-needed cultural resources services for an amount not to exceed \$30,000.

3. Ratify Change Orders to Contract No. EOCWD-2021-1 and Authorize Budget Increase

Recommended for approval at February 21 Board meeting: 1) Ratify issuance of Change Orders Nos. 1 – 18, and 2) Increase project budget by \$855,600 for a total project budget of \$8,940,600.

4. Contract No. TAL-2024-1: Talbert Barrier Well Redevelopment – Publication of Notice Inviting Bids

Recommended for approval at February 21 Board meeting: Authorize publication of Notice Inviting Bids for Contract No. TAL-2024-1, 2023-24 Talbert Barrier Well Redevelopment Project.

MATTER FOR CONSIDERATION

5. Cities of Anaheim and Orange, Serrano Water District, and Yorba Linda Water District Petitions for Exemption of Payment of Replenishment Assessment and Basin Equity Assessment and Schedule Public Hearing

Chief Hydrogeologist Roy Herndon reported that Anaheim, Orange, Serrano WD and Yorba Linda WD have Replenishment Assessment (RA) and Basin Equity Assessment (BEA) exemptions for well water discharged to OCWD facilities. He advised that Anaheim and Yorba Linda WD also requested exemptions or credit for PFAS treatment system “flushing” water discharged to recharge facilities. He shared Anaheim has 5 wells and a PFAS Treatment facility, Orange has 9 existing and 2 future wells and a PFAS Treatment facility, Serrano WD has 2 existing and 1 future well and a PFAS Treatment facility, and Yorba Linda WD has 10 wells and a PFAS treatment facility. He stated OCWD staff evaluated the eligibility for exemptions per the OCWD Act and information appears to be adequate to support consideration for an exemption from the RA/BEA for the petitioners’ well water pumped to waste; however, the treatment facilities do not meet the definition of a “water-producing facility” in the OCWD Act. Mr. Herndon stated that since water discharged from treatment facilities is not subject to payment of the RA/BEA, there is no provision in the OCWD Act to exempt such water from the RA/BEA. He suggested an alternative approach: 1) PFAS treatment system flushing is a normal activity during construction and startup to achieve stable and acceptable water quality – cost of this water can be included in the producers’ reimbursable capital costs. 2) Treatment system discharges to waste may be required during normal operation and maintenance and may be included in producers’ annual O&M costs.

Upon motion by Director Yoh, seconded by Director Weigand and carried [5-0], the Committee Recommended for approval at the February 21 Board meeting:

- 1) **Receive and file petitions for exemption from city of Anaheim for Wells 42, 43, 44, 52, and 58; city of Orange for Wells 9, 19 to 25, 27, and future wells 28 and 29; Serrano Water District for Wells 3, 5, and a future well; and Yorba Linda Water District for Wells 1, 5, 7, 10, 12, and 18 to 22 from payment of the Replenishment Assessment and Basin Equity Assessment;**
- 2) **Receive and file staff report evaluating the petitions from cities of Anaheim and Orange, Serrano Water District, and Yorba Linda Water District; and**
- 3) **Schedule a Public Hearing on this matter on March 20, 2024, in accordance with Section 38.1 of the OCWD Act.**

CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR CONSIDERATION AT THE FEBRUARY 21 BOARD MEETING

It was agreed to place all items on the Consent Calendar at the February 21 Board meeting.

ADJOURNMENT

There being no further business, the meeting was adjourned at 12:23 p.m.

Bruce Whitaker, Chair

AGENDA ITEM SUBMITTAL

Meeting Date: March 13, 2024

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen / M. Patel

Budgeted: Yes

Proposed Budget: \$150,000

Cost Estimate: N/A

Funding Source: R&R Reserve

Program/Line Item No.: R23011

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

**Subject: AMENDMENTS TO AGREEMENTS FOR EMERGENCY ON-CALL
REPAIR SERVICES**

SUMMARY

The District operates and maintains more than 60 miles of transmission pipeline and several infrastructure systems, some of which were constructed more than 50 years ago. The District relies on contractors to perform emergency repairs on this infrastructure when needed.

RECOMMENDATION

Agendize for March 20 Board meeting:

1. Authorize issuance of Amendments to Agreements 1450, 1451 and 1452 with Doty Bros. Equipment Company, Inc.; W.A. Rasic Construction Company, Inc.; and TE Roberts, Inc., respectively, for Emergency On-Call Repair Services for a three-year term commencing April 1, 2024; and
2. Authorize the General Manager to initiate emergency repairs with the on-call firms for an amount not to exceed \$150,000 per emergency occurrence with Board ratification after the work is complete.

BACKGROUND/ANALYSIS

The District owns and maintains several pipelines including the Green Acres Project, Groundwater Replenishment System Pipeline, Santiago Creek Pipeline, Talbert Barrier Pipeline, and other water conveyance systems that total more than 60 miles in length. The age of these assets varies from a few years to more than 50 years. Additionally, District assets include the Advanced Water Purification Facility and forebay recharge infrastructure. Occasionally, portions of these systems require immediate emergency repair in order to prevent or limit loss of life, property, and/or to maintain satisfactory levels of service. The District relies on contractors to perform emergency repair work on pipelines and related appurtenances.

The agreements for the current pool of three contractors with emergency on-call agreements will expire March 31, 2024. The three existing on-call contractors have been highly responsive and satisfactorily performed repairs at competitive rates.

Staff recommends renewing emergency on-call agreements by issuing amendments with the three contractors: W.A. Rasic Construction Company, Inc.; Doty Bros. Equipment Company, Inc.; and TE Roberts, Inc.

PRIOR RELEVANT BOARD ACTION(S)

2/17/21, R21-2-24: Authorize issuance of Agreements to W.A. Rasic Construction Company, Inc.; Doty Bros. Equipment Company, Inc.; and TE Roberts, Inc. for Emergency On-Call Repair Services for a three-year term commencing April 1, 2021 and authorize the General Manager to initiate emergency repairs with the on-call firms for an amount not to exceed \$150,000 per emergency occurrence.

3/21/2018, R18-3-25: Agreements authorized for Emergency On-Call Repair Services for three-year terms commencing April 1, 2018 with an option to renew an additional three years: W.A. Rasic Construction Company, Inc.; Doty Bros. Equipment Company, Inc.; T.E. Roberts, Inc.; and Charles King Company; that the OCWD General Manager is authorized to initiate emergency repairs with the aforementioned on-call firms for an amount not to exceed \$150,000.

9/16/2015, R15-9-128: Authorize agreements with ARB, Inc., Doty Bros. Construction Company, and W.A. Rasic Construction Company, Inc. for On-Call Emergency Pipeline Repair Services.

9/2/2012, R12-9-109: Authorize agreements with ARB, Inc., Doty Bros. Construction Company, and W.A. Rasic Construction Company, Inc. for Emergency Construction, Inspection Services, and Repair Work.

8/18/2010, R10-8-127: Authorize agreement Doty Bros. Equipment Company for Emergency Construction, Inspection Services, and Repair Work.

2/18/2009, R09-2-21: Authorize agreement with Doty Bros. Equipment Company for Emergency Construction, Inspection Services, and Repair Work.

3/21/2007, R07-3-44: Authorize agreement with Doty Bros. Equipment Company for Emergency Construction, Inspection Services, and Repair Work.

AGENDA ITEM SUBMITTAL

Meeting Date: March 13, 2024

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen / R. Bouley

Budgeted: Yes

Budget Amount: \$6,857,000

Cost Estimate: \$7,176,000

Funding Source: CIP

Program/Line Item No.: C19014

General Counsel Approval: Yes

Engineers Report: Completed

CEQA Compliance: MND

Subject: RATIFY AND AUTHORIZE CHANGE ORDER TO CONTRACT NO. IRWD-2021-1 AND AUTHORIZE BUDGET INCREASE

SUMMARY

Innovative Construction Solutions (ICS) is completing work on the Irvine Ranch Water District Well OPA-1 PFAS Treatment Plant, Contract No. IRWD-2021-1. There are four change orders that were previously approved under the General Managers authority that require ratification and one pending change order that warrants authorization. Staff recommends ratifying change orders 4-7, authorizing Change Order No. 8, and increasing the project budget by \$369,000.

RECOMMENDATION

Agendize for March 20 Board meeting:

1. Ratify issuance of Change Order Nos. 4-7, and
2. Authorize issuance of Change Order No. 8, and
3. Increase project budget by \$369,000 for a total project budget of \$7,176,000.

BACKGROUND/ANALYSIS

Construction of the IRWD Well OPA-1 PFAS water treatment plant is underway and expected to be complete within the next 2 months. The Contractor has performed additional work to date to modify piping, structural, and electrical components along with additional work to waterproof the recessed vessel structure. Staff has issued seven change orders to date. Change Orders #1-3 were previously ratified by the Board. Change Orders #4-7 are summarized below:

CCO #4. Additional work to install Victaulic couplings to accommodate pipe removal, revise rebar that was detailed incorrectly on the plans, provide a grounding system, relocate a transmitter device for easier access and provide alternative lighting fixtures – Add \$69,860.

CCO #5. Additional work to waterproof the outside of the recessed vessel foundation walls as required by IRWD – Add \$49,924 and 15 Calendar Days.

CCO #6. Additional work to paint IX vessels per IRWD's request – Add \$21,402.

CCO #7. Additional work to reposition valves and add additional Victaulic couplings at IRWD's request – Add \$13,757.

There have also been additional changes on the project related to the new masonry wall installed across the front of the site. This was intended to match the existing wall on the current well site, but the heights and structure of the existing wall differed from the record drawings. This extra work requires Change Order No. 8 and includes additional excavation to match the existing masonry wall footing, as well as additional masonry blocks and rebar to match the existing wall height.

Change orders 4-7 account for 4.45% of the construction contract. Staff requests ratifying the existing change orders and authorizing Change Order No. 8 since the total of these change orders exceed the General Manager's signing authority of 5%. In addition to the change orders, there have been additional costs of Construction Management by OCWD Staff (\$92,000) and CDM Smith (\$111,130), and the IX Vessel System and IX media costs have also increased (\$103,000). Staff recommends ratifying Change Orders 4 – 7, authorizing Change Order No. 8, and increasing the project budget by \$369,000 due to these additional project costs. The proposed project budget is shown in Table 1, below:

Table 1: IRWD Well OPA-1 PFAS Treatment Budget Summary

Description	Previous Anticipated Budget	Proposed Budget
Design and Construction Management		
AECOM Work Order 1 (Design)	\$624,785	\$624,785
AECOM Work Order 1A (Design)	\$6,410	\$6,410
AECOM Work Order 1B (Construction Support)	\$150,748	\$150,748
CDM Smith Work Order 3 (CM/Inspection)	\$461,140	\$461,140
<i>CDM Smith Work Order 3A (CM/Inspection)</i>		\$83,630
<i>CDM Smith Work Order 3B (CM/Inspection)</i>		\$27,500
Subtotal	\$1,243,083	\$1,354,213
Construction		
Contract IRWD-2021-1	\$3,485,000	\$3,485,000
CCO Nos 1-3	\$560,577	\$560,577
<i>CCO 4-7</i>	\$0	\$154,943
<i>CCO 8</i>	\$0	\$39,507
<i>OPA-1 PFAS Treatment Vessels</i>	\$772,000	\$834,000
<i>OPA-1 IX Resin</i>	\$509,000	\$550,000
Construction Sub-Total	\$5,326,577	\$5,624,027
<i>Bid Advertisement Costs</i>	\$0	\$5,800
<i>OCWD Staff Expense</i>	\$0	\$92,000
Project Contingency	\$287,340	\$99,960
Project Budget	\$6,857,000	\$7,176,000
<i>Continued Next Page</i>		

IRWD Reimbursement		
Contract IRWD-2021-1	(\$50,000)	(\$50,000)
<i>Well Rehabilitation (Reimburse Actual Cost)</i>	<i>(\$500,000)</i>	<i>(\$450,000)</i>
Project Cost to OCWD	\$6,307,000	\$6,676,000

PRIOR RELEVANT BOARD ACTION(S)

03/15/23, M23-24: Ratifying Change Orders to Contract No. IRWD-2021-1, and Authorizing Budget Increase.

03/16/22, R22-3-26: Award Contract No. IRWD-2021-1, Irvine Ranch Water District Well OPA-1 PFAS Treatment System, to Innovative Construction Solutions.

12/15/21, R21-12-178: Approve actions in connection with the IRWD Well OPA-1 PFAS Water Treatment Plant Project: Approve Engineers Report, Find Addendum No. 1 to the ISMND for OPA Well Replacement adequately evaluates the environmental impacts of the project, authorize publication of RFP for IX Media, authorize publication of Notice Inviting Bids, and authorize filing a Notice of Determination for Addendum No. 1 to the ISMND for the OPA Well Replacement Project.

AGENDA ITEM SUBMITTAL

Meeting Date: March 13, 2024

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Herndon/D. Field

Budgeted: Yes

Budgeted Amount: \$500,000

Cost Estimate: \$500,000

Funding Source: CIP

Program/ Line Item No.: C23004

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: Yes

Subject: AWARD CONTRACT SG-2024-1 CONSTRUCTION OF OCWD-BS29 MONITORING WELL CLUSTER TO BC2 ENVIRONMENTAL, LLC AND AUTHORIZE AGREEMENT TO WOOD RODGERS FOR INSPECTION SERVICES

SUMMARY

In September 2023, the Board approved construction of monitoring well cluster OCWD-BS29 (BS29) including issuing a Notice Inviting Bids for well construction and issuing a Request for Proposals for inspection services during construction. Based on review of the bids and proposals, staff recommends awarding the contract to BC2 Environmental, LLC (BC2) for an amount not to exceed \$352,605; and authorizing a services agreement with Wood Rodgers to conduct inspection services during well construction for an amount not to exceed \$80,646.

RECOMMENDATIONS

Agendize for March 20 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract SG-2024-1;
2. Accept bid and award Contract No. SG-2024-1 to BC2 Environmental, LLC for an amount not to exceed \$352,605; and
3. Authorize issuance of a services agreement to Wood Rodgers for inspection services during construction of the OCWD-BS29 monitoring well cluster for an amount not to exceed \$80,646.

BACKGROUND/ANALYSIS

In the coastal area of Orange County, the primary source of saline and brackish groundwater is seawater intrusion through permeable aquifer sediments underlying topographic lowlands or gaps between the erosional remnants or mesas of the Newport-Inglewood Uplift. The susceptible locations from north to south are the Alamitos, Sunset, Bolsa, and Talbert gaps as shown in Figure 1.

OCWD has been investigating the nature and extent of seawater intrusion in the Sunset Gap since 2010: 1) performed two surface geophysical surveys within the Naval Weapons Station Seal Beach (NWSSB); 2) installed thirteen multi-depth monitoring wells at the NWSSB and in the city of Huntington Beach; 3) prepared nine hydrogeologic cross-sections through the area; and 4) developed a computer model that simulates groundwater flow and brackish water movement in the Alamitos and Sunset Gaps. As authorized by the Board, staff is proceeding with a feasibility study to evaluate alternatives for a potential seawater intrusion barrier in the Sunset Gap.

Proposed Bolsa Gap Monitoring Well Cluster (OCWD-BS29)

Proposed well cluster BS29 fills an important data gap where seawater intrusion potentially occurs across the Bolsa-Fairview Fault to the north beneath the Bolsa Chica Mesa and into the southeastern portion of Sunset Gap (Figure 2). Confirmation of this potential intrusion pathway or lack thereof will help define the lateral extent and depth of intrusion and support the development of potential remedial actions in Sunset Gap.

Monitoring well cluster BS29 would include four single-cased wells constructed of 2-inch PVC, similar to other monitoring well clusters installed in Sunset Gap. A well site has been selected in Huntington Beach and approved by city staff. Table 1 below summarizes the anticipated casing depths and target aquifers for these wells.

