AGENDA

18700 Ward St.
Fountain Valley, CA 92708
(714) 378-3200

WATER ISSUES COMMITTEE MEETING
WITH BOARD OF DIRECTORS *
ORANGE COUNTY WATER DISTRICT
Wednesday, June 11, 2025 12:00 p.m., L-1

*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 **June 18** 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, Santa Ana
1454 Madison Street, Tustin
1502 North Broadway, Santa Ana
303 W. Commonwealth Ave., Fullerton
Hotel Pacai, Lobby Didžioji g. 7, Vilnius, 01128 Vilniaus m. sav., Lithuania
100 South Main Street, Los Angeles
* 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 – 11)

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 MAY 14, 2025

   RECOMMENDATION: Approve minutes as presented

2. AWARD CONTRACT NO. GA-2024-1 GAP PROCESS BUILDING EXTERIOR STAIR REPLACEMENT PROJECT TO VICON ENTERPRISE

   RECOMMENDATION: Agendize for June 18 Board meeting:

   1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract GA-2024-1 GAP Process Building Exterior Stair Replacement Project;

   2. Accept bid and award contract GA-2024-1 to the lowest responsive bid and responsible bidder, Vicon Enterprise, in the amount of $470,000

   3. Authorize issuance of Amendment 1 to Agreement No. 1507 with Scheevel Engineering for construction phase services in the amount of $22,800.00, and

   4. Establish Project budget in the amount of $535,050

3. CONTRACT NO. LAB-2024-1: CHANGE ORDER RATIFICATION AND BUDGET INCREASE

   RECOMMENDATION: Agendize for June 18 Board meeting:

   1. Ratify issuance of Change Order No. 1;

   2. Increase project budget by $50,000 for a total project budget in the amount of $1,175,000

4. CONTRACT NO. SA-2025-1 CITY OF SANTA ANA PFAS TREATMENT AT JOHN GARTHE RESERVOIR NOTICE INVITING BIDS AND REQUEST FOR PROPOSALS FOR CONSTRUCTION MANAGEMENT

   RECOMMENDATION: Agendize for June 18 Board meeting:

   1. Authorize publication of Notice Inviting Bids for Contract No.SA-2025-1, City of Santa Ana PFAS Treatment at John Garthe Reservoir Project;

   2. Authorize issuance of a Request for Proposal for Construction Management Services for the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project

5. AWARD CONTRACT NO. FV-2024-1 ANNEX BUILDING ROOF REPLACEMENT PROJECT TO C.I. SERVICES INC.

RECOMMENDATION: Agendize for June 18 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract FV-2024-1 Annex Building Roof Replacement Project;

2. Ratify issuance of Addendum #1;

3. Accept bid and award contract FV-2024-1 to the lowest responsive bid and responsible bidder, C.I Services Inc, in the amount of $168,000, and

4. Establish Project budget in the amount of $177,400

6. ANAHEIM LAKE VALVE VAULT PROJECT: REQUEST FOR PROPOSALS FOR CONSTRUCTION MANAGEMENT AND INSPECTION SERVICES

RECOMMENDATION: Agendize for June 18 Board meeting: Authorize issuance of RFP for Construction Management and Inspection Services for Contract No. A-2025-1, Anaheim Valve Vault Project

7. ADOPTION OF THE ORANGE COUNTY REGIONAL WATER AND WASTEWATER MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR 2025

RECOMMENDATION: Agendize for June 18 Board meeting: Approve and adopt the revised Orange County Regional Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan

8. FULLERTON MAIN PLANT (WELLS 5, 6 & 8) AND WELL 7A PFAS WATER TREATMENT PLANT ENGINEERS REPORT; CATEGORICAL EXEMPTION, CONTRACT NO. FUL-2025-1 NOTICE INVITING BIDS, AND AUTHORIZATION TO REIMBURSE CITY OF FULLERTON FOR WELL 7A PFAS WATER TREATMENT PROJECT

RECOMMENDATION: Agendize for June 18 Board Meeting:

1. Approve the Engineer's Report for the City of Fullerton Main Plant (Wells 5, 6 & 8) and Well 7A PFAS Water Treatment Projects and determine the projects feasible, necessary and beneficial to the lands of the District;

2. Authorize filing of a Categorical Exemption for the City of Fullerton Main Plant (Wells 5, 6 & 8) in compliance with the California Environmental Quality Act (CEQA) guidelines;

3. Authorize publication of Notice Inviting Bids for Contract No. FUL-2025-1, Fullerton Main Plant (Wells 5, 6 & 8) PFAS Water Treatment Plant; and

4. Authorize reimbursement to the City of Fullerton for constructing the Main Plant Well 7A PFAS Water Treatment Project in an amount not to exceed $750,000

9. AMENDMENT TO ABM ELECTRICAL POWER SERVICES, LLC AGREEMENT NUMBER 1586 FOR FIELD HEADQUARTERS SITE WIDE ELECTRICAL MAINTENANCE AND TESTING

RECOMMENDATION: Agendize for June 18 Board meeting: Authorize issuance of Amendment No. 1 to ABM Electrical Power Services, LLC in the amount of $4,260 for services to inspect, clean, test and certify 12 sites' power distribution equipment and increase agreement 1586 total cost to $58,620

10. AWARD CONTRACT NO. GWRS-2025-2 MICROFILTRATION WEST BASEMENT ACOUSTIC PANEL PROJECT TO PACIFIC SOUND CONTROL

RECOMMENDATION: Agendize for June 18 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract GWRS-2025-2 Microfiltration West Basement Acoustic Panel Project;

2. Ratify issuance of Addendum No. 1 and Addendum No. 2;

3. Accept bid and award contract GWRS-2025-2 to the lowest responsive bid and responsible bidder, Pacific Sound Control, in the amount of $519,628; and

4. Establish the Microfiltration West Basement Acoustic Panel Project budget in the amount of $675,000

11. PROJECT FUNDING AGREEMENT WITH THE WATER RESEARCH FOUNDATION FOR PILOT STUDY ON PFAS TREATMENT

RECOMMENDATION: Agendize for June 18 Board meeting:

1. Approve and authorize agreement with The Water Research Foundation (WRF) in the amount of $300,000 for the study titled "Estimating PFAS using total fluorine methods in influent and effluents from a pilot-scale adsorption system"
2. Authorize $100,000 pre-payment to WRF for study co-funding (District cash contribution); and
3. Approve and authorize contractor agreements with Kleinfelder for an amount not to exceed $18,000 and regeneration subcontract for an amount not to exceed $20,000

END OF CONSENT CALENDAR

MATTER FOR CONSIDERATION

12. AUTHORIZE ISSUANCE OF REQUEST FOR PROPOSALS FOR FLOW REVERSAL REVERSE OSMOSIS RETROFIT CONSTRUCTABILITY STUDY

RECOMMENDATION: Agendize for June 18 Board Meeting: Authorize issuance of Request for Proposals for the Flow Reversal Reverse Osmosis Retrofit Constructability Study

INFORMATIONAL ITEMS

13. OC SAN BIOSOLIDS DEEP WELL INJECTION PROJECT

14. PRADO BASIN SAND REMOVAL

CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR CONSIDERATION AT THE JUNE 18 BOARD MEETING

DIRECTORS' ANNOUNCEMENTS/REPORTS

GENERAL MANAGER'S ANNOUNCEMENTS/REPORTS

ADJOURNMENT

WATER ISSUES COMMITTEE MEMBERS

Committee Members
Cathy Green – Chair
Erik Weigand – Vice Chair
Roger Yoh
Van Tran
Dina Nguyen

Alternates
Valerie Amezcua
Fred Jung
Natalie Meeks
Steve Sheldon
Denis Bilodeau

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
May 14, 2025 @ 12:00 p.m.