Table 1. Monitoring Well Cluster OCWD-BS29 Anticipated Depths and Target Aquifers

Well No.	Aquifer Name	Approx. Screen Depth (feet bgs)
OCWD-BS29A	Bolsa/Beta	80-100
OCWD-BS29B	Lambda	120-140
OCWD-BS29C	Omicron	150-170
OCWD-BS29D	Main	340-360

Well Construction Contract SG-2024-1

The NIB for Contract SG-2024-1 was issued on January 29, 2024. The following responsive bids were received on February 28, 2024.

BC2 Environmental, LLC	\$352,605
ABC Liovin Drilling, LLC	\$423,825
Yellow Jacket Drilling Services, LLC	\$492,650

All bids are deemed responsive. The lowest responsive bid from BC2 in the amount of \$352,605 is consistent with the Geologist’s estimate of \$380,000. Staff recommends awarding the contract to BC2 Environmental, LLC.

Well Construction Inspection Services

Staff advertised the Request for Proposal (RFP) for inspection services during the construction of the BS29 monitoring well cluster on January 25, 2024. The RFP was posted to the OCWD website. The scope of work includes full-time inspection during critical phases of work such as drilling, well construction, and well development, and part-time inspection during non-critical phases of work such as mobilization and demobilization. In response to the RFP, three written proposals were received from the following firms:

1. ENGEO
2. Group Delta
3. Wood Rodgers

OCWD staff evaluated the written proposals prior to opening the separately-sealed cost proposals from the top two ranked firms. Staff's evaluation of the written proposals included consideration of personnel qualifications, experience, record of success on similar well construction projects, work plan (including number of proposed hours), and time commitment of key staff. Table 2 below shows the firms and the average technical evaluation scores from OCWD staff that reviewed the proposals. Table 2 also shows the proposed hours, average hourly rate, the proposed total fee, and the OCWD cost estimate.

Table 2. Inspection Services Proposal Review Scoring

Firm	Score¹	Proposed Hours	Average Hourly Rate*	Proposal Fee
ENGEO	4.81	410	\$218	\$97,750
Wood Rodgers	4.53	364	\$199	\$80,646
Group Delta	3.80	389	-	-
OCWD Cost Estimate	-	445	\$186	\$82,000

¹Scoring scale: 1=poor, 5=excellent

*Average hourly rate calculated using labor hours only (excludes incidentals)

Wood Rodgers and ENGEO, the top ranked firms, showed a clear understanding of the project, have qualified and experienced personnel, which OCWD staff feel are capable of conducting quality work on this project. Although staff scored ENGEO's proposal slightly higher than Wood Rodgers, staff recommends issuance of a services Agreement with Wood Rodgers for the BS29 monitoring well cluster inspection services because they provided a competitive cost estimate while providing field inspectors with Professional Geologist certification.

Table 3 below summarizes the approved budget and anticipated expenditures. Anticipated project expenditures incorporating the recent bid and proposal show the project is expected to be completed within the approved budget.

Table 3. OCWD-BS29 Monitoring Well Cluster Construction Budget

Task	Approved Budget	Anticipated Expenditures
OCWD-BS29 Monitoring Well Cluster Construction (SG-2024-1)	\$ 380,000	\$ 352,605
Construction Inspection Services and Well Survey	82,000	80,646
Project Contingency	38,000	35,000
TOTAL:	\$ 500,000	\$ 468,000

Figure 1: Coastal Gaps in Orange County

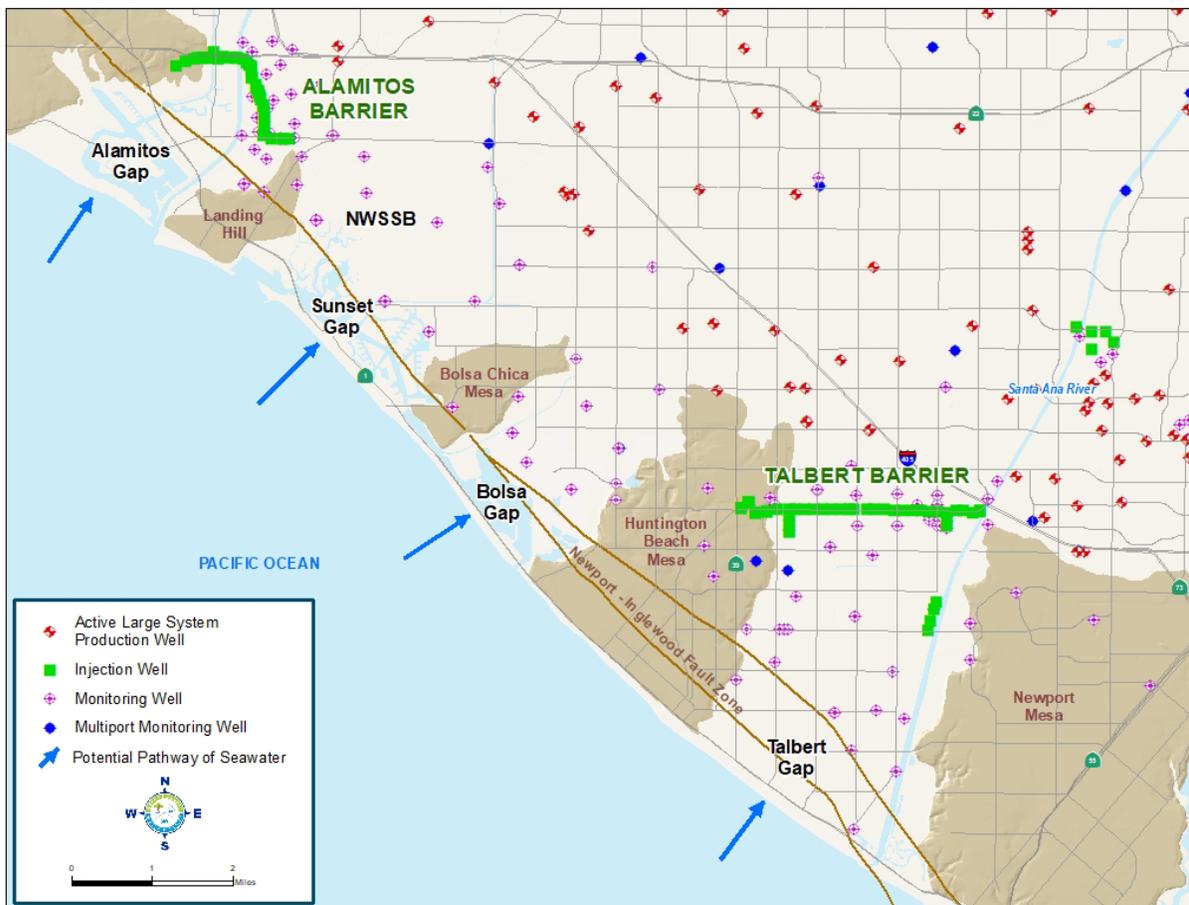
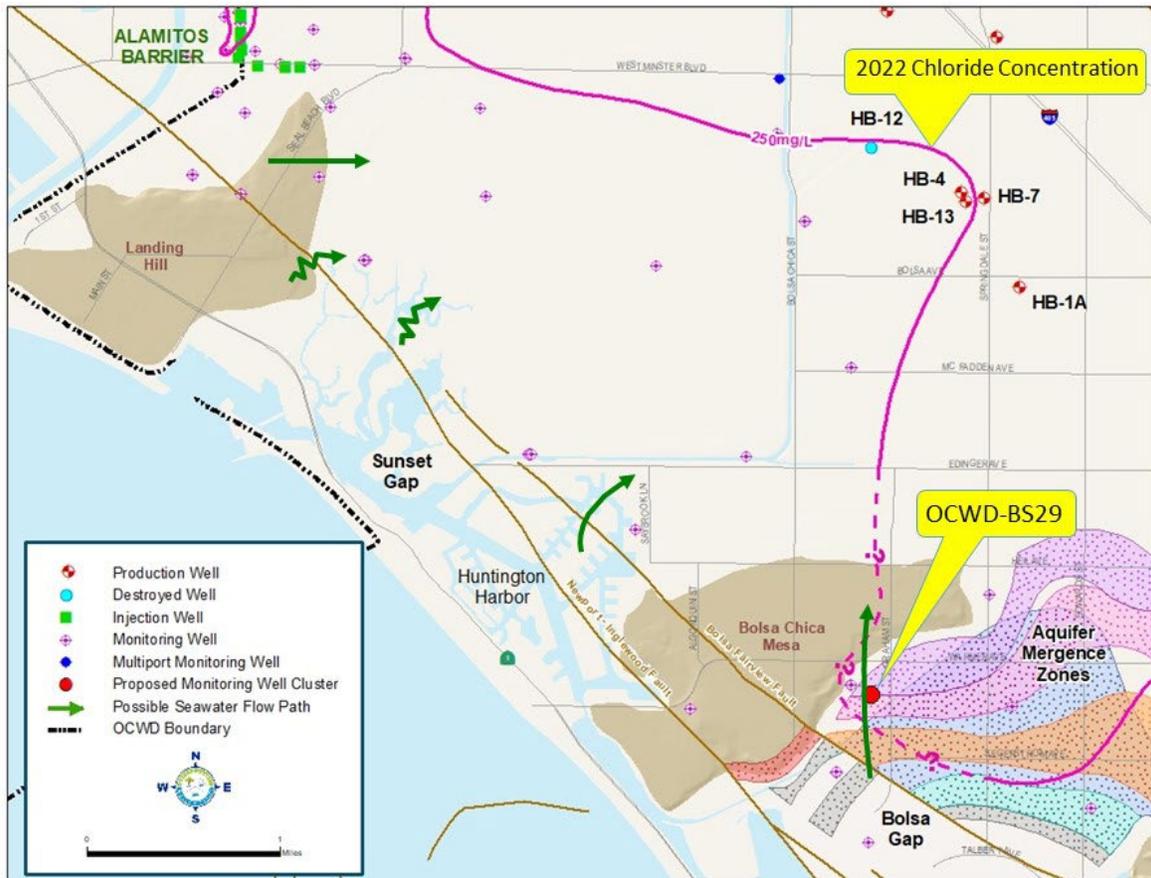


Figure 2: Proposed OCWD-BS29 monitoring well cluster in the city of Huntington Beach.



PRIOR RELEVANT BOARD ACTIONS

9/20/2023 R23-9-119 – Authorize construction of OCWD-BS29 monitoring well cluster.

6/16/2021 R21-6-90 - Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SG-2021-1, waive the BC2 Environmental, LLC inconsequential bid informalities, and accept bid and award Contract SG-2021-1 to BC2 Environmental, LLC for an amount not to exceed \$1,038,730.

1/20/21 R21-1-6 – Authorize issuance of a services agreement to ENGEO for construction management and surveying services during the installation of additional Sunset Gap monitoring wells for an amount not to exceed \$198,347.

10/21/20 R20-10-140 - Adopt resolution certifying the Final IS/MND, authorizing to file the Notice of Determination, approving the Geologist's Report, approving the proposed Sunset Gap Additional Monitoring Well Project, establishing a project budget of

\$1,600,000, authorizing issuance of a Notice Inviting Bids for well construction, authorizing necessary permitting documents by the General Manager from regulatory agencies, and authorizing issuance of an RFP for construction management services.

8/5/20 R20-8-97 – Authorize execution of a 30-year no-fee License Agreement for proposed monitoring wells OCWD-BS26A and OCWD-BS26B with The Boeing Company for well construction, monitoring, and maintenance.

8/15/18 R18-8-112 – Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SG-2018-1; Accept bid and award Contract No. SG-2018-1 to ABC Liovin Drilling, Inc. for an amount not to exceed \$807,646; and Authorize issuance of services agreement to Geotechnical Consultants, Inc. for inspection services during construction of the OCWD-BS13 and OCWD-BS24 monitoring well clusters for an amount not to exceed \$203,000.

2/21/18 R18-2-12 – Adopt the Final Initial Study/Mitigated Negative Declaration for Sunset Gap Monitoring Well Clusters BS13 and BS24, and the Bolsa Chica Channel Levee Repair Project; Approve the proposed construction of BS13 and BS24 Monitoring Well Clusters and proposed repairs to the Bolsa Chica Flood Control Levee; Authorize a budget increase in the amount of \$1,648,771 to establish a revised project budget of \$4,054,711 covering R7R projects R12030 and R14026, and complete capital project C13005; Authorize issuance of a Request for Proposals for inspection services during the construction of BS13 and BS24 well clusters; Authorize issuance of the Notice Inviting Bids for construction of BS13 and BS24 Monitoring Well Clusters; Authorize issuance of the Notice Inviting Bids for Repair of the Bolsa Chica Flood Channel; and Authorize staff to file the Notice of Determination.

2/15/17 R17-2-11 – Authorize issuance of Amendment No. 2 to Agreement No. 1087 with Ninyo & Moore in the amount of \$20,789 for additional out-of-scope geotechnical services required for the OCWD-BS13 well site geotechnical investigation.

12/7/16 R16-12-168 – Award Contract SG-2016-1 for monitoring well OCWD-BS24C construction to BEKS Acquisition Inc. dba BC2 Environmental in the amount of \$177,425.

10/19/16 R16-10-143 – Authorize General Manager to execute an amendment to Contract SG-2015-1 to reflect Change Order No. 1 for out-of-scope costs associated with the destruction of the OCWD-BS09 monitoring wells and abandonment of the OCWD-BS24 borehole and to terminate the contract without fault to either party.

9/16/16 R15-9-123 – Award Contract SG-2015-1 for destruction of Sunset Gap OCWD-BS09 monitoring wells and construction of replacement monitoring well OCWD-BS24 to Cascade Drilling in the amount of \$464,074.

7/20/16 R16-7-102 – Authorize issuance of agreement to Intera, Inc., in an amount not to exceed \$135,032, to expand and recalibrate the Alamitos Gap groundwater model into the Sunset Gap.

5/18/16 R16-5-61 – Authorize Amendment No. 1 in the amount of \$19,904 to agreement with Ninyo & Moore for geotechnical investigation.

4/20/16 R16-4-41 – Approve Department of Navy license agreements for monitoring wells and geotechnical investigation at Naval Weapons Station and authorize payment of fees.

6/17/15 R15-6-77 – Authorize filing Notice of Exemption for the construction of monitoring well BS24; authorize destruction of monitoring wells BSO9A, BSO9B and BSO9C, and construction of replacement monitoring well OCWD-BS24; and authorize issuance of Amendment No. 2 to Agreement No. 0958 with CDM Smith in the amount of \$56,550 for additional field inspection services required for the destruction of BSO9A, BSO9B and BSO9C, and construction of monitoring well OCWD-BS24.

6/17/15 R15-6-81 – Authorize issuance of Amendment No. 1 to Agreement No. 0958 with CDM Smith in the amount of \$127,935 for additional field inspection services required for the Sunset Gap Project and issuance of agreement to Ninyo & Moore for geotechnical services at the OCWD-BS13 well site for an amount not to exceed \$58,078.

3/15/15 R15-3-30 – Approve modification to license agreement with the Department of the Navy for the Sunset Gap Seawater Intrusion Investigation.

5/21/14 R14-5-66 – Award Contract No. SG-2014-1 to Yellow Jacket Drilling for \$1,477,295 for construction of six monitoring wells and destruction of three monitoring wells.

12/18/13 R13-12-00 – Authorize agreement with CDM Smith for an amount not to exceed \$194,117 for construction management of the Sunset Gap monitoring well installations and destructions.