Director Weigand 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		OCWD
Cathy Green	(absent)	Chris Olsen – Executive Director of Engineering/Water Resources
Erik Weigand		Mehul Patel – Executive Director of Operations
Roger Yoh		Jason Dadakis – Executive Director of Water Quality & Technical Resources
Van Tran		Roy Herndon – Chief Hydrogeologist
Dina Nguyen	(absent)	Dave Mark – Principal Hydrogeologist
Alternates		Adam Hutchinson – Recharge Planning Manager
Valerie Amezcua		Megan Plumlee – Director of Research
Fred Jung		Randy Fick – Treasurer/CFO
Natalie Meeks	(arrived 12:14 p.m.)	Ryan Bouley – Director of Engineering
Steve Sheldon		Larry Esguerra – Senior Engineer
Denis Bilodeau		Kevin O'Toole – Senior Planner
		Sheryl Parsons – Natural Resources Director
		Pat Versluis – Director of Water Quality
		Audrey Perry – Associate Engineer
		Ben Smith – Director of Recharge & Wetland Ops
		Gina Ayala – Director of Public Affairs
		Shawn Neville – Principal Planner
		Jeremy Jungreis – General Counsel
		Leticia Villarreal – Assistant District Secretary
		Janice Kovacevic – Executive Assistant

CONSENT CALENDAR

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

Ayes: *Weigand, Yoh, Tran, Amezcua, Jung*

1. Minutes of Water Issues Committee Meeting

The Minutes of the Water Issues Committee meeting held April 9, 2025, were approved as presented.

2. Invitation for Quotes (IFQ-24-002) for Soil Borings at Anaheim Lake (Resilience Plan Priority Project No. 12)

Recommended for approval at May 21 Board meeting: Authorize issuance of Invitation for Quotes for services to drill soil borings at Anaheim Lake.

3. Authorize Agreement to Butier Engineering Inc. for Construction Management and Inspection Service for SB-2025-1 Bond Basin Slope Repair and Budget Increase

Recommended for approval at May 21 Board meeting:

1. **Authorize agreement with Butier Engineering, Inc. for a not-to-exceed amount of $321,123.50 for construction management and inspection services for SB-2025-1 Bond Basin Slope Repair; and**

2. **Increase project budget by $71,124 for a total project budget amount of $3,849,414.**

4. Contract No. TUS-2022-1 Amendment No. 2 to Butier Engineering

Recommended for approval at May 21 Board meeting: Authorize issuance of Amendment No. 2 to Agreement No. 1558 with Butier Engineering Inc. for construction management and inspection services in the amount of $197,010.

5. Agreement Extension for On Call Surveying Services

Recommended for approval at May 21 Board meeting: Authorize time extension of agreements to Stantec Consulting Services, Inc., CASC Engineering and Consulting, and Huitt-Zollars, Inc. for on-call surveying services through June 30, 2027.

6. Talbert Barrier Injection Wells I-24 & I-25 Control Valve Project – Publication of Notice Inviting Bids

Recommended for approval at May 21 Board meeting: Authorize issuance of a Request for Qualifications for On-Call Environmental Consultants.

7. Contract No. A-2025-1 Anaheim Lake Valve Categorical Exemption and Notice Inviting Bids

Recommended for approval at May 21 Board meeting:

1. **Authorize filing of a Categorical Exemption for the Anaheim Lake Valve Vault project in compliance with the California Environmental Quality Act (CEQA) guidelines; and**

2. **Authorize publication of Notice Inviting Bids for Contract No. A-2025-1, Anaheim Lake Valve Vault**

8. Golden State Water Company Clair Plant, Beach Plant, and Dale Plant PFAS Treatment

Recommended for approval at May 21 Board meeting:

1. **Approve the Engineer's Report for the Golden State Water Company Clair Plant, Beach Plant, and Dale Plant PFAS Treatment Systems Project and determine the project feasible, necessary and beneficial to the lands of the District; and**

2. **Authorize filing of a Categorical Exemption for the Golden State Water Company Clair Plant, Beach Plant, and Dale Plant PFAS Treatment Systems Project in compliance with the California Environmental Quality Act (CEQA) guidelines**

9. Authorize Agreement to Tait and Associates, Inc. for 2025 Asphalt Pavement Rehabilitation Design

Recommended for approval at May 21 Board meeting: Authorize issuance of Agreement to Tait and Associates, Inc. for an amount not to exceed $100,000 for the 2025 Asphalt Pavement Rehabilitation Design

10. Issuance of Services Agreement with Tetra Tech, Inc. for 2025 Prado Basin Multispectral Aerial Imagery and Light Detection Ranging (LIDAR)

Recommended for approval at May 21 Board meeting:

1. **Authorize issuance of an Agreement to Tetra Tech, Inc., in the amount of $41,198 for multispectral aerial imaging and high-pulse count LiDAR data collection of Prado Basin; and,**

2. **Approve and authorize execution of cost share agreement with Inland Empire Utilities Agency and Chino Basin Watermaster for multispectral aerial imagery and LiDAR data collection, subject to approval as to form by the District's General Counsel.**

11. Authorization to Enter into a Memorandum of Understanding (MOU) with the County of Orange for the Continued Use of the County's ALERTOC

Recommended for approval at May 21 Board meeting: Authorize the General Manager to sign the Memorandum of Understanding (MOU) between the Orange County Water District and the County of Orange for the continued use of the County's Mass Notification System, AlertOC, administered through Everbridge, Inc.

12. Award Contract No. GWRS-2025-1 Reverse Osmosis CIP Valve Relocation to Murray Company

Recommended for approval at May 21 Board meeting:

1. **Receive and file Affidavit of Publication of Notice Inviting Bids for Contract GWRS-2025-1 Reverse Osmosis CIP Valve Relocation Project;**

2. **Ratify issuance of Addendum No. 1 to provide responses to potential bidder's questions; and**

3. **Accept bid and award contract GWRS-2025-1 to the lowest responsive bid and responsible bidder, Murray Company, in the amount of $340,885; and**

4. **Establish the Reverse Osmosis CIP Valve Relocation Project budget in the amount of $500,000.**

MATTERS FOR CONSIDERATION

13. Award Direct Access Electricity Contract for Groundwater Replenishment System, Burris Pump Station, and Green Acres Project Santa Ana Reservoir

Executive Director of Operations Mehul Patel informed the Committee that OCWD currently procures electricity through a four-year Direct Access contract with Constellation New Energy (CNE) set to expire June 30, 2025. He added that pricing quoted by Direct Access providers is based upon market pricing on day quotation is received and the Direct Access providers procure electricity from various sources in their portfolio. He informed the Committee that OCWD facilities enrolled in Direct Access are the GWRS/GAP Plant/FV Campus (since 2013), GAP Santa Ana Reservoir (since 2015) and Burris Pump Stations DA added in 2025. He asserted that based on prices received to date, OCWD will see a Load Following fixed price contract for five years with both RA and RPS pricing.

Upon motion by Director Jung, seconded by Director Yoh and carried [5-0], the Committee recommended for approval at the May 21 Board meeting: Authorize the General Manager in

consultation with the Board President to enter into a five year contract ending June 30, 2030 for Direct Access electricity procurement with Constellation New Energy, NRG/Direct Energy or Shell Energy for the OCWD Kiwi Substation, Burris Pump Station, and Green Acres Project Santa Ana Reservoir on May 22, 2025.
Ayes: Green, Weigand, Amezcua, Sheldon, Bilodeau

14. Results of Riverbed Filtration System Demonstration Project and Authorization to Issue Request for Proposals for Feasibility Study (Resilience Plan Project No. 11)

Recharge Planning Manager Adam Hutchinson informed the Committee that clogging caused by the accumulation of suspended solids is a key constraint limiting the capacity of OCWD's recharge facilities. He added that from 2015 to 2023, a Riverbed Filtration System (RFS) was constructed and tested. The RFS was effective in removing 96 percent of the suspended solids (TSS) from the Santa Ana water. He elaborated that RFS water is projected to double the recharge capacity over unfiltered water, it can also increase recharge, can divert water when rubber dams must be deflated and reduces the number of basin cleanings required, thus reducing costs and wear and tear on equipment. He suggested next steps would be to conduct feasibility/preliminary design study in FY25-26 to study potential design options and evaluate costs/benefits.

Upon motion by Director Weigand, seconded by Director Jung and carried [5-0], the Committee recommended for approval at the May 21 Board meeting: Authorize issuance of Request for Proposals for the Riverbed Filtration System Feasibility Study.
Ayes: Weigand, Yoh, Tran, Amezcua, Jung

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

ADJOURNMENT

There being no further business, the meeting was adjourned at 12:43 p.m.

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Cathy Green, Chair

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AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/M. Patel/
F. Almario

Budgeted: Yes
Budgeted Amount: $400,000
Cost Estimate: $470,000
Funding Source: R&R
Program/Line Item No.: R23009
General Counsel Approval: N/A
Engineers Report: N/A
CEQA Compliance: N/A

Subject: AWARD CONTRACT NO. GA-2024-1 GAP PROCESS BUILDING EXTERIOR STAIR REPLACEMENT PROJECT TO VICON ENTERPRISE

SUMMARY

One construction bid was received on May 22, 2025, for the GAP Process Building Exterior Stair Replacement Project, Contract No. GA-2024-1. Staff recommends awarding the contract to Vicon Enterprise in the amount of $470,000. Staff additionally recommends authorizing the issuance of an Amendment to Agreement No. 1507 with Scheevel Engineering to provide construction phase services in the amount of $22,800.

Attachments:
- Affidavit of Publication for Notice Inviting Bids for Contract GA-2024-1
- Scheevel Engineering – Construction Phase Services Proposal

RECOMMENDATION

Agendize for June 18 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract GA-2024-1 GAP Process Building Exterior Stair Replacement Project;

2. Accept bid and award contract GA-2024-1 to the lowest responsive bid and responsible bidder, Vicon Enterprise, in the amount of $470,000.

3. Authorize issuance of Amendment 1 to Agreement No. 1507 with Scheevel Engineering for construction phase services in the amount of $22,800.

4. Establish Project budget in the amount of $535,050.

BACKGROUND/ANALYSIS

The GAP Process Building (including the exterior stairs) was constructed in 1990. The existing stairs are located on the eastern exterior of the process building and are constructed of cast-in-place concrete, rising approximately 17 feet from the exterior finished grade to the roof of the building.

Many locations throughout the stair structure exhibit excess cracking and are showing signs of internal reinforcing steel corrosion. Landing/riser connections and railing post pockets are the primary areas where water has infiltrated the structure over time (30+ years) and caused the internal reinforcing steel to corrode, expand, and crack the concrete. Staff have performed repair of the damaged areas in the past by applying mortar patches and steel/stainless steel plating to slow the deterioration of the structure. However, this localized repair approach is no longer sufficient to maintain the integrity of the cast-in-place concrete staircase, and it must be replaced prior to failure.

Scheevel Engineering completed engineered drawings and specifications for the new stairs, and the 35-day bid advertisement period commenced April 17, 2025. The project was posted on OCWD's website and OCWD's third-party plan hosting website. It was also advertised in the Orange County Register, and notices were sent to several OCWD's regular Contractors. A Non-Mandatory Pre-Bid conference was held onsite on May 1, 2025, and was attended by two potential bidders, the design engineer, and OCWD staff. Staff contacted several bidders and were informed that due to the size of the project and the availability of other larger projects to bid, they weren't able to bid this project. One construction bid was received on May 22, 2025, for contract GA-2024-1.

Staff contacted the second potential bidder as to why he failed to submit a construction bid. He indicated that due to workload and unfortunate timing with his paperwork, he was not able to submit the bid by the established due date and time. Based upon the conversation with the other bidder, staff are confident that the price reflected in the bid received is fair, and rebidding the project would not result in lower bids.

A summary of the bid is shown below in Table 1.

Table 1: Construction Bid Summary

Contractor	Bid Price
Vicon Enterprise	$ 470,000

Staff reviewed the bid of Vicon Enterprise, checked references, and confirmed that its contractor's license is current, active, and in good standing with the State of California. Staff recommends award of the construction contract to Vicon Enterprise as the lowest responsive bidder for $470,000.

The project budget is summarized in Table 2.

Table 2: Gap Process Building Exterior Stair Replacement Project Budget Summary

Description	Budget
Design and Construction Management	
Scheevel Engineering (Design and bid phase)	$ 17,750
Amendment 1 (Construction phase services)	$ 22,800
Advertisement	$ 1,000
Construction	
Contract GA-2024-1	$ 470,000
Project Contingency	$ 23,500
Total Project Budget:	$ 535,050

Table 3 shows the proposed schedule for the project:

Table 3: Project Schedule

Description	Date
Complete Design	December 2024
Construction Contract GA-2024-1	Jun 2025 – Dec 2025

PRIOR RELEVANT BOARD ACTION(S)

11/20/24, M24-106: Authorize publication of Notice Inviting Bids for GAP Process Building Exterior Stair Replacement

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

Account Number:	5179533
Ad Order Number:	0011730524
Customer's Reference/PO Number:	
Publication:	The Orange County Register
Publication Dates:	04/17/2025
Total Amount:	$899.93
Payment Amount:	$0.00
Amount Due:	$899.93
Notice ID:	cgZeQjD0UmpePGL9SAvh
Invoice Text:	

THE ORANGE COUNTY
REGISTER
The Orange County Register
1920 Main Street, Suite 209
Irvine, California 92614
(714) 796-7000

0011730524

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:

04/17/2025

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

Dated at Irvine, California

On this 17th day of April, 2025.