9/18/13 R13-9-121 – Receive and file Geologist's Report and approve Sunset Gap Groundwater Investigation including the construction of four new monitoring wells, two replacement monitoring wells, and destruction of three unusable monitoring wells for a combined capital and R&R budget of \$1,896,400; authorize issuance of a RFP for field inspection services; authorize filing a Notice of Determination.

6/20/12 R12-6-70 – Authorize application for California Department of Water Resources Local Groundwater Assistance Grant.

THE ORANGE COUNTY
REGISTER

1920 Main Street, Suite 209
Irvine, California 92614
(714) 796-7000
legals@inlandnewspapers.com

Orange County Water District
18700 Ward Street
Fountain Valley, California 92708

<i>Account Number:</i>	5179533
<i>Ad Order Number:</i>	0011645617
<i>Customer's Reference/PO Number:</i>	
<i>Publication:</i>	The Orange County Register
<i>Publication Dates:</i>	02/01/2024 and 02/14/2024
<i>Total Amount:</i>	\$10174.88
<i>Payment Amount:</i>	\$0.00
<i>Amount Due:</i>	\$10174.88
<i>Notice ID:</i>	puZ8kLkset7fL9WYKEN3
<i>Invoice Text:</i>	NOTICE OF INVITING BIDS CONSTRUCTION OF OCWD-BS29 MONITORING WELL CLUSTER CONTRACT NO. SG-2024-1 PLEASE TAKE NOTICE that sealed bids will be received at the office of the Contracts Administrator of the Orange County Water District ("District"), 18700 Ward Street, Fountain Valley, CA 92708 (mailing address: P.O. Box 8300, Fountain Valley, CA 92728-8300), until 2:00 p.m. local time on Wednesday, February 28, 2024 at which time the bids will be publicly opened and read aloud for performing all work and furnishing all labor, materials and equipment for: The work to be performed and bid complete herein, shall be as shown and specified in the Technical Specifications and on the Plans (Figures) and is generally described as supplying all labor, equipment, materials and forces necessary to complete the construction of four (4) monitoring wells at one (1) site located within the city of Huntington Beach under Contract No. SG-2024-1 (Figures). The well site is within an area referred to as the Bolsa Gap, where groundwater is suspected to be impacted by seawater intrusion. Boreholes shall be drilled using direct circulation mud rotary (deep borehole) and rotary sonic drilling methods (shallow boreholes). The wells shall be constructed with a 2-inch diameter PVC well casing installed within a nominal 8-inch diameter borehole, as shown in the plans. The well shall be completed in such a manner as to hydraulically isolate the screened interval of the target aquifer, so that discrete depth-specific water samples and water level measurements can be obtained from the aquifer zone. The Work is to be done in accordance with the plans, specifications and contract documents on file in the District office, 18700 Ward Street, Fountain Valley, California, which plans and specifications are designated as above,

THE ORANGE COUNTY
REGISTER Register
1520 Main Street, Suite 209
Irvine, California 92614
(714) 796-7000

0011645617

Orange County Water District
18700 Ward Street
Fountain Valley, California 92708

**PROOF OF PUBLICATION
(2015.5 C.C.P.)**

**STATE OF CALIFORNIA
County of Orange**

I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Orange County Register, a newspaper of general circulation, printed and published in the City of Irvine*, County of Orange, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of County of Orange, State of California, under the date of November 19, 1905, Case No.A-21046. The notice, of which the annexed is a printed copy (set in type not smaller than nonpareil), has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

02/01/2024, 02/14/2024

I certify (or declare) under the penalty of perjury that the foregoing is true and correct.

Dated at Irvine, California

On this 14th day of February, 2024.


Signature

NOTICE OF INVITING BIDS

**CONSTRUCTION OF OCWD-BS29 MONITORING WELL
CLUSTER**

CONTRACT NO. SG-2024-1

PLEASE TAKE NOTICE that sealed bids will be received at the office of the Contracts Administrator of the Orange County Water District ("District"), 18700 Ward Street, Fountain Valley, CA 92708 (mailing address: P.O. Box 8300, Fountain Valley, CA 92728-8300), until 2:00 p.m. local time on Wednesday, February 28, 2024 at which time the bids will be publicly opened and read aloud for performing all work and furnishing all labor, materials and equipment for:

The work to be performed and bid complete herein, shall be as shown and specified in the Technical Specifications and on the Plans (Figures) and is generally described as supplying all labor, equipment, materials and forces necessary to complete the construction of four (4) monitoring wells at one (1) site located within the City of Huntington Beach under Contract No. SG-2024-1 (Figures). The well site is within an area referred to as the Bolsa Gap, where groundwater is suspected to be impacted by seawater intrusion.

Boreholes shall be drilled using direct circulation mud rotary (deep borehole) and rotary sonic drilling methods (shallow boreholes). The wells shall be constructed with a 2-inch diameter PVC well casing installed within a nominal 8-inch diameter borehole, as shown in the plans. The well shall be completed in such a manner as to hydraulically isolate the screened interval of the target aquifer, so that discrete depth-specific water samples and water level measurements can be obtained from the aquifer zone.

The Work is to be done in accordance with the plans, specifications and contract documents on file in the District office, 18700 Ward Street, Fountain Valley, California, which plans and specifications are designated as above, and which documents are by this reference incorporated herein.

NON-MANDATORY PREBID CONFERENCE: A pre-bid conference will be held at the District Office, 18700 Ward Street, Fountain Valley, CA on Wednesday, February 7, 2024, at 10:00 a.m. In addition, an optional remote prebid conference will be offered, via Zoom service. **Link to meeting:** <https://ocwd.zoom.us/j/84577937524>
Meeting ID Number: 845 7793 7524 or by phone: (646) 568-7788. Find your local number: <https://ocwd.zoom.us/j/84577937524>. All potential bidders, contractors and other interested parties are encouraged to attend this conference conducted by the District and Engineer. Any potential bidder that does not attend the prebid conference will be charged with knowledge of all information that was available at the prebid conference.

The District Project Manager will also discuss the role and participation of potential bidders in the District's Contractor Safety Program. Also as a part of this program, the OCWD Pre-Award Safety Review form (Appendix A of the Contractor Safety Procedures) will be discussed in greater detail.

COMPLETION OF WORK AND LIQUIDATED DAMAGES: All Work must be substantially completed within sixty (60) consecutive calendar days from the date of the Notice to Proceed issued by the District. Failure to complete the Work within the time set forth herein will result in the imposition of liquidated damages for each day of delay, in the amount set forth in the Information for Bidders.

OBTAINING CONTRACT DOCUMENTS: Plans and specifications and all contract documents must be purchased through HB Digital at www.ocwdplanroom.com. Payment will not be refunded and the plans and specifications and contract documents are not required to be returned.

BID GUARANTEE: Each Bid shall be accompanied by one of the following: a certified or cashiers check, or bid bond in an amount not less than ten percent (10%) of the total bid price, payable to the Orange County Water District, as a guarantee that the Bidder, if its Bid is accepted, shall promptly execute the Agreement, furnish a satisfactory Faithful Performance Bond in an amount not less than one hundred percent (100%) of the total bid price, furnish a Labor and Material Bond in an amount not less than one hundred percent (100%) of the total bid price, and furnish certificates evidencing that the required insurance is in effect in the amounts set forth in the Insurance Conditions. The Faithful Performance Bond shall remain in full force and effect through the guarantee period as specified in the General Provisions. All surety companies shall be admitted surety insurers and shall comply with the provisions of Code of Civil Procedure Section 995.630.

WAGE RATE: As required by Section 1773 of the California Labor Code, the Director of the Department of Industrial Relations of the State of California has determined the general prevailing rates

of wages in the locality in which the Work is to be performed. The prevailing wage determinations are available at the following web site: <http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm>. The Contractor and any subcontractor under it shall not pay less than the specified prevailing rates of wages to all workers employed in the execution of the Contract.

PROJECT ADMINISTRATION: All questions relative to this project prior to the opening of bids shall be directed, in writing, to the Engineer for the project:

ORANGE COUNTY WATER DISTRICT
18700 Ward Street
Fountain Valley, CA 92708

Mailing Address:
P.O. Box 8300
Fountain Valley, CA 92728-8300

Attention: David Field

Telephone: 714/378-3200
Facsimile: 714/378-3373

SUBSTITUTION OF SECURITIES: At the request and expense of the successful bidder, the District will pay the amounts retained pursuant to the contract documents as security for the completion of the Work in compliance with the requirements of Public Contract Code Section 22300 and the provisions of the General Provisions pertaining to "Substitution of Securities."

CONTRACTOR'S LICENSE SPECIFICATION: In accordance with the provisions of California Public Contract Code Section 3300, the District requires that the bidder possess the following classification of contractor's license at the time that the bid proposal is submitted: Class C-57. If the license classification specified hereinabove is that of a "specialty contractor" as defined in Section 7058 of the California Business and Professions Code, the specialty contractor awarded the Contract for this Work shall itself construct a majority of the Work. In accordance with the provisions of California Business and Professions Code Section 7059, each bidder shall clearly write or type their contractor's license number on the outside of the bidding envelope.

CONTRACTOR'S REGISTRATION: In accordance with Labor Code Section 1771.1.a, contractor or subcontractor shall not be qualified to bid on or be listed in a bid proposal or engage in the performance of this Work unless currently registered and qualified to perform the Work pursuant to Labor Code Section 1725.5.

COMPLIANCE MONITORING AND ENFORCEMENT: Contractor's performance of the Work described in this Notice Inviting Bids is subject to compliance monitoring and enforcement by the California Department of Industrial Relations.

SHEETING, SHORING AND BRACING: Pursuant to the provisions of California Labor Code Section 6707, each bid submitted in response to this Notice Inviting Bids shall contain, as a bid item, adequate sheeting, shoring, and bracing, or equivalent method, for the protection of life and limb in trenches and open excavation, which shall conform to applicable safety orders.

CONTRACTOR SAFETY PROGRAM: The District has instituted a Contractor Safety Program to comply with Cal/OSHA's Multi-Employer Worksite Standards. A copy of the District's Contractor Health & Safety Handbook is appended as Exhibit B of these contract documents. Potential bidders are strongly encouraged to familiarize themselves with this handbook and complete and submit appropriate forms with their bid proposal as indicated.

DISTRICT'S RIGHTS RESERVED: The Orange County Water District reserves the right to reject any or all bids, and to waive any informality in any bid.

Dated: January 29, 2024

ORANGE COUNTY WATER DISTRICT

By: John C. Kennedy
General Manager

The Orange County Register
Published: 2/1, 2/14/24

AGENDA ITEM SUBMITTAL

Meeting Date: March 13, 2024

To: Water Issues Committee
Board of Directors

From: John C. Kennedy

Staff Contact: C. Olsen / R. Bouley

Budgeted: Yes

Contract Amount: \$23,843,700

Final Cost: \$24,336,000

Funding Source: CIP

Program/Line Item No.: C19013

General Counsel Approval: Yes

Engineers Report: Completed

CEQA Compliance: Cat. Ex.

**Subject: GARDEN GROVE WELLS 21, 23, 28, 29 AND 30 PFAS WATER
TREATMENT PLANTS: INCREASE PROJECT BUDGET**

SUMMARY

Notice of Completion for the Construction of the city of Garden Grove (City) Wells 21, 23, 28, 29, and 30 PFAS Water Treatment Plants contract with Pacific Hydrotech was authorized in November, 2023. Additional invoices for Construction Management and PFAS Vessels were received after that date and staff recommends increasing the budget to include those costs.

RECOMMENDATION

Agendize for March 20 Board meeting: Authorize Budget Increase in the amount of \$492,300 for a total budget of \$24,336,000, for additional Construction Management and PFAS Treatment Vessel invoices received after the Notice of Completion.

BACKGROUND/ANALYSIS

Construction of the PFAS water treatment plants at the city of Garden Grove Wells 21, 23, 28, 29, and 30 was completed in October 2023. The Board authorized the final budget amount and authorized the Notice of Completion to be filed in November, 2023. After this date, staff received late invoices for Construction Management Services that included time to finalize record drawings and fix minor issues observed after startup. Staff also received an invoice for the final ten percent of the cost of the PFAS treatment Vessels that was not included in the final budget. These invoices caused the total cost of the project to exceed the amount authorized in Board's previous action. Staff recommends increasing the budget to account for these additional costs. The budget summary for this project is summarized below in Table 1.

Table 1: GG PFAS Water Treatment Plant Budget Summary

Description	Authorized Amount	Requested Amount
Design, Construction Management, Permitting		
CDM Smith Work Order No. 2 (incl. revisions)	\$ 2,645,100	\$ 2,645,100
<i>CDM Smith Additional Invoice</i>	<u>\$ 0</u>	<u>\$ 60,900</u>
Engineering Sub-Total	\$ 2,645,100	\$ 2,706,000

Construction		
Contract GG-2020-1 (Wells 21, 23, 28, 29, 30)	\$ 13,596,600	\$ 13,596,600
GG Wells Treatment Vessels (Evoqua)	\$ 4,491,000	\$ 4,491,000
<i>Additional Vessel Costs</i>	\$ 0	\$ 431,400
GG Wells IX Resin (Evoqua)	\$ 2,991,000	\$ 2,991,000
Project Administrative Costs	\$ 120,000	\$ 120,000
Construction Sub-Total	\$ 21,198,600	\$ 21,630,000
Project Total	\$ 23,843,700	\$ 24,336,000

PRIOR RELEVANT BOARD ACTION(S)

11/15/23, R23-11-153: Accept Completion of Contract No. GG-2020-1, City of Garden Grove Wells 21, 23, 28, 29, and 30 PFAS Water Treatment Plants

6/2/21, R21-6-85: Approve Agreement to Evoqua Water Technologies, LLC For Ion-Exchange Resin Media and Installation at Garden Grove PFAS Treatment Plant Project (Wells 21, 23, 28, 29, and 30)

2/17/21, R21-2-32: Award Contract No. GG-2020-1, Garden Grove Wells 21, 23, 28, 29, and 30 PFAS Water Treatment Plants, to Pacific Hydrotech Corporation

12/2/20, R20-12-160: Receive and file the Engineer's Report for the Garden Grove Wells 19, 21, 23, 28, 29, and 30 PFAS Water Treatment Plants and determine the project feasible, necessary and beneficial to the lands of the District; Authorize filing of a Categorical Exemption in compliance with the California Environmental Quality Act (CEQA) guidelines; Authorize publication of a Request for Proposals to Procure and Install Ion Exchange Resin Media for the Garden Grove Wells 21, 23, 28, 29, and 30 PFAS Water Treatment Plants; and Authorize publication of Notice Inviting Bids for Contract No. GG-2020-1, Garden Grove Wells 21, 23, 28, 29, and 30 PFAS Water Treatment Plants.

1/22/20, R20-1-13: Issuance of a Request for Quotes to pre-purchase up to 150 PFAS treatment vessels; Issuance of a Request for Proposals for on-call consultants to prepare PFAS Treatment System designs; Execution of PFAS treatment system professional services agreements for design services with the highest ranked consultants; and Establishment of a project design budget of \$10,000,000.

AGENDA ITEM SUBMITTAL

Meeting Date: March 13, 2024

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen / R. Fick

Budgeted: N/A

Budget Amount: \$6.0 Million

Cost Estimate: \$6.0 Million

Funding Source: Water Budget

Program/Line Item No: N/A

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: PROPOSED FISCAL YEAR 2024-25 WATER PURCHASE BUDGET

SUMMARY

The proposed fiscal year (FY) 2024-25 water budget totals \$6.0 million. Information from the draft FY 2024-25 budget document provided to the Board on March 6, 2024, is attached and provides the water budget details. The budget is based upon the 2024 and estimated 2025 Metropolitan Water District (MWD) water rates. Staff will review the budget with the Committee.