Sandra Campos
Signature

NOTICE INVITING BIDS

GAP PROCESS BUILDING EXTERIOR STAIR REPLACEMENT, CONTRACT NO. GA-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 10:00 AM PT. local time on May 22, 2025 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 shall include the demolition of existing reinforced concrete stairs and the fabrication and installation/assembly of a new aluminum stair system and associated foundations, as shown on the approved Construction Plans and Specifications, in accordance with the Contract Documents and OCWD requirements.
NON-MANDATORY PRE-BID CONFERENCE: A pre-bid conference will be held at the District Office, 18700 Ward Street, Fountain Valley, CA on Thursday, May 1, 2025 at 2:00 PM PT. All potential bidders, contractors and other interested parties are required to attend this conference conducted by the District and Engineer. Any potential bidder that does not attend the pre-bid conference will be charged with knowledge of all information that was available at the pre-bid conference.
PROJECT ADMINISTRATION: All questions regarding the Bid must be submitted in writing before the deadline due date of Wednesday, May 7, 2025 at 12:00 PM PT. Questions received after the questions due date may not be considered. All questions relative to this project prior to the opening of bids shall be directed, in writing, to OCWD:

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

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

Attention: Fernando Almario, Project Manager
Telephone: (714) 378-3369
Email: procurement@ocwd.com

COMPLETION OF WORK AND LIQUIDATED DAMAGES: All Work must be substantially completed within ONE HUNDRED EIGHTY (180) 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 cashier's 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.
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 A and/or B (must have a minimum of five (5) years of experience in Public Works projects). 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.
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.
ORANGE COUNTY WATER DISTRICT

John C. Kennedy, General Manager

Dated: April 17, 2025

The Orange County Register
Published: 4/17/25

May 10, 2025

Orange County Water District
Fernando Almario, P.E., Senior Engineer
18700 Ward Street
Fountain Valley, CA, 92708

RE: Professional Engineering Consulting Services Proposal:
GAP Process Building Exterior Stair Replacement Project Construction Phase Services

Dear Mr. Almario:

Scheevel Engineering respectfully submits this Amendment #1 request for professional consulting services for construction phase service tasks for the Orange County Water District's (OCWD) GAP Process Building Exterior Stair Replacement Project (Project). Scheevel Engineering provides a wide variety of consulting and field services unique to water resource projects. These services include pilot field testing, field data collection, streamflow measurements, sediment transport analysis, 3D CFD modeling, hydraulic analysis, 1-D & 2D hydraulic modeling, structural analysis and design, O&M modeling, preliminary design, final design, design-build, construction management, extension of staff, construction support and operations and maintenance support services for water resource projects.

Scheevel Engineering has prepared this amendment request to provide construction phase assistance to OCWD for the Project. Scheevel will also provide assistance to OCWD's construction manager (if any). The scope of work provided by Scheevel Engineering is as follows.

Table 1: Scope of Work

Scope Item Description	
1)	Meetings & Coordination a. Meetings – Attend meetings as requested by OCWD. Meetings may include, but will not be limited to, weekly construction meetings and task specific issue meetings. Includes meeting prep time. b. Coordination – Includes time to communicate and discuss issues related to the Project. Includes time for emails and phone calls as needed.
2)	Construction Phase Assistance a. Contractor Submittal Reviews – Provide review and recommendations for select notice of change conditions, change orders, request for information & submittals. Assumes approximately 10 reviews. b. Site Visits & Inspections – Provide specialty inspection services unique to the project. At a minimum this assumes a visit at the end of demolition, one visit prior to concrete placement, one visit prior to stair assembly and a final visit once stairs are complete (4 site visits/inspections).
3)	Record Drawings a. Record Drawing Preparation – At the end of the Project, Scheevel well draft record drawings for the based upon contractor red-lines submitted during construction. Scheevel will provide record drawings in PDF format.

Scheevel Engineering ● P.O. Box 28745 ● Anaheim, CA 92809 ● Phone: (714) 470-9045 ● Email: nathanscheevel@yahoo.com

Upon your review of the above scope of work please let me know if you would like any additions or subtractions. Scheevel Engineering provides all services at an hourly rate of $300.00. Travel time is free of charge and no additional fees or charges apply unless approved by OCWD. The original contract amount for the initial scope of work was $19,750.00. The total request for Amendment #1 is **$22,800.00 (twenty-two thousand and eight hundred dollars)**. The resultant, new, total contract amount equals $42,550.00. A breakdown of the fees associated with the proposed scope of work is illustrated in Table 2: Schedule of Fees.

Table 2: Schedule of Fees

Scope Item Description	Hours	Rate	Fee
Scope Items			
1) Meetings & Coordination	**10**		**$ 3,000.00**
a. Meetings	6	$300/hr	$ 1,800.00
b. Coordination	4	$300/hr	$ 1,200.00
2) Construction Management Assistance	**28**		**$ 8,400.00**
a. Contractor Submittal Reviews	20	$300/hr	$ 6,000.00
b. Site Visits & Inspections	8	$300/hr	$ 2,400.00
3) Record Drawings	**38**		**$ 11,400.00**
a. Record Drawing Preparation	38	$300/hr	$ 11,400.00
Total	**76**		**$ 22,800.00**
Contract Summary			
Original Contract Amount	Total		$ 19,750.00
Amendment #1 Request	**Total**		**$ 22,800.00**
Total Amended Contract Value	Total		$ 42,550.00

This proposal is valid for 30 days. Scheevel Engineering is prepared to continue work on the project uninterrupted and can modify the scope, fees and schedule to meet OCWD's needs. Thank you for the opportunity to provide professional consulting services to the Orange County Water District.

Sincerely,
Scheevel Engineering

Nate Scheevel, P.E.
President/Principal

Scheevel Engineering ● P.O. Box 28745 ● Anaheim, CA 92809 ● Phone: (714) 470-9045 ● Email: nathanscheevel@yahoo.com

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: P. Parmar/L. Esguerra

Budgeted: Yes
Budgeted Amount: $1,125,000
Cost Estimate: $1,175,000
Funding Source: R&R
Program/ Line Item No. R21002
General Counsel Approval: N/A
Engineers/Feasibility Report: N/A
CEQA Compliance: N/A

Subject: CONTRACT NO. LAB-2024-1: CHANGE ORDER RATIFICATION AND BUDGET INCREASE

SUMMARY

Construction of the Laboratory Washroom Refurbishment Project, Contract No. LAB-2024-1 is progressing. There has been one change order issued to date which has nearly depleted the project contingency amount. Final installation of lab equipment may require relocation and adjustment of existing HVAC and plumbing resulting in additional unforeseen costs. Staff recommends ratifying Change Order No. 1 and increasing the project budget by $50,000.

RECOMMENDATION

Agendize for the June 18 Board Meeting:

1. Ratify issuance of Change Order No. 1;

2. Increase project budget by $50,000 for a total project budget in the amount of $1,175,000.

BACKGROUND/ANALYSIS

The Laboratory Washroom Refurbishment Project is under construction. The project generally consists of replacing and upgrading washroom fixtures and cabinets with chemically resistant materials, installation of a permanent safety eyewash/shower, installation of three fume hoods, and replacing the epoxy flooring. There has been one change order issued to date which has nearly depleted the project contingency amount.

Change Order No. 1 ($40,530.47) included the following: relocation of a trap primer panel; replacement of an additional corroded cabinet; corrosion resistant wall paint system upgrade; city building permit fee reimbursement; and replacement of additional corroded HVAC ductwork.

The project is nearing 80% completion, with final installation of the lab equipment, testing of the HVAC, electrical, and plumbing, as well as final building and fire department inspections remaining. It is anticipated the final installation of new fume hoods will require an additional change order for relocation of existing HVAC and plumbing resulting in additional unforeseen costs. The additional cost for these modifications are unknown and additional budget of

$50,000 is recommended for additional material, installation and inspection fees. Staff recommends ratifying Change Order No. 1 and increasing the project budget by $50,000 as summarized in Table 1.

Table 1: Laboratory Washroom Refurbishment Budget Summary

Description	Current Budget	Proposed Budget
Design, Construction Management. Permitting		
Design (IDS)	$ 60,300	$ 60,300
Construction Support (IDS)	$ 35,046	$ 35,046
Permitting	*$ 19,654*	*$ 29,000*
Sub-Total	*$ 115,000*	*$ 124,346*
Construction		
Contract (RBA)	$ 959,927	$ 959,927
Change Order No. 1	*$ 0*	*$ 40,530*
Construction Sub-Total	*$ 959,927*	*$ 1,000,457*
Project Contingency	*$ 50,073*	*$ 50,197*
Total Project Budget:	***$ 1,125,000***	***$ 1,175,000***

The project schedule is shown below in Table 2.

Table 2: Laboratory Washroom Refurbishment Schedule

Description	Date
Design	Jun 2022 – Nov 2024
Construction Contract LAB-2024-1	Jan 2025 – Sep 2025

PRIOR RELEVANT BOARD ACTIONS

12/18/2024, R24-12-154 – Awarding Contract LAB-2024-1 Laboratory Washroom Refurbishment to RBA Builders LLC and authorizing increase of existing purchase order to IDS Group INC and budget Increase.

6/15/2022, R22-6-77 – Approving Purchase Order to IDS Group, Inc. for the Evaluation and Design of the Laboratory Washroom in the amount of $60,300.

6/19/2024, M24-55 – Authorizing Publication of Notice of Inviting Bids for Laboratory Washroom Refurbishment Project.

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley / L. Esguerra

Budgeted: Yes
Proposed Budget: $30,000,00
Cost Estimate: $30,000,000
Funding Source: CIP / Fed. CPF
Program/Line Item No.: C24008
General Counsel Approval: Yes
Engineers Report: Completed
CEQA Compliance: Cat. Ex.

Subject: CONTRACT NO. SA-2025-1 CITY OF SANTA ANA PFAS TREATMENT AT JOHN GARTHE RESERVOIR NOTICE INVITING BIDS AND REQUEST FOR PROPOSALS FOR CONSTRUCTION MANAGEMENT

SUMMARY

The final plans and specifications for the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project (Project) are nearing completion. Up to 25% of the project design and construction costs will be funded by a WaterSMART: Title XVI WIIN Act Grant from the United States Bureau of Reclamation (USBR). Staff recommends authorizing issuance of a Notice Inviting Bids for the construction contract and authorizing issuance of a Request for Proposal for a construction management firm to oversee construction and perform inspection services.

RECOMMENDATION

Agendize for June 18 Board Meeting:

1. Authorize publication of Notice Inviting Bids for Contract No.SA-2025-1, City of Santa Ana PFAS Treatment at John Garthe Reservoir Project; and

2. Authorize issuance of a Request for Proposals for Construction Management Services for the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project.

BACKGROUND/ANALYSIS

In anticipation of the US Environmental Protection Agency issuing National Primary Drinking Water Regulation for PFAS the City of Santa Ana contracted design of the centralized PFAS treatment plant at the City's John Garthe Reservoir for PFAS treatment of five City wells; 18, 24, 32, 36, and 39 to Tetra Tech. The location of the John Garthe Reservoir is shown in Figure 1, below. Due to site constraints and flow requirements at the reservoir site, IX treatment with six vessel systems (12 vessels total) and a capacity of 9,600 gallons per minute has been selected. Tetra Tech is nearing completion of design, and the City has requested that the project design costs be reimbursed by OCWD and has requested that OCWD manage project construction per the District's PFAS program.

Figure 1: City of Santa Ana PFAS Treatment at John Garthe Reservoir

The City of Santa Ana PFAS Treatment at John Garthe Reservoir Project will include installing IX vessel systems and pre-filtration; site piping and well modifications to for City Wells 18, 36, and 39; removal and installation of an on-site sodium hypochlorite generation facility; upgrades to an existing hydro generator facility; electrical upgrades; and other appurtenant work. The expected project schedule is shown in Table 1:

Table 1: City of Santa Ana PFAS Treatment at John Garthe Reservoir Schedule Summary

Description	Date
City of Santa Ana PFAS Treatment at John Garthe	
Design	Nov 2023 – Aug 2025
DDW Permitting	Nov 2023 – Feb 2028
Construction Contract SA-2025-1	Dec 2025 – Jun 2028

The District was awarded $30 million from the United States Bureau of Reclamation (USBR) as part of the WaterSMART: Title XVI WIIN Act Grant (Grant). Up to 25% of both the design and construction costs of the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project will be funded by the Grant. Staff is currently working

with the USBR Denver Office on the final approval of the District's Grant application, PFAS program budget, funding matrix, program components and schedule, and Federal environmental compliances. The USBR is the lead agency for National Environmental Policy Act (NEPA) compliance, and USBR is expediting the process with completion anticipated in September 2025. The Project will be eligible for reimbursement once the NEPA compliance process is completed.