Attachments:

- Water Budget Spreadsheet
- Water Budget Description
- Presentation

RECOMMENDATION

Informational

DISCUSSION/ANALYSIS

The water budget expense items are listed below:

- Municipal Water District of Orange County (MWDOC) Groundwater charge - \$400,000
- MWD Capacity Charge which is passed through by MWDOC - \$10,000
- MWD Readiness-to-serve charge which is passed through by MWDOC - \$1.3 million
- Purchase of injection water for the Alamitos Seawater Barrier - \$4.3 million

The budget does not include the purchase of any MWD untreated full service water. The District normally budgets for and purchases untreated imported water, which currently cost \$903/acre-foot, to recharge the groundwater basin to support higher levels of groundwater pumping. In general, it is a good basin management strategy to budget money for MWD untreated water purchases. During years when no water is purchased, this money stays in the water fund for future purchases. The two primary benefits of this strategy include:

- This program allows the District to conjunctively operate with the MWD imported water system. During drought years and reductions to imported water supplies, OCWD can

overdraft the groundwater basin if necessary, knowing that at least partial funding is available to refill the basin when wet periods occur.

- Eventually the water is pumped out of the groundwater basin by the Groundwater Producers, disinfected and served to their customers. This operation reduces the amount of treated imported water that is purchased by the Groundwater Producers, which currently costs \$1,256/acre-foot, resulting in a net water supply savings to the region.

Staff is recommending to temporarily deviate from this budgeting strategy due to several reasons, they include:

- Groundwater pumping remains less than normal due to the PFAS issue;
- The recent expansion of the GWRS is providing the District with additional recharge water;
- The groundwater basin is in very good condition; and
- The recommended Replenishment Assessment increase would be higher than what is currently being considered.

Staff anticipates recommending the inclusion of funding to purchase MWD untreated water in future budgets.

Staff is estimating the accumulated overdraft will be approximately 168,000 acre-feet as of June 30, 2024. The proposed FY 2024-25 budget would reduce the accumulated overdraft by approximately 21,000 acre-feet assuming average hydrology as shown below. Thus, the accumulated overdraft would decrease to 147,000 acre-feet as of June 30, 2025.

Expected FY24-25 Groundwater Basin Water Balance

Sources	Amount (af)
Captured Santa Ana River Baseflows	75,000
Captured Santa Ana River Stormflows	58,000
Natural Incidental Recharge	49,000
MWD Untreated Full Service Water	0
GWR System	128,000
Alamitos Seawater Barrier	<u>3,000</u>
Total water recharged	313,000
Expected Basin Pumping at 85% BPP with PFAS issue	<u>(292,000)</u>
Increase in water storage supplies or reduction to accumulated overdraft	21,000

PRIOR RELEVANT BOARD ACTION(S)

3/6/24– Provided draft FY24-25 budget and Replenishment Assessment and Basin Production Percentage.

1/17/24, M22-7 - Provided initial FY22-23 Replenishment Assessment and Basin Production Percentage estimates.

12/23- Informational Item Administrative Finance Committee – initiated budget process

**Fiscal Year 2024-25 Budget for Water Purchase
(July 1, 2024 to June 30, 2025)**

<u>Item #</u>		Volume (AF)	2024-25 Unit Cost \$/af ⁽¹⁾	MWDOC Surcharge \$/af	Total Cost Amount
1	Alamitos Barrier Injection water from Long Beach Water Department ⁽²⁾	3,000	1,439.96	n/a	\$4,319,880
2	Untreated Non-interruptible MWD Water ⁽³⁾	0	934.50	n/a	\$0
Sub-total		3,000			\$4,319,880
3	MWDOC Groundwater Charge				\$400,000
4	MWD/MWDOC Capacity Charge ⁽⁴⁾				\$10,000
5	Readiness-to-serve charge is based upon an 4-year average of previous purchases ⁽⁵⁾				\$1,300,000
Total		3,000			\$6,029,880

NOTES

- (1) Average of 2025 and 2024 rates
- (2) Treated Non-interruptible rate assumed to increase from \$1,256/af to \$1,344/af: Average is \$1,300/af
Unit cost includes \$5/af City of Long Beach fee plus \$123/af RTS and \$12/af Capacity Charge paid by Long Beach to MWD
- (3) Untreated non-interruptible rate assumed to increase from \$903/af to \$966/af: Average is \$934.50/af
- (4) MWD/MWDOC Capacity Charge is billed monthly by MWDOC as a flat fee
- (5) Readiness-to-serve (RTS) charge is calculated and provided by MWDOC

WATER PURCHASE

The proposed FY 2024-25 water budget is \$6.0 million and calls for not purchasing any Metropolitan Water District (MWD) untreated full-service water for two primary reasons: (1) The groundwater basin is in good condition with high water storage levels that area expected to be even higher in the near future; and (2) Funding that would have been spent to purchase imported water can be diverted to assist in paying for necessary PFAS cost.

Staff expects groundwater pumping to continue to remain depressed due to the State Division of Drinking Water establishing a 10 ppt PFOA Response Level and the anticipated Environmental Protection Agencies 4 ppt Maximum Contaminant Level for PFOA.

This water budget will result in the accumulated overdraft, assuming an average hydrological year, to decline (resulting in increasing water storage levels) by approximately 20,000 acre-feet.

The groundwater basin accumulated overdraft is projected to be approximately 168,000 acre-feet on June 30, 2024. The overdraft is 7,000 acre-feet above the District's recommended target accumulated overdraft of 175,000 acre-feet (Average of 200,000 acre-feet to 150,000 acre-feet recommended range). The general maximum desired balance in the water reserve fund is to have sufficient funding available to purchase 50% of the water needed from MWD to refill the groundwater basin to the 175,000-acre-foot target. Given the anticipated June 30, 2024 overdraft, no reserve funds are needed.

Estimated June 30, 2024 Accumulated Overdraft		168,000 af
OCWD Target Accumulated Overdraft Range (150,000 to 200,000 af)		<u>175,000 af</u>
	Difference over/(under)	(7,000) af
	50% of Difference	0.0 af
2024-25 Average MWD untreated full-service rate including \$80 per acre-feet for RTS and Capacity Charge (\$935 + \$80)		\$1,015/af
Necessary water fund balance to purchase 0.0 af of water (\$1,015/af x 0.0 af)		\$0.00 million
Estimated June 30, 2024 Water Reserve Fund Balance		\$1 Million

The accompanying table provides a detailed summary of the Water Purchase Budget for FY 2024-25. MWD's rates are assumed to increase on January 1, 2025, as shown. For budgeting purposes, the cost per acre-foot for MWD water is an average of the existing and expected calendar year 2024 rates. The specific water purchase items in the table include:

1. The District anticipates purchasing approximately 3,000 acre-feet of water from the City of Long Beach for injection into the Alamitos Barrier. The cost of this water is \$5/acre-foot above the cost of MWD Tier I water plus the Readiness-To-Serve and Capacity Charge paid by the City of Long Beach to MWD. The total cost for this water is \$1,439.96/af.
2. The District will not purchase any untreated full service non-interruptible MWD water for recharge at the District's field headquarters in the City of Anaheim.
3. MWDOC Groundwater Charge – MWDOC charges the District a fee to fund its staff time and other expenses incurred to support OCWD's programs and purchases of imported water. The fee is currently estimated at \$400,000.
4. The District incurs a Capacity Charge fee on any purchase of MWD non-interruptible water supplies (i.e., OC-44 connection supplies or untreated non-interruptible water). The Capacity Charge is administered by MWDOC and is now billed monthly to the District as a flat fee. The Capacity Charge for FY 2024-25 will be approximately \$10,000.
5. The District also incurs a Readiness-To-Serve charge on any purchase of MWD treated non-interruptible water supplies (i.e., OC-44 connection supplies or untreated non-interruptible water). The fee is expected to be approximately \$1,300,000 in FY 2024-25.

The total Water Purchase budget expense for FY 2024-25 is \$6.0 million.



Review of FY24-25 Proposed Water Purchase Budget

Water Issues Committee



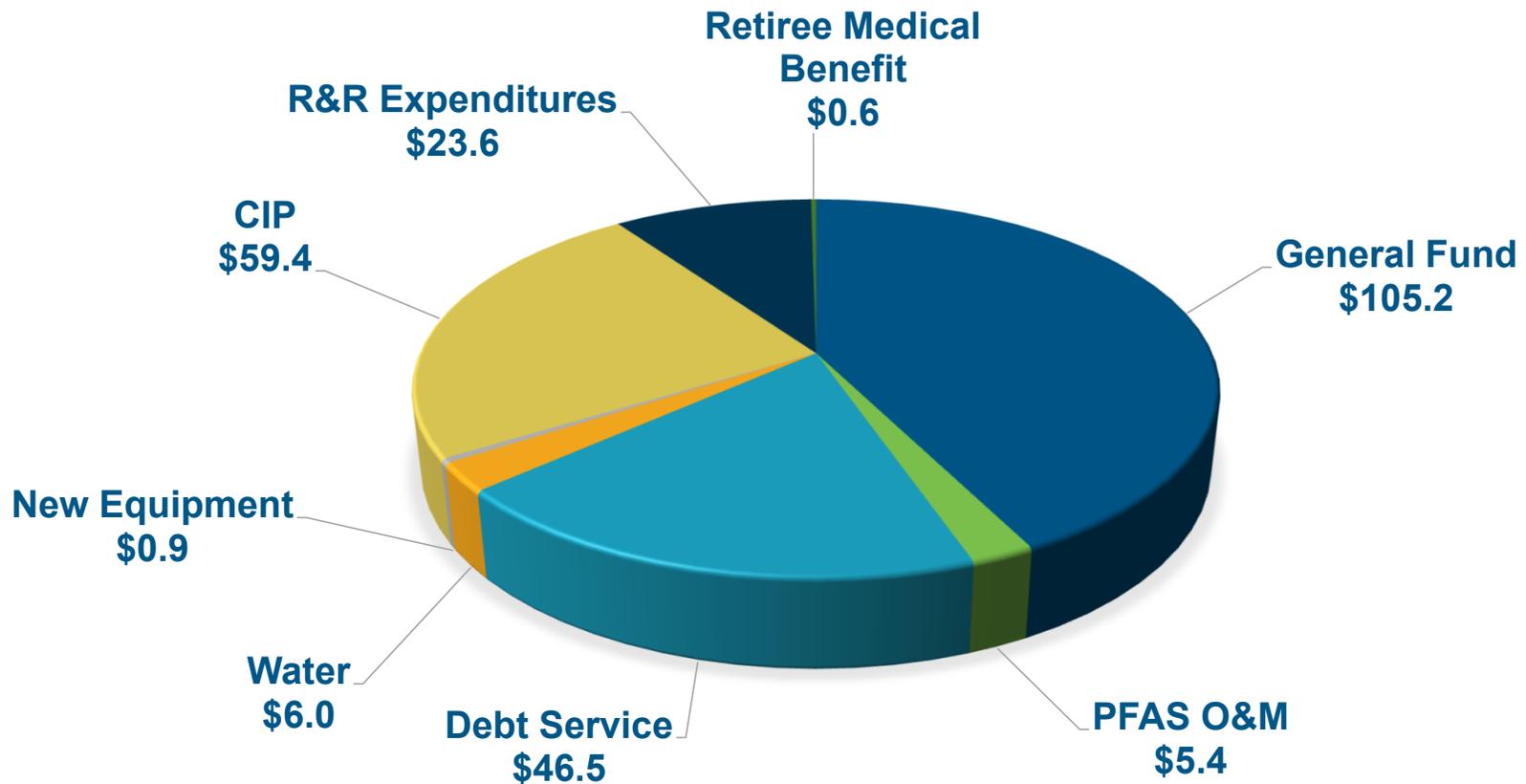
March 13, 2024

FY 2024-25 Budget Schedule

Date	Meeting	Topic
December 14, 2023	Admin/Finance Cte	Budget preparation overview and kick-off
January 11, 2024	Admin/Finance Cte	Provide preliminary BPP and RA estimates
March 6, 2024	Board	Present Draft Budget
March 13, 2024	Producers	Present Draft Budget
March 13, 2024	Water Issues Cte	Review Water Budget 
March 14, 2024	Admin/Finance Cte	Review R&R Budget
April 10, 2024	Water Issues Cte	Review CIP Budget
April 10, 2024	Producers	Discuss Draft Budget
April 11, 2024	Admin/Finance Cte	Review General Fund Budget
April 17, 2024	Board	Public Hearing to set RA & BPP Consideration to approve budget

FY 24-25 Budget Components

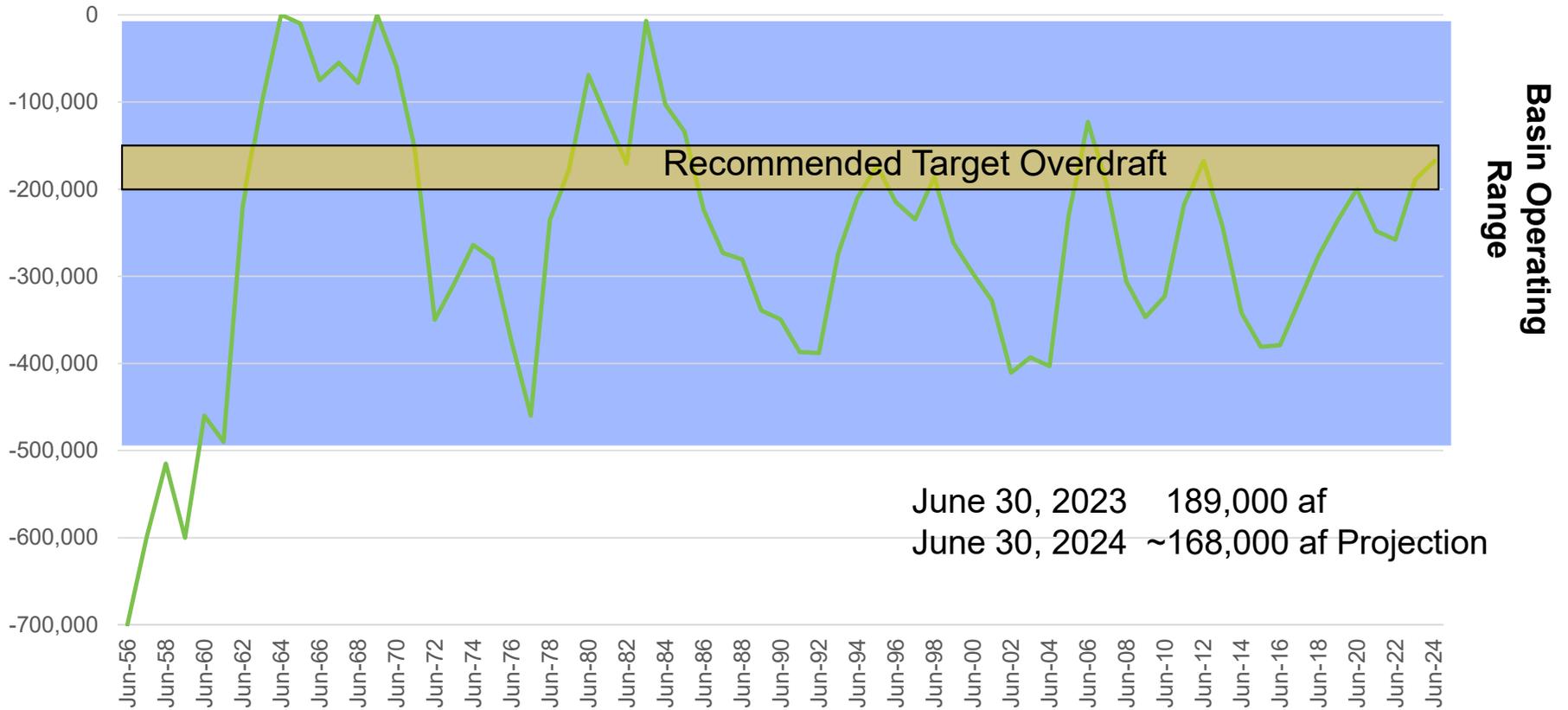
Expenditures - \$247.6 million



Proposed FY 2024-25 Water Budget Expenses

Water Source	Amount (af)	Unit Cost	Amount
Alamitos Barrier	3,000	\$1,439.96/af	\$4,319,880
MWD untreated full service	<u>0</u>	\$934.50/af	<u>\$0</u>
Subtotal	3,000		\$4,319,880
MWD readiness to serve charge			\$1,300,000
MWDOC Groundwater Charge			\$400,000
MWD Capacity Charge			<u>\$10,000</u>
Total Expenses			\$6,029,880

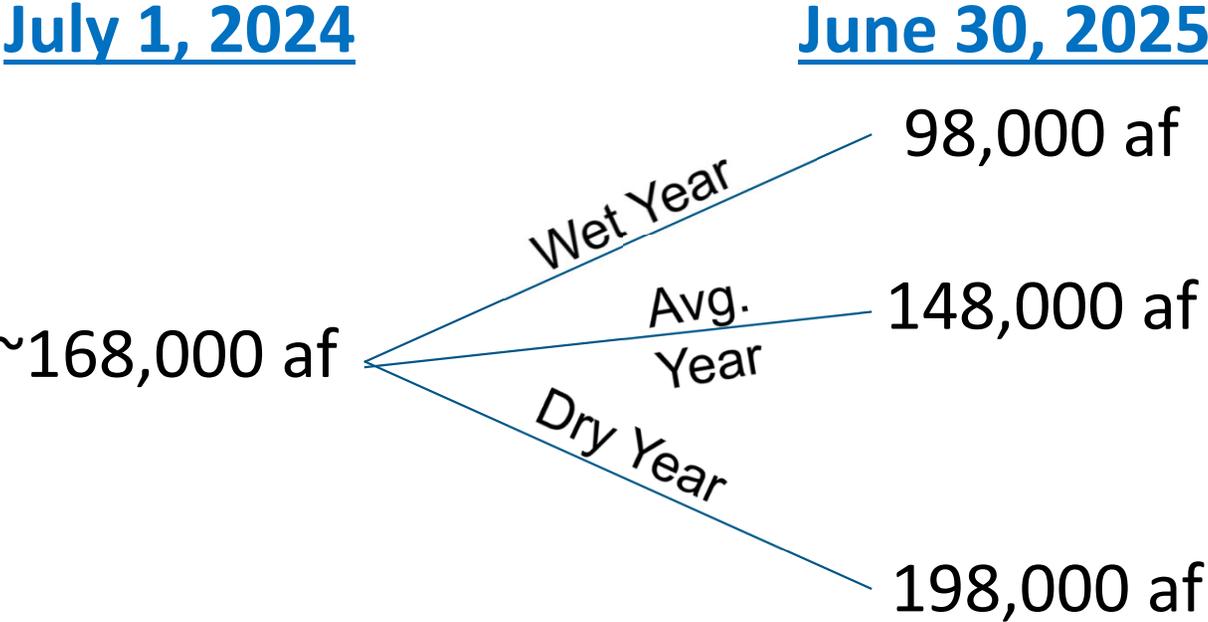
OCWD Groundwater Basin Accumulated Overdraft



Updated FY 2024-25 Groundwater Basin Water Balance

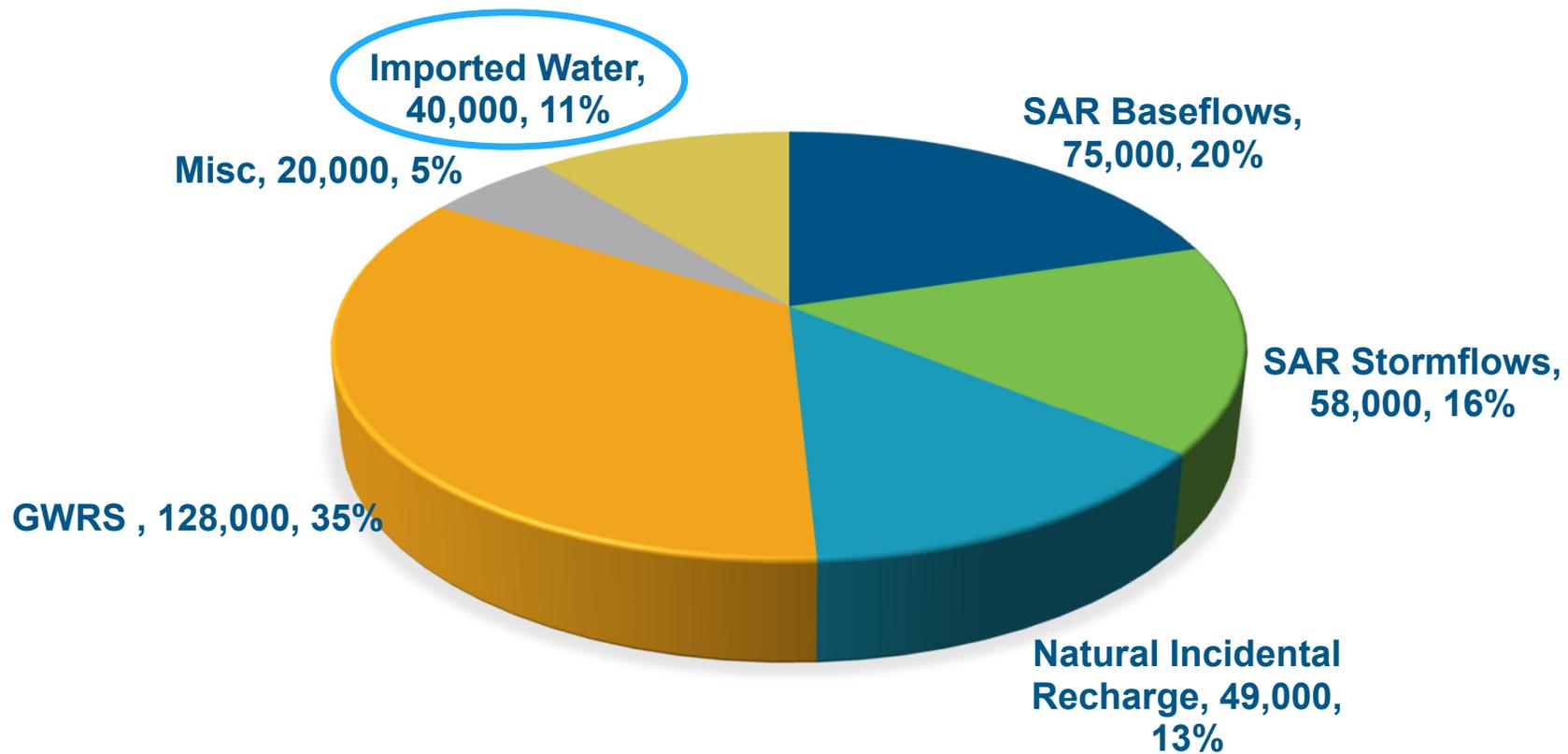
Water Source	Amount (afy) (Average)
SAR Baseflow	75,000
SAR Stormflows	58,000
Incidental Recharge	49,000
GWR System	128,000
Other	<u>3,000</u>
Total Water Into Basin	313,000
Expected Pumping @ 85% BPP with PFAS	<u>292,000</u>
Subtotal Basin Gain/Loss	21,000

FY24-25 Accumulated Overdraft Projection



Current OCWD Service Territory Water Supply Sources

Total Water Demands = ~370,000 afy



Recommendations

- Informational
- Received Committee comments
- Discuss with Groundwater Producers

Additional Slides

MWD Volumetric Rate Components (\$/af)

Rate Components	1/1/2024	1/1/2025*
Supply Rate	\$332	\$353
System Access Rate	\$389	\$463
System Power Rate	<u>\$182</u>	<u>\$190</u>
Total Untreated	\$903	\$1,006
Treatment Surcharge	<u>\$353</u>	<u>\$459</u>
Total Treated	\$1,256	\$1,465

MWDOC Groundwater Charge

- OCWD's groundwater charge calculation:
 - Calculate total MWDOC core budget
 - Subtract WEROC budget
 - Divide by 26 (total MWDOC member agencies)

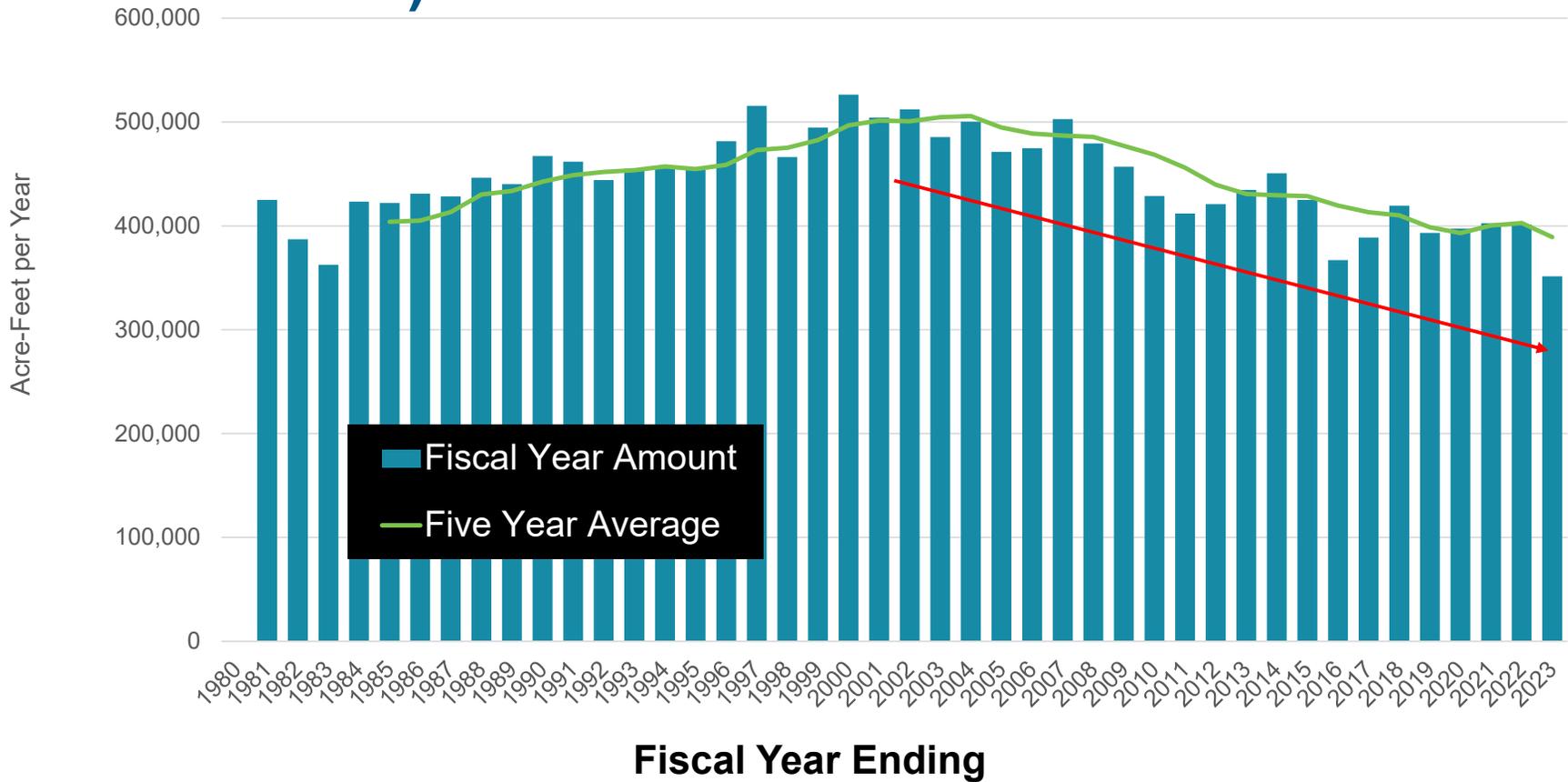
MWD Capacity Charge

- Fixed Charge
- \$11,200/cfs
- Recovers cost of peak distribution capacity
- Calendar Year Charge billed monthly
- Levied on an agency's peak day summer demand over past three years (2021 – 2023)
- Summer period is May 1 through Sept 30 deliveries
- Encourages shifting of MWD deliveries from summer to winter

MWD Readiness-to-Serve Charge (RTS)

- Fixed Charge
- \$167M in 2024 to all MWD member agencies MWDOC to pay ~ \$20 M
- Recovers cost of emergency system storage and standby conveyance capacity
- Allocated among MWD member agencies by a 10-year rolling average of firm demand
- MWDOC collects over 4-year rolling average
- Can deduct property tax stand-by revenue charge from MWD bill

Historical Total Water Demands (Groundwater & Imported Water) for the 19 Groundwater Producers



AGENDA ITEM SUBMITTAL

Meeting Date: March 13, 2024

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: L. Haney/A. Hutchinson

Budgeted: N/A

Budgeted Amount: N/A

Cost Estimate: N/A

Funding Source: N/A

Program/Line Item No. N/A

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: FORECAST INFORMED RESERVOIR OPERATIONS (FIRO) AT PRADO DAM: COMPLETION OF FINAL VIABILITY ASSESSMENT AND IMPLEMENTATION ROADMAP

SUMMARY

Dr. Marty Ralph recently updated the Board on the progress of implementing Forecast Informed Reservoir Operations (FIRO) at Prado Dam. Planning staff will now dive into the technical details of the Final Viability Analysis and provide additional implementation information. The presentation will cover the status of the 508 ft minor deviation at Prado Dam and outline the roadmap for seamlessly integrating FIRO into the Corps Water Control Manual, ensuring its complete integration into operational protocols. FIRO stands as a promising path for enhancing stormwater capture efforts at Prado Dam, thereby aiding groundwater replenishment efforts.

Attachment: Presentation

RECOMMENDATION

Informational

BACKGROUND/ANALYSIS

FIRO is a flexible water management strategy that uses data from watershed monitoring and modern weather and hydrologic forecasting to help water managers selectively retain or release water from reservoirs in a manner that reflects current and forecasted conditions. FIRO uses emerging science and technology to optimize limited resources and adapt to changing climate conditions. Scientific research on the intensity, duration, and location of Atmospheric Rivers (ARs) is central to FIRO.

ARs are responsible for more than half of all beneficial precipitation and over 90 percent of flood damage in California. Long, narrow bands of concentrated moisture, ARs stretch thousands of miles across the Pacific Ocean. When ARs make landfall, they can release a staggering amount of rain and snow, as was demonstrated during a particularly active AR season from October 2022 to April 2023, when 16 ARs produced a maximum of nearly 74 inches and an average of 29 inches of precipitation in the Santa Ana River watershed. Figure 1 shows a landfalling AR that impacted the

watershed in mid-March 2023.