Construction of the City of Santa Ana PFAS Treatment at John Garthe Reservoir is very complex and will require additional monitoring to comply with Grant requirements. In addition, the City will require the existing on-site reservoirs, pump station, and wells to remain in operation throughout construction. Therefore, the project will be constructed in two phases: Phase 1 will construct the PFAS treatment system and Phase 2 will construct improvements to City Wells 36 and 39. The PFAS treatment system will be tested and placed into service prior to construction of Phase 2. Due to the complexity and the significance of this facility and project funding, Staff recommends issuing a Request for Proposals (RFP) for a construction management firm to oversee construction and perform inspections throughout the project. The scope of work in this RFP will generally include overseeing construction activities for the District including conducting construction progress meetings; facilitating review and responses to submittals, RFIs, and change order requests; daily inspections to assure the project conforms to the plans and specifications; and fill material soil testing, soil compaction testing, concrete compressive strength testing, and special inspections of steel reinforcement that the District cannot perform in-house.

Staff recommends authorizing Publication of the Notice Inviting Bids for Contract No. SA-2025-1 and authorizing issuance of a Request for Proposals for Construction Management Services for the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project.

PRIOR RELEVANT BOARD ACTIONS

3/19/25, R25-3-39 –Authorizing filing of a Categorical Exception for the City of Santa Ana PFAS Treatment at John Garthe Reservoir and approving the Engineer's Report

11/20/19, R19-146 - Approved PFAS Policy

1/22/20, R20-1-12 - Approved modifications to the PFAS Policy

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/M. Patel/
F. Almario

Budgeted: Yes
Budgeted Amount: $170,000
Cost Estimate: $168,000
Funding Source: R&R
Program/Line Item No.: R24011
General Counsel Approval: N/A
Engineers Report: N/A
CEQA Compliance: N/A

Subject: AWARD CONTRACT NO. FV-2024-1 ANNEX BUILDING ROOF REPLACEMENT PROJECT TO C.I SERVICES INC.

SUMMARY

Seven construction bids were received on May 22, 2025 for Annex Building Roof Replacement Project, Contract No FV-2024-1. Based on the review of the bids, staff recommends awarding the contract to C.I. Services Inc. in the amount of $168,000.

Attachment(s): Affidavit of Publication for Notice Inviting Bids for Contract FV-2024-1

RECOMMENDATION

Agendize for June 18 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract FV-2024-1 Annex Building Roof Replacement Project;

2. Ratify issuance of Addendum #1;

3. Accept bid and award contract FV-2024-1 to the lowest responsive bid and responsible bidder, C.I Services Inc, in the amount of $168,000

4. Establish Project budget in the amount of $177,400.

BACKGROUND/ANALYSIS

The Annex building was constructed in the early 1980's and is located on the Fountain Valley campus. Both the OCWD Research and Development department and National Water Research Institute (NWRI) occupy the Annex building. The existing roof system on the Annex building is typical of its era and consists of one layer of ½" plywood decking for structure with one layer of bitumen (tar) and reinforcing fabric to provide weather/water proofing. The current roofing system has reached the end of its usable life and has been patched many times due to numerous leaks since it was constructed about forty years ago.

The roof was inspected in February 2023 by Maintenance Staff and a representative from Weather Weld to explore possible repair or replacement options. Weather Weld

manufactures a fiberglass reinforced ceramic asphalt that is sprayed over the existing roofing materials to provide a new seamless roof membrane surface that is water-tight, meets California energy requirements, and does not require the removal and disposal of the existing roof material. In September 2024, Weather Weld provided a demonstration of how their roof would be installed in a small area of the Annex roof that required a patch, and the roof was inspected again to verify conditions prior to preparing design documents. In general, the existing roof was rated from fair to poor with observations of ponding water. The inspection report noted that the roof field, field seams, and the roof perimeter were all in poor condition. Additionally, the roof penetrations showed signs of deterioration that could be potential pathways for leaks. The inspector also performed a core test to determine the condition of the plywood decking and found the structure to be in fair condition.

The inspection report concluded that the existing roof materials could stay in place and would not require complete removal. Weather Weld's recommendation includes installation of a reinforcement coating system directly over the existing roof making the entire roof seamless from the top of the parapet to the bottom of the drains. This system would be sprayed on and applied to a minimum thickness of 250 mil dry film thickness (¼-inch). This system will require no maintenance for the life of the 40-year warranty.

A Non-Mandatory Pre-Bid conference was held on April 30, 2025 and was attended by representatives from Weather Weld, potential bidders, and OCWD staff.

The bid advertisement period commenced April 17, 2025 and spanned 35 calendar days. Addendum No. 1 was issued May 8, 2025 to provide to provide responses to potential bidder's questions. Seven construction bids were received on May 22, 2025 for contract FV-2024-1. A summary of the seven bids is shown below in Table 1.

Table 1: Construction Bid Summary

Contractor	Bid Price
C.I. Services, Inc.	$ 168,000
Best Contracting Services	$ 192,848
AME Builders	$ 222,600
Southland Roofing Company	$ 224,000
Chapman Coast Roof Company	$ 231,314
McDonnel Roofing, Inc.	$ 243,675
Ranger Roofing and Solar	$ 251,670

Staff reviewed the bid of C.I. Services Inc, checked references, and confirmed that its contractor's license is current, active, and in good standing with the State of California. Staff recommends award of the construction contract to C.I. Services Inc. as the lowest responsive bidder for $168,000.

The project budget for the Annex Building Roof Replacement project is summarized in Table 2.

Table 2: Annex Building Roof Replacement Budget Summary

Description	Budget
Design and Construction Management	
In-house CM	$ 0
Advertisement	$ 1,000
Construction	
Contract FV-2024-1	$ 168,000
Project Contingency	$ 8,400
Total Project Budget:	$ 177,400

The expected project schedule is shown in Table 2.

Table 2: Annex Building Roof Replacement Project Schedule Summary

Description	Date
Design	December 2024
Construction Contract FV-2024-1	Jun 2025 – Aug 2025

PRIOR RELEVANT BOARD ACTION(S)

12/18/2024, M24-118: Authorize publication of Notice Inviting Bids for Annex Building Roof Replacement Project.

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

Account Number:	5179533
Ad Order Number:	0011730523
Customer's Reference/PO Number:	
Publication:	The Orange County Register
Publication Dates:	04/17/2025
Total Amount:	$883.99
Payment Amount:	$0.00
Amount Due:	$883.99
Notice ID:	g9l33PTMH09TSCkY4FDZ
Invoice Text:	

THE ORANGE COUNTY
REGISTER
The Orange County Register
1920 Main Street, Suite 209
Irvine, California 92614
(714) 796-7000

0011730523

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:

04/17/2025

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

Dated at Irvine, California

On this 17th day of April, 2025.

Sandra Campos
Signature

NOTICE INVITING BIDS

ANNEX BUILDING ROOF REPLACEMENT, CONTRACT NO. FV-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 1:00pm PT. local time on May 22, 2025 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 encapsulation of the existing roof using WeatherWeld 16-30 system and Title 24 compliant reflective roof coating at the OCWD Annex Building. The Contractor shall complete Work in sequence listed below. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor.

1. Preparation of a construction schedule and schedule of values.
2. Construction of a temporary work area and staging area for use during construction.
3. Repair any damage to the substrate, remove any exposed or erupted fasteners, and clean thoroughly in preparation to receive the roof system.
4. Apply seamless roof membrane materials to provide watertight roof assembly that meets WeatherWeld warranty requirements. Encapsulate entire roof area.
5. Install flashings and accessories.
6. Install walkway pads (where applicable).
7. Apply anti-skid traffic coating (where applicable).
8. Site cleanup and demobilization.