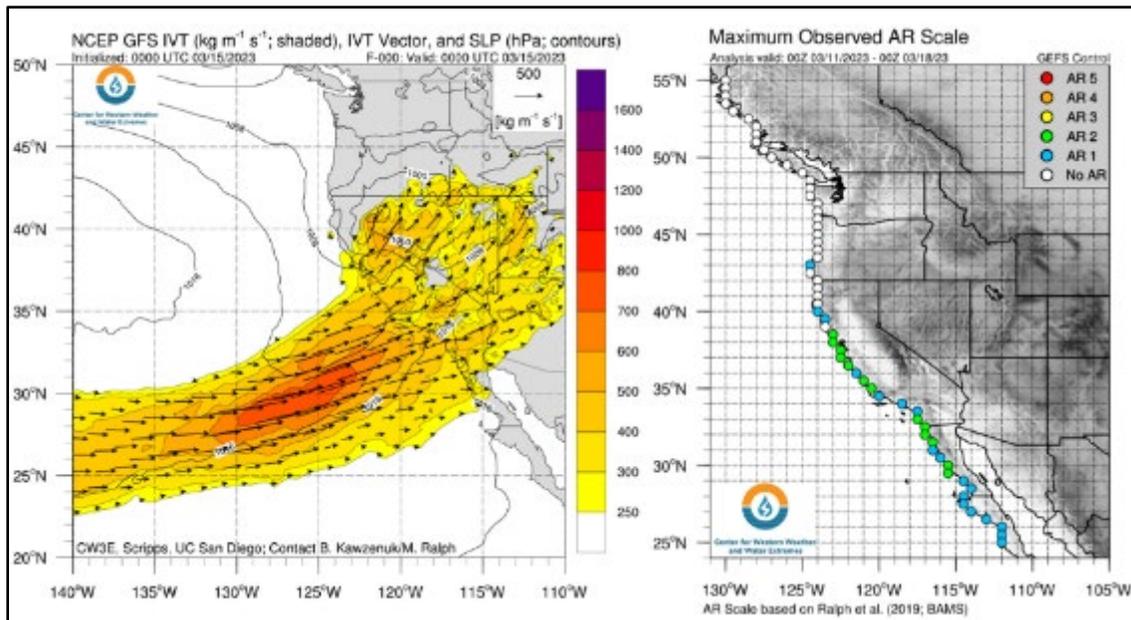


Figure 1. A landfalling AR on 15 March 2023, one of several that contributed to >140% of normal precipitation for the Los Angeles basin as of this date. Right: Estimated impact of the AR as measured on the AR scale, on 11 March 2023. The AR scale is determined based on the duration of AR conditions (with integrated water-vapor transport (IVT) >250 kg m⁻¹ s⁻¹) and maximum IVT during the AR).

Prado Dam is owned and operated by the US Army Corps of Engineers (USACE). OCWD has a long history of working with the USACE to steadily increase the volume of water that can be temporarily impounded behind the dam in what is called the buffer pool. In April 2021, the buffer pool was raised to elevation 505 feet for both the non-storm (March-Sept) and storm seasons (Oct-Feb). At elevation 505 ft, the buffer pool contains approximately 20,000 acre-feet of storage.

Stormwater represents a significant source of water used by OCWD to recharge the groundwater basin. Over the last 20 years, OCWD has captured and recharged an average of 50,000 acre-feet per year (afy) of stormwater with a maximum of 98,000 af in FY22-23, which was a year in which multiple ARs hit the Santa Ana Watershed.

FIRO holds promise to allow the USACE to capture more stormwater in a manner that does not negatively impact flood risk management capabilities and other dam priorities.

Multi-Phase FIRO Study

To explore the potential for increased stormwater capture, the Board approved a Multi-Phase Study on FIRO at Prado Dam in collaboration with the Center for Western Weather and Water Extremes (CW3E) at the Scripps Institution of Oceanography in 2017. This study marked the second FIRO pilot study in the country, following the initial one conducted at Lake Mendocino on the Russian River. Concurrently, additional FIRO studies are in progress within the Yuba-Feather River system in northern California and at Howard Hansen Dam in Washington.

Since 2017, several phases of the Prado Dam FIRO study have been completed as shown in Table 1.

Table 1: Phases of Prado Dam FIRO Study and Schedule

Phase	Activity	Schedule
I	Scoping Study, Develop FIRO Viability Assessment Work Plan Outline, preliminary technical studies	Completed 2018
II	FIRO Viability Assessment Work Plan, continue technical studies	Completed 2019
III	Preliminary FIRO Viability Assessment Report	Completed 2021
IV	Final FIRO Viability Assessment Report	Completed 2023
IV/V	Conduct Minor Deviation to Elevation 508 ft msl	2024-29*
V	FIRO incorporated into Prado Dam Water Control Manual as permanent feature.	Est. 2028

*Minor Deviation would end when Water Control Manual is updated to include FIRO.

The study of FIRO at Prado Dam is guided by a diverse Steering Committee that includes members of the USACE, U.S. Fish and Wildlife Service, California Nevada River Forecast Center, California Department of Water Resources (DWR), Sonoma Water, and Orange County Public Works. OCWD and CW3E provide leadership, oversight, and additional resources as Steering Committee Co-Chairs.

Final Viability Assessment (FVA)

The Final Viability Assessment (FVA), which was completed in November 2023 ([Prado FIRO Final Viability Assessment](#)), presents results and recommendations for future FIRO operations. It builds on the 2021 Preliminary Viability Assessment (PVA), which demonstrated that FIRO is viable at Prado Dam. The ultimate goal of this project is to inform the update of USACE's Water Control Manual (WCM) for Prado Dam to allow flexible FIRO operations, as demonstrated by rigorous analyses and documented in the FVA.

The FVA assessed whether higher buffer pool elevations could be safely managed to provide further water supply reliability benefits for Orange County. With the improvements to Prado Dam, including raising the dam height, increasing the

downstream channel capacity from 10,000 cubic feet per second (cfs) to 30,000 cfs, and a future spillway raise, there is a unique opportunity to integrate FIRO into future dam operations to maximize benefits to flood risk management, water supply, and the environment.

Summary of FVA Results

To evaluate FIRO, the Steering Committee established operational constraints and boundary conditions, and tested variables such as spillway elevations (with and without a planned spillway raise) and maximum release schedules for buffer pool elevations up to 520 feet. Five water management alternatives with five buffer pool elevations combined for a total of 26 scenarios (including baseline), which were modeled using historical weather data from 1990–2019 and extreme events scaled to 100-, 200-, and 500-year three-day Prado Dam inflow volumes. The results were compared against 12 decisional metrics. Key FVA findings are summarized below.

- FIRO strategies can successfully enhance recharge for OCWD.
- On average, FIRO strategies from elevation 510 feet to 512 feet are estimated to yield 4,000 to 6,000 acre-feet per year of additional groundwater recharge over existing operations (i.e., 505 feet).
- Over the range of the historical period examined (1990–2019) and for scaled events (100-, 200-, and 500-year three-day volume), FIRO strategies have a slight positive impact on flood risk management outcomes associated with reservoir spill and releases in excess of channel capacity for all buffer pools tested.
- All FIRO strategies at all buffer pools perform better than existing operations.
- Additional monitoring and operational triggers are needed to further study impacts and adjust water levels as needed for habitat and nesting season protection during FIRO operations.

For a detailed list of findings and recommendations, refer to Sections 7 and 8 of the FVA.

FVA Recommendations

Based on the work conducted for the FVA, the Prado Steering Committee recommended the following:

- A FIRO buffer pool ranging from 510 ft to 512 ft be explored during the minor deviation period. The minor deviation seeks to raise the buffer pool to elevation 508 ft.
- Steering Committee involvement should continue throughout the minor deviation period and through FIRO being established as a permanent feature at Prado Dam.
- A decision support system (DSS) is critical for FIRO implementation and must be adaptive to future improvements in forecast skill and infrastructure. Elements of the DSS should be developed and tested to support the planned minor deviation.

Once the preferred alternative is selected, the DSS should be modified accordingly and integrated into the existing USACE Los Angeles District’s DSS framework.

- AR tools, observations, and precipitation forecast products should be tailored and dedicated to the Santa Ana River watershed to support real-time operations at Prado Dam and, in the future, coordinate FIRO operations with Seven Oaks Dam for watershed-based FIRO operations.
- Expand the existing environmental monitoring program above 505 ft to identify potential environmental impacts and, as needed, implement adaptive management program to offset FIRO impacts.

FIRO Implementation Roadmap

With the completion of the FVA, the roadmap to implementing FIRO involves the completion of several key activities as shown in Figure 2.

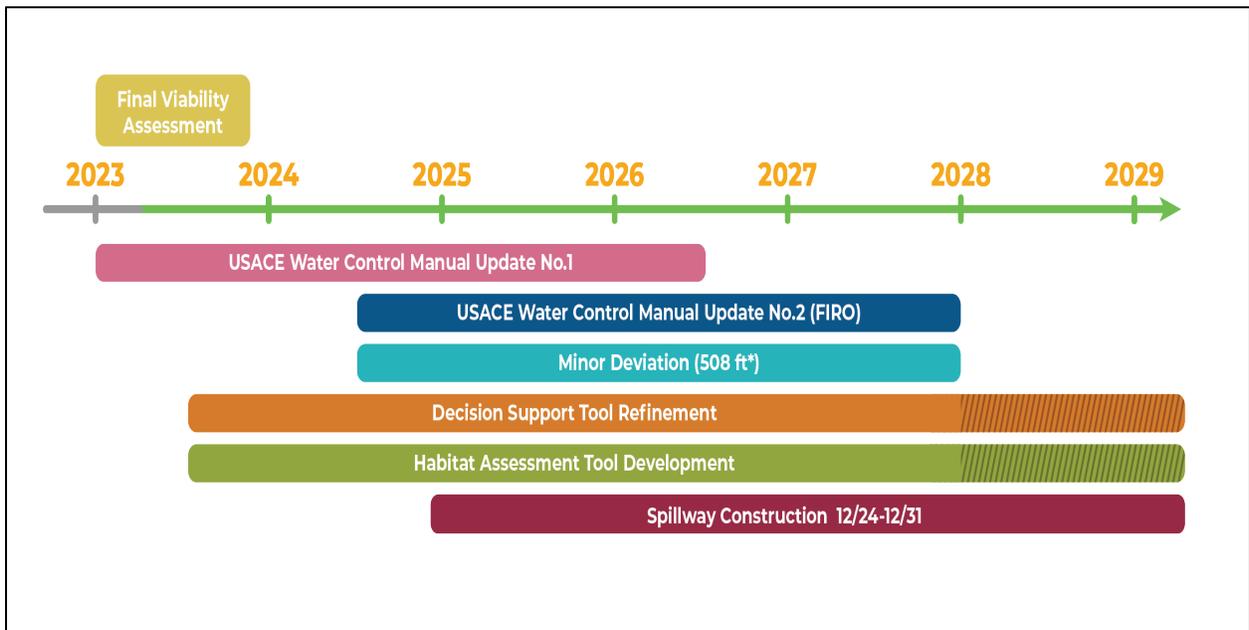


Figure 2. FIRO Implementation Roadmap and Schedule

Water Control Manual Update No. 1 and No. 2

The ultimate objective of this program is to incorporate FIRO into the USACE’s Prado Dam Water Control Manual (WCM), which describes the rules the USACE follows in operating Prado Dam. The USACE is currently working to complete WCM Update No. 1 which addresses the increased discharge capacity of the dam from 10,000 cfs to 30,000 cfs. This is expected to be completed by July 2026.

Water Control Manual Update No. 2 is solely to incorporate FIRO into the WCM. This update cannot be implemented until WCM Update No. 1 is completed in 2026; however,

work will proceed in planning for Update No. 2 so it can be implemented as soon as possible.

Efforts are already underway with the USACE, Sonoma Water, DWR, and Yuba Water Agency to develop flexible language describing the application of FIRO in the WCM's of Lake Mendocino, Lake Oroville, and New Bullards Bar Reservoir. These efforts will assist in developing the language for WCM Update No. 2.

The USACE received partial funding of \$500,000 in its FY24 budget for WCM Update No. 2. As a project partner, OCWD will assist with the work required, including the environmental review and documentation. The current target time frame for completing WCM Update No. 2 is 2027 to 2028.

Minor Deviation

The Prado FIRO Steering Committee requested that the USACE process a minor deviation to increase the buffer pool to elevation 508 ft for a five-year period. There are multiple reasons for seeking a minor deviation. The first is to test FIRO at an intermediate buffer pool elevation, continue developing decision support tools and forecast tools specific to Prado Dam operations, and to develop assessment tools to better understand how FIRO may affect habitat behind Prado Dam. The second reason is to act as a bridge until WCM Update No. 2 is implemented. A five-year period was selected to provide sufficient time for wet years to occur to test FIRO and to ensure this additional storage was available for storm water capture in case there were delays in implementing WCM Update No. 2. OCWD and USACE staff are working closely to get the minor deviation in place in 2024. Based on FVA modeling, raising the buffer pool to 508 ft will provide an average of 2,000 ac-ft of additional recharge to the groundwater basin.

Decision Support Tool Refinement

The Center for Western Water and Weather Extremes ([Center for Western Weather and Water Extremes – Center For Western Weather and Water Extremes \(ucsd.edu\)](https://www.ucsd.edu/center-for-western-weather-and-water-extremes)) has developed a plethora of forecast tools that provide situational awareness as well as specific forecasts for the Santa Ana River watershed. During the FVA process, specific FIRO tools were developed for Prado Dam. These tools have already proven useful and are being used by USACE Los Angeles District Reservoir Regulation staff. USACE, CW3E, and OCWD staff regularly meet to discuss these tools and will continue to refine them over time to increase their value. This is expected to be an ongoing process as forecast tools improve and new technologies come to the fore. In the long-term, FIRO tools will need to be incorporated into the USACE's existing tool set, including the Corps Water Management System (CWMS). In the short term, improvements envisioned include a FIRO Dashboard and dedicated website that include selected links and tools that are useful to USACE reservoir operators.

Habitat Assessment Tool Development

One of the biggest remaining challenges to implementing FIRO at Prado Dam is understanding the various factors affecting habitat health behind Prado Dam. Increased inundation caused by water conservation activities affect habitat in sensitive ways including time of year, duration of inundation, and frequency.

The FVA and US Fish and Wildlife recommend expanded monitoring of habitat above 505 ft to determine if the additional water has impacts on riparian habitat. OCWD has established habitat values that will be monitored for the Prado Basin forest and its inhabitants. Specific recommendations for expanded habitat monitoring are as follows:

- Expand the existing monitoring program above 505 feet identify potential environmental impacts, and as needed, implement adaptive management program to offset impacts.
- Preemptively and adaptively manage adequate riparian habitat to offset potential temporary or long-term impacts associated with FIRO.
- Explore and study opportunities for habitat value creation made possible by FIRO. For example, continue experimenting with habitat islands and flood irrigation pathways above an elevation of 505 feet to expand the area benefiting from temporary flood irrigation, which could offset potential environmental impacts in the lower elevations associated with FIRO.
- Develop new methods to study riparian habitat responses to prolonged dry and wet conditions.
- Create operational procedures based on observed field conditions to maximize viable vireo habitat and success.

These recommendations are timely in that over the past several years, OCWD Natural Resources staff have worked with the US Fish and Wildlife Service (USFWS) to employ a “Stacked Cube Method” to assess habitat suitability, particularly for the endangered least Bell’s vireo. Both OCWD and the USFWS have concluded that this methodology is not useful. In the Biological Opinion for the minor deviation, the USFWS is requiring OCWD to develop a new approach to understanding the critical factors affecting habitat health and least Bell’s vireo population and distribution.

OCWD will be working closely with the USFWS on the FVA recommendations and developing various tools during the minor deviation period that will set the stage for final FIRO implementation. Staff will present more information on Habitat Assessment Tool development at a future meeting.

PRIOR RELEVANT BOARD ACTIONS

6/15/22, R22-6-78 - Authorize amending agreement with UC San Diego/Scripps Institution of Oceanography by adding an amount not to exceed \$265,000 to complete Phase IV of Study on Forecast-Informed Reservoir Operations at Prado Dam.

2/17/21, R21-2-27 - Authorize amending agreement with UC San Diego/Scripps Institution of Oceanography by adding an amount not to exceed \$291,000 for Phase IV of Study on Forecast-Informed Reservoir Operations at Prado Dam and Authorize reimbursing three independent reviewers at \$5,000 each for independent review of the Prado FIRO Preliminary Viability Assessment for a total amount not to exceed \$15,000.

1/22/20, R20-1-9 - Authorize amending agreement with UC San Diego/Scripps Institution of Oceanography by adding an amount not to exceed \$291,000 for Phase III of Study on Forecast-Informed Reservoir Operations at Prado Dam.

10/17/18, R18-10-146 - Approve Phase II FIRO Scoping Study with Scripps Institution of Oceanography; Authorize amending agreement with Scripps Institution of Oceanography by adding an amount not to exceed \$325,000 for Phase II

6-21-2017, R17-6-90 - Authorize execution of an agreement for Phase I of a Scoping Study on Forecast-Informed Reservoir Operations (FIRO) at Prado Dam with UC San Diego/Scripps Institution of Oceanography for an amount not to exceed \$250,000; and, Authorize the District's Membership and Participation in the Subseasonal-to-Seasonal Precipitation Coalition, which is at no cost to the District.



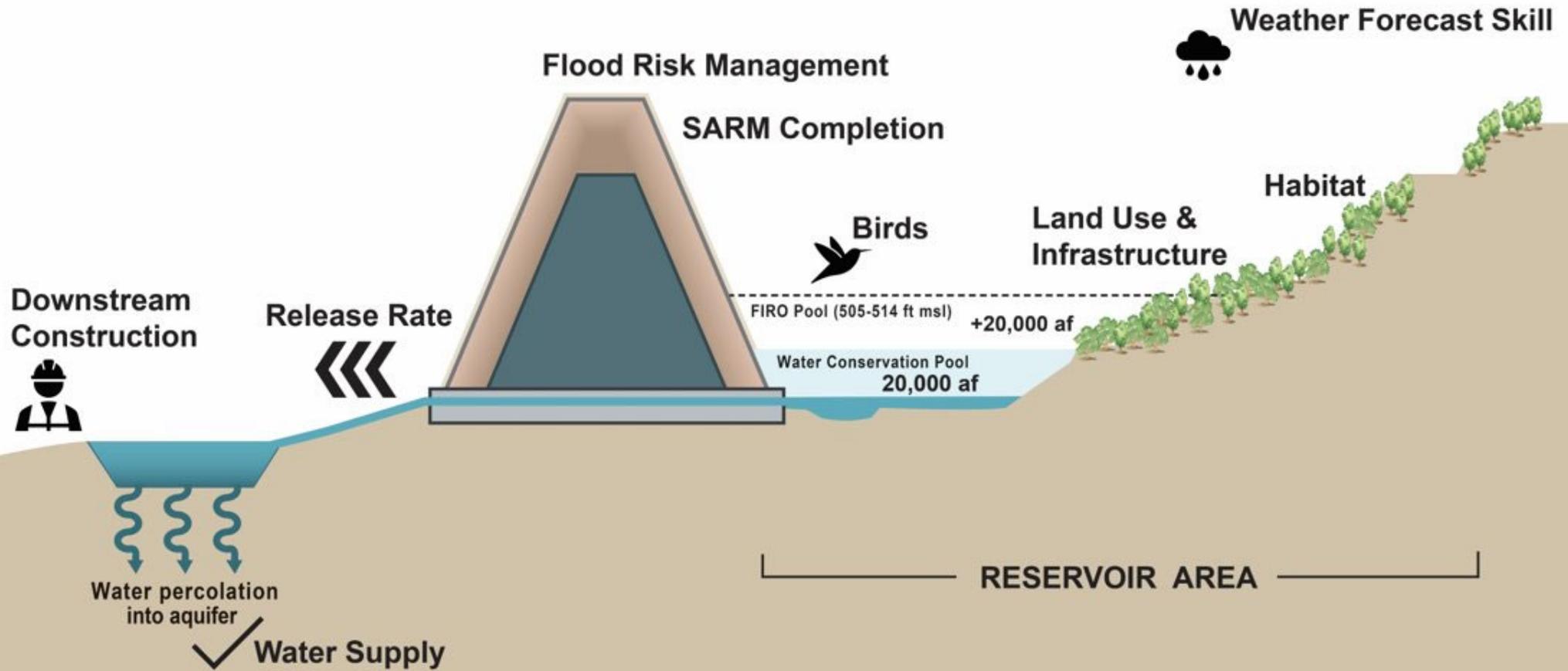
Forecast Informed Reservoir Operations (FIRO) at Prado Dam: Completion of Final Viability Assessment and Implementation Roadmap



Water Issues Committee

March 13, 2024

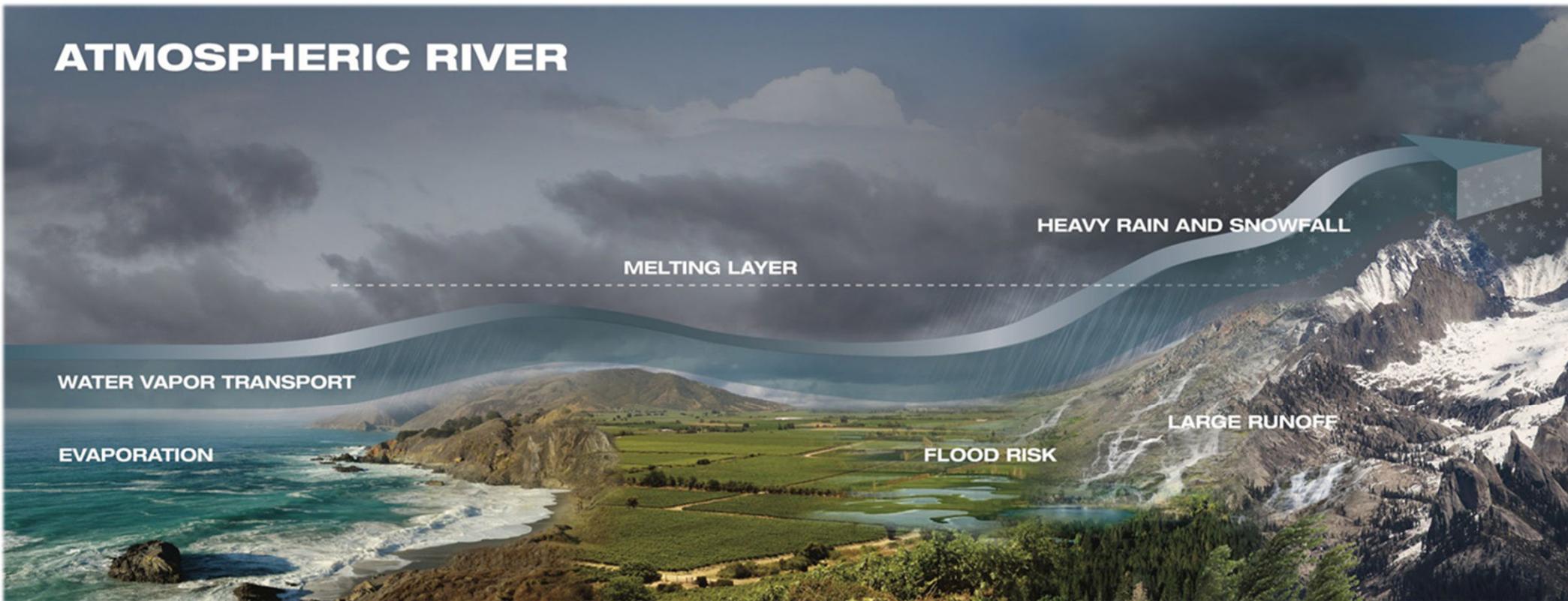
Prado Dam



OCWD has a long history of water conservation at Prado Dam. Multiple factors must be considered in applying FIRO at Prado Dam.

Atmospheric Rivers are Rivers in the Sky and Can Make the Difference Between Drought and Wet Years

ATMOSPHERIC RIVER

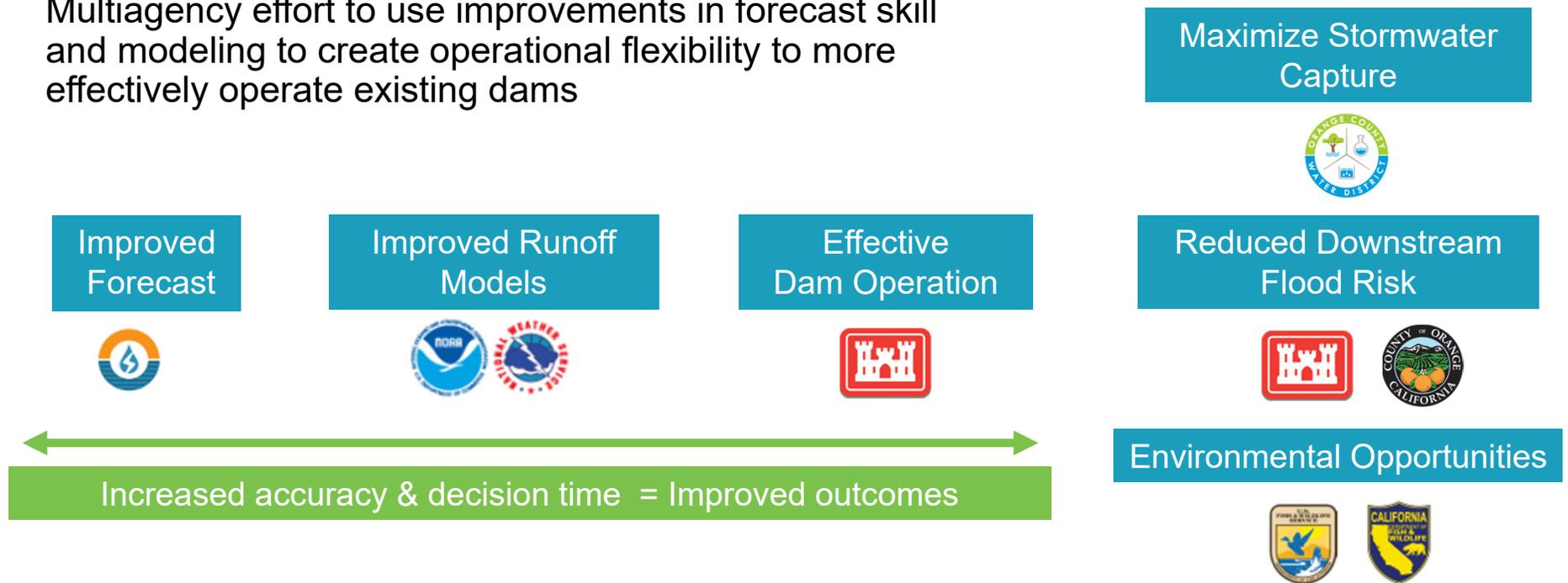


Courtesy of CW3E

ORANGE COUNTY WATER DISTRICT

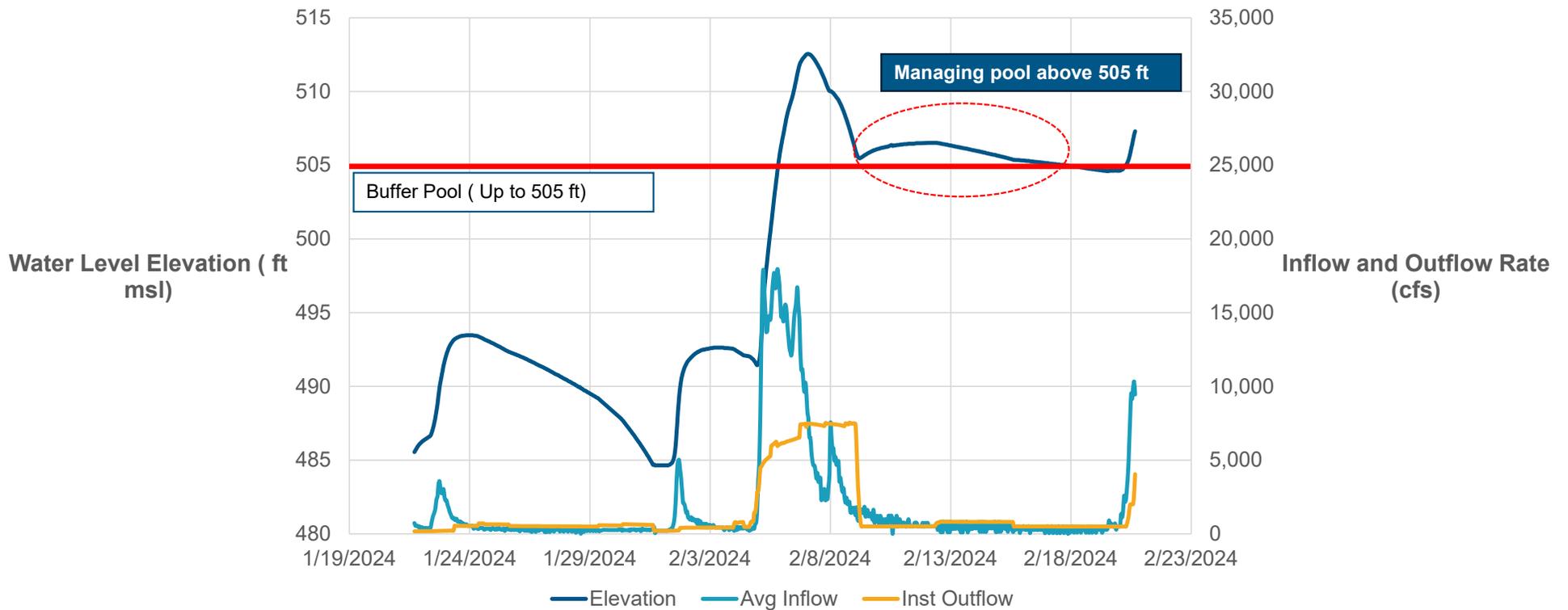
What is FIRO or Forecast Informed Reservoir Operations?

Multiagency effort to use improvements in forecast skill and modeling to create operational flexibility to more effectively operate existing dams

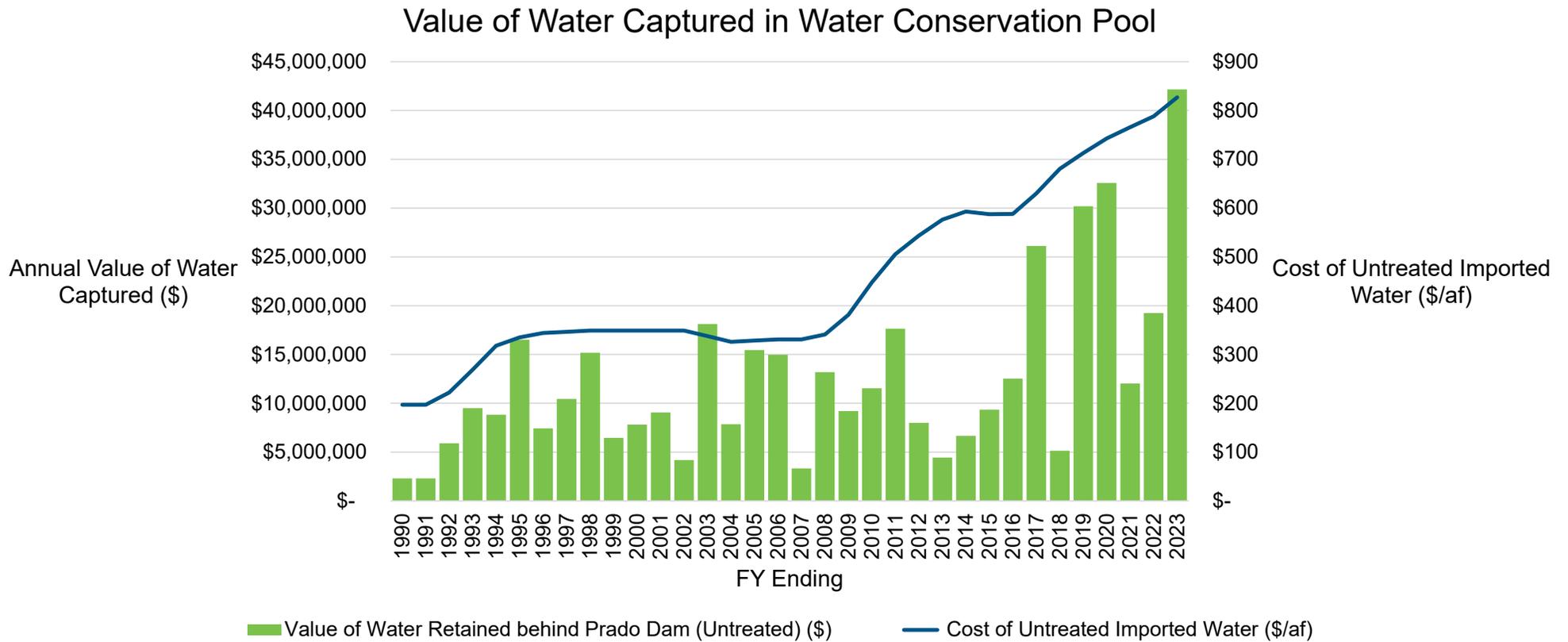


FIRO is Providing Tools to Allow For More Flexible Management of the Buffer Pool

Prado Dam Operations, Jan. 21 to Feb. 20



Since 1990, Value of Stormwater Captured at Prado Dam is Estimated at More Than \$426M



Prado FIRO Effort Started in 2017; Final Viability Assessment (FVA) Published in November 2023



End dates for Minor Deviation and Water Control Manual not shown.
*Dates dependent on hydrology and completion of the Santa Ana River Mainstem Project.