NON-MANDATORY PRE-BID CONFERENCE: A pre-bid conference will be held at the District Office, 18700 Ward Street, Fountain Valley, CA on Wednesday, April 30, 2025 at 2:00 PM PT. All potential bidders, contractors and other interested parties are to attend this conference conducted by the District and Engineer.

PROJECT ADMINISTRATION: All questions regarding the Bid must be submitted in writing before the deadline due date of Wednesday, May 7, 2025 at 12:00 PM PT. Questions received after the questions due date may not be considered. All questions relative to this project prior to the opening of bids shall be directed, in writing, to OCWD:

ORANGE COUNTY WATER DISTRICT 18700 Ward Street Fountain Valley, CA 92708	Mailing Address: P.O. Box 8300 Fountain Valley, CA 92728-8300	Attention: Fernando Almario, Project Manager Telephone: (714) 378-3369 Email: procurement@ocwd.com

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 cashier's 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.

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-39. 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.

ORANGE COUNTY WATER DISTRICT

By John C. Kennedy, General Manager Dated: April 17, 2025

The Orange County Register
Published: 4/17/25

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/L. Esguerra

Budgeted: Yes
Budgeted Amount: $2,500,000
Cost Estimate: $150,000 (CM work)
Funding Source: R&R Fund
Program/Line Item No.: R24032
General Counsel Approval: N/A
Engineers/Feasibility Report: NA
CEQA Compliance: Cat. Ex.

Subject: ANAHEIM LAKE VALVE VAULT PROJECT: REQUEST FOR PROPOSALS FOR CONSTRUCTION MANAGEMENT AND INSPECTION SERVICES

SUMMARY

Publication of Notice Inviting Bids for Contract No. A-2025-1, Anaheim Lake Valve Vault Project construction contract was authorized by the Board on May 21, 2025. Staff recommends authorizing issuance of a Request for Proposal (RFP) for a construction management firm to oversee construction, construction inspection, and material testing services.

RECOMMENDATION

Agendize for June 18 Board meeting: Authorize issuance of RFP for Construction Management and Inspection Services for Contract No. A-2025-1, Anaheim Valve Vault Project.

DISCUSSION

The Anaheim Lake pipeline distributes water to various locations including Anaheim Lake, Miller Basin, Kraemer Basin, Atwood Channel, and the Carbon Creek Diversion Channel. Several connections to the Anaheim Pipeline are directly buried within a small area just north of the spillway between OC-28 and Anaheim Lake and are inaccessible without deep excavation. These connections were constructed from the late 1980s to the early 1990s. The existing valves within the project limits are at the end of their expected lifespan and need replacement.

The Anaheim Lake Valve Vault Project will construct a new vault structure to house two 48-inch butterfly valves for the Warner Pipeline to the Anaheim Pipeline and one 72-inch valve for OC-28 to the Anaheim Pipeline. These valves will be equipment electric motor actuators allowing basin operators to open and close the valves remotely. The project will replace two existing manual 48-inch valves which release water from Anaheim Pipeline into the Atwood Channel and construct structural modifications to OC-28. The expected project schedule is shown in Table 1.

Due to specialty structural inspections and steel pipeline inspections required for construction, Staff recommends issuing a Request for Proposals for a construction

management firm to oversee construction and perform specialty inspections. The RFP scope of work will generally include overseeing overall construction activities for the District including conducting construction progress meetings; facilitating responses to submittals, RFIs, and change order requests; daily inspections to confirm the concrete vault, valves and piping are constructed in conformance with the plans and specifications; and material testing services the District cannot perform in-house such as fill material soil testing, soil compaction testing, concrete compressive strength testing, and special inspections for steel reinforcement and welded steel pipe.

A summary of the Project schedule is shown below in Table 1:

Table 1: Anaheim Lake Valve Vault Schedule

Description	Dates
Design	Aug 2018 – Jun 2025
Construction Contract	Aug 2025 – Dec 2027

PREVIOUS BOARD ACTIONS

5/21/25, R25-5-X: Authorize filing of a Categorical Exemption in compliance of CEQA and authorize publication of Notice Inviting Bids.

2/19/2025, R25-2-21: Authorizing Amendment No.1 to Agreement No. 1681 with MKN for an amount not to exceed $33,200 for design services for the Anaheim Lake Valve Vault Project.

11/20/2024, R24-11-141: Authorizing issuance of agreement to MKN for design services for the Anaheim Lake Valve Vault Project.

3/20/2019, R19-3-38: Approving amendment to Gannett Fleming for Anaheim Lake Valve Vault Project.

10/17/2018, R18-10-145: Authorizing termination of agreement to KEH & Associates for design services for Anaheim Lake Valve Vault Project and awarding agreement to Gannett Fleming.

8/15/2018, R18-8-110: Authorize agreement to KEH & Associates for design services for Anaheim Lake Valve Vault Project.

12/20/2017, M17-170: Authorize Issuance of RFP for the Anaheim Lake Valve Vault Project.

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: P. Bouyounes/S. Dosier

Budgeted: Partially
Budgeted Amount: $10,000
Cost Estimate: $11,800
Funding Source: General
Program/Line-Item No.: 1034.53001
General Counsel Approval: N/A
Engineers/Feasibility Report: N/A
CEQA Compliance: N/A

Subject: **ADOPTION OF THE ORANGE COUNTY REGIONAL WATER AND WASTEWATER MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR 2025**

SUMMARY

Orange County Water District (OCWD) and other participating water and wastewater utilities updated the Orange County Regional Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), which was last approved in 2019. The MJHMP outlines strategies and actions to reduce or eliminate the long-term risk to people and property from natural disasters and other hazards (such as earthquakes, floods, wildfires, and severe storms). According to the federal Disaster Mitigation Act of 2000, State and local governments are required to develop hazard mitigation plans and update them every five years as a condition for receiving certain types of nonemergency disaster assistance, including grant funding for mitigation projects.

Attachments:

- Exhibit A – Resolution
- Annex B: Orange County Water District

RECOMMENDATION

Agendize for June 18 Board meeting: Approve and adopt the revised Orange County Regional Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan.

BACKGROUND/ANALYSIS

The Disaster Mitigation Act of 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) to establish a framework for state, local, tribal, and territorial governments to engage in hazard mitigation planning as a prerequisite for receiving certain types of non-emergency disaster funding assistance. The requirements and procedures for implementing hazard mitigation planning provisions are outlined in Title 44, Chapter 1, Part 201 (44 CFR Part 201) of the Code of Federal Regulations.

In January 2024, WEROC initiated the update of the Orange County Water and Wastewater Multi-Jurisdiction Local Hazard Mitigation Plan (MJHMP). WEROC's mission for this project was to provide project management and guidance to ensure compliance with FEMA's 2023 Hazard Mitigation Requirements and ensure continued eligibility for Federal Emergency Management Agency (FEMA) hazard mitigation funding.