FVA Found FIRO is Viable at Prado Dam and We Are Moving Forward with Implementation

Key Findings

Prado Dam

FORECAST INFORMED RESERVOIR OPERATIONS

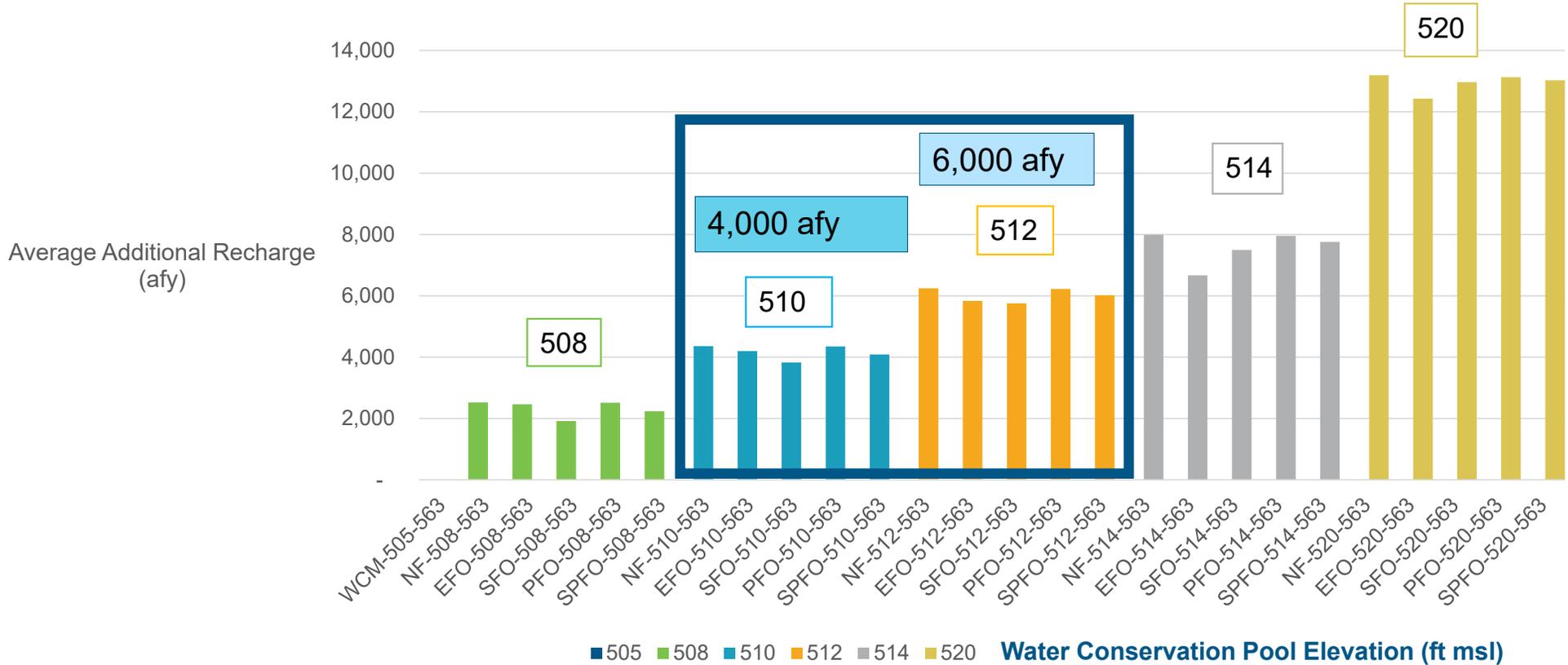
- Raising the maximum water level to 510 or 512 ft msl would yield approximately 4,000 to 6,000 acre of feet of additional recharge - 10% Increase
- FIRO has a slightly positive impact on flood risk management
- Additional research needs to be done to understand environmental effects

Implementation

- Test FIRO with Minor Deviation (508 ft)
- Continue to develop FIRO decision support tools
- Develop tools to understand environmental effects of increased water conservation, including multi-parameter model
- Update USACE Water Control Manual to incorporate FIRO as a permanent feature (Est. 2028)



FIRO Anticipated to Produce Additional 4,000-6,000 afy of Recharge to the Basin



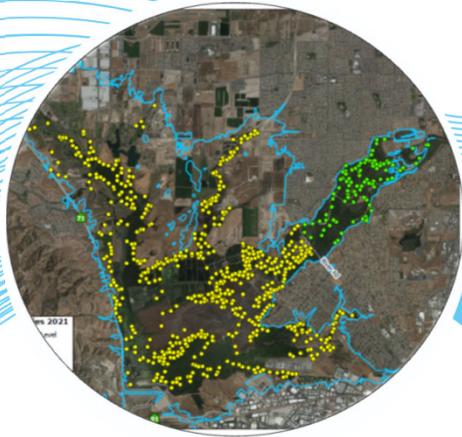


508 Minor Deviation New Requirements		Estimated Cost
CM 2.	New vegetation monitoring program; new habitat monitoring/mitigation program	Staff Time
CM 7.	Vegetation monitoring during habitat rehabilitation/re-establishment activities	Staff Time
CM 8.	Removal of additional 1,141 cubic yards of sediment from Santa Ana River at Prado Wetlands diversion channel	\$5,705/yr for 5 years
RPM 3.	Additional reporting requirements for least Bell's vireo	Staff Time
RPM 5.	Riparian habitat monitoring/reporting & potential habitat re-establishment <ul style="list-style-type: none"> if >30%loss of habitat after operating at 508 for 2 years in a row 	<p>183 acres of habitat between 505 & 508</p> <p>30% loss of habitat = 55 acres</p> <p>\$35,000/acre for planting and \$25,000/acre for maintenance = \$3.3 million*</p>



*Assumes 1:1 mitigation ratio and exactly 30% loss of habitat

Multi-Benefit Habitat Assessment Tool



Regulatory Requirement

Monitoring Program for FWS
Replace Stacked Cube
Reach Agreement by 9/1/2024
Communicate Past Data

Informed Decision Making

Better Understand Factors Affecting Habitat
Loss/Growth
Historical Trend & Predictive Analysis
Improve Dam Operations to Consider Habitat

Visualize & Automate

Real-Time Information
Connect Scattered Data
Report Meaningful Visuals
Automate Data Collection

FIRO Implementation Timeline

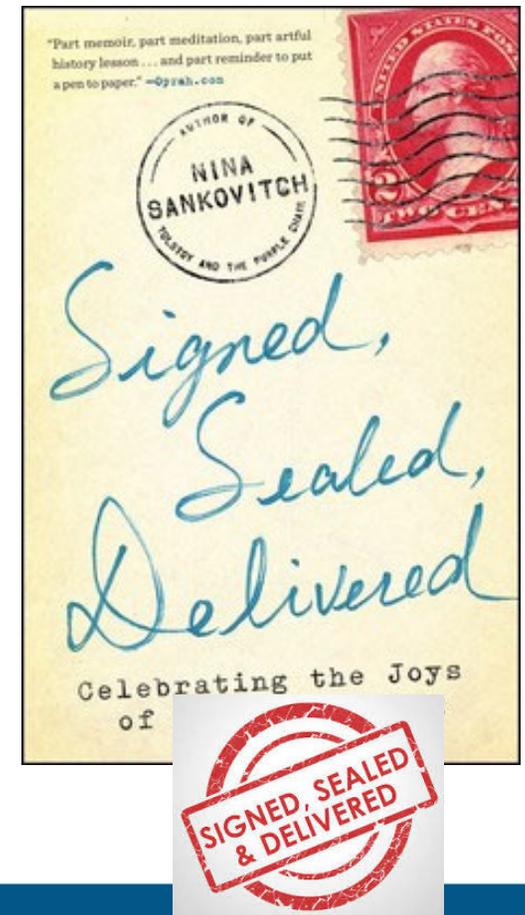


FIRO Implementation Timeline

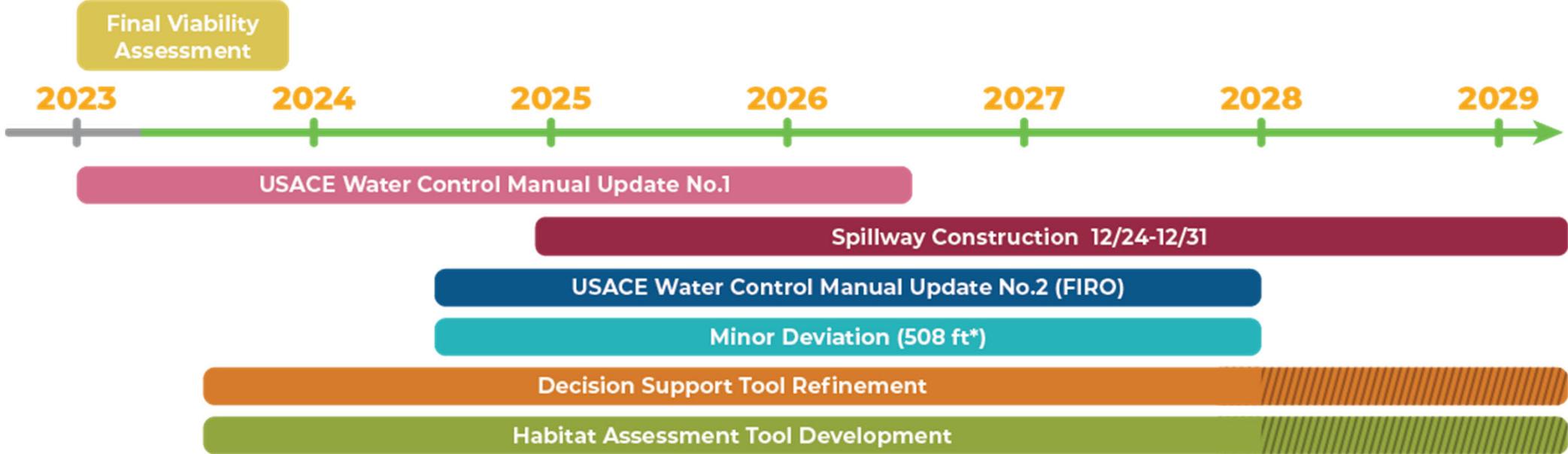


508 Minor Deviation Status

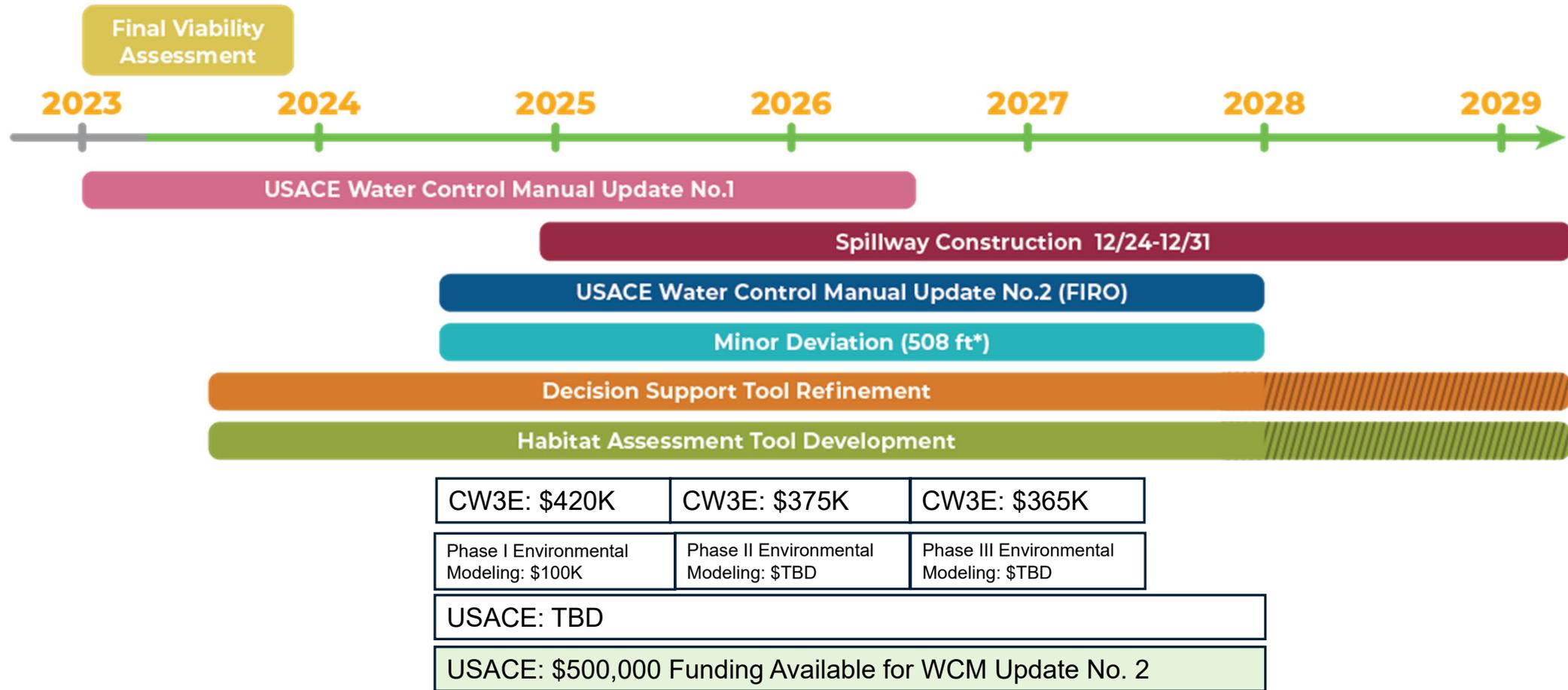
- Biological Opinion **approved March 2024**
- Cultural Analysis ongoing **Estimated Completion June/July 2024**
- Finalization of the Environmental Assessment (EA) to cover NEPA compliance **Estimated Completion by Fall 2024**
 - Must be circulated to USACE legal for approval
 - Public review
 - USACE stamps approval
- **Implement – Fall 2024**



FIRO Implementation Timeline



FIRO Implementation Draft Budget



Thank You!