A key update in the 2023 guidelines highlighted public outreach, participation, and engagement as essential components for plan approval. In response, Risk & Safety collaborated with Public Affairs to ensure targeted outreach activities, engagement, and required documentation were completed for the update.

The 2025 MJHMP includes the following agencies:

- Costa Mesa Sanitary District
- El Toro Water District
- Irvine Ranch Water District
- Laguna Beach County Water District
- Mesa Water
- Moulton Niguel Water District
- Municipal Water District of Orange County
- Orange County Sanitation District
- Orange County Water District
- Santa Margarita Water District
- Serrano Water District
- South Coast Water District
- South Orange County Wastewater Authority
- Trabuco Canyon Water District
- Yorba Linda Water District

Risk & Safety also worked in collaboration with Mehul Patel, the Executive Director of Operations to provide key data, including hazard rankings, asset inventory, and capabilities assessments. This information was shared with the consultant responsible for compiling and incorporating it into the revised Hazard Mitigation Plan.

WEROC submitted the MJHMP to the California Office of Emergency Services (CalOES) on December 3, 2024, in accordance with the project milestones. The submission included all necessary documentation for compliance.

On February 14, 2025, CalOES approved and transmitted the plan to FEMA for final review, a process that typically takes approximately 45 days.

FEMA has determined that MJHM plan is eligible for final approval, pending its formal adoption by the Municipal Water & Wastewater District of Orange County and all participating jurisdictions.

RESOLUTION NO. ____

RESOLUTION OF THE BOARD OF DIRECTORS OF ORANGE COUNTY WATER DISTRICT (OCWD) ADOPTING THE ORANGE COUNTY WATER AND WASTEWATER MULTI-JURISIDICITIONAL HAZARD MITIGATION PLAN

WHEREAS, the OCWD recognizes that the threat from natural hazards poses a risk to water and wastewater utilities and the individuals they serve, and impacts can result in regional economic and public health consequences; and

WHEREAS, OCWD and 14 other agencies participated in the development of the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS, the Orange County Water and Wastewater MJHMP identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in Orange County from the impacts of future hazards and disasters; and

WHEREAS, a Planning Team was formed to participate in the FEMA-prescribed mitigation planning process to prepare the HMP; and

WHEREAS, a public outreach strategy to include whole community planning was implemented by including posting information on member agency websites, email and social media distribution, community survey, and presentations at the community meetings for inclusion and opportunity to participate in the planning process by community members, community based organizations and people with access and functional needs; and

WHEREAS, on December 3, 2024, the MJHMP was provided to the California Office of Emergency Services (CalOES) Hazard Mitigation Division for review; and

WHEREAS, the MJHMP was revised based on CalOES requirements relating to the new Federal Hazard Mitigation Standards released in 2023 by the Federal Emergency Management Agency (FEMA); and

WHEREAS, OCWD with the consultant made all required changes, and the plan was approved by CalOES and submittal to FEMA for review on February 14, 2025; and

WHEREAS, OCWD has requested FEMA to grant approval pending adoption in the event there are any required changes, and subject to the member agencies adopting resolutions approving and adopting the MJHMP once FEMA review states all requirements are met; and

WHEREAS, adoption by the OCWD Board of Director demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED by the OCWD Board of Directors that the ORANGE COUNTY WATER AND WASTEWATER MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN (2025) is hereby adopted by _____.

NOW, THEREFORE, BE IT FURTHER RESOLVED, while content related may require revisions to meet the plan approval requirements, changes occurring after adoption will not require _____ to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

Said Resolution was adopted on June 19, 2025, by the following roll call vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

I HEREBY CERTIFY the foregoing is a full, true, and correct copy of Resolution No. ___ adopted by the Board of Directors of Orange County Water District of Orange County at its meeting held on June 18, 2025.

_____

Christina Fuller, Secretary
Orange County Water District

2024

Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan

Annex B: Orange County Water District

WATER EMERGENCY RESPONSE ORGANIZATION OF ORANGE COUNTY
WEROC

Contents

Exhibits

ORANGE COUNTY WATER DISTRICT ANNEX

Orange County Water District (OCWD) is a participant (Member Agency [MA]) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). As a participant MA, OCWD representatives were part of the MJHMP planning process and served on the planning team responsible for the plan update; refer to **Section 2** of the MJHMP. The base plan, including the MJHMP procedural requirements and planning process apply to OCWD.

This annex details the hazard mitigation planning elements specific to OCWD and describes how OCWD's risks vary from the planning area. This annex is not intended to be a standalone document but supplements the information contained in the base plan. All sections of the base MJHMP, including the planning process and other procedural requirements, apply to and were met by OCWD. The base plan treats the entire county as the planning area and identifies which MAs are subject to a profiled hazard. The purpose of this annex is to provide additional information specific to OCWD with a focus on the risk assessment and mitigation strategies.

B.1 HAZARD MITIGATION PLAN POINT OF CONTACT AND DEVELOPMENT TEAM

The representative listed in **Exhibit B-1** lead the OCWD planning team, attended meetings on behalf of OCWD, and coordinated the hazard mitigation planning efforts with OCWD staff and the consultant team supporting the effort.

Exhibit B-1. Planning Team Lead

Primary Point of Contact
Name: Paula Bouyounes
Title: Risk & Safety Manager
Telephone: 714-378-3310
Email: pbouyounes@ocwd.com

OCWD followed the planning process detailed in **Section 2** and formed an internal team to support and provide information for the plan update. The following staff served as OCWD's internal hazard mitigation planning development team.

Exhibit B-2. Internal Hazard Mitigation Planning Development Team

Name	Title
Benjamin Smith	Director of Recharge and Wetlands Operations
Patel Mehul	Executive Director of Operations/Water Production
Chris Olsen	Executive Director of Engineering
Lenyss Bahena	Safety Assistant

Outreach to the public within OCWD's service area was performed Public Affairs staff to ensure residents could access information on this planning effort. To reach the largest number of people possible, OCWD published a webpage with information on the MJHMP process. The MJHMP survey was posted to their social media platforms on Facebook and X (formerly known as Twitter) to increase engagement. OCWD's Public Affairs team included the MJHMP survey information and link in the district's August newsletter and hosted the survey link on the district's website homepage for a month.

B.2 JURISDICTION PROFILE

Service Population: 2,400,000

OCWD manages a large groundwater basin that provides reliable, high-quality groundwater to 19 cities and water utilities and their 2.4 million customers. OCWD was formed in 1933 by a special act of the California Legislature [Water Code App §40-1 et seq.], which authorized OCWD to represent water users and landowners in litigation (with upstream users) and empowered OCWD to protect the water supply and protect the groundwater basin. The mission of OCWD is to provide local water retailers with a reliable, adequate, high-quality water supply at the lowest reasonable cost in an environmentally responsible manner. With years of proper planning and investment, OCWD has more than doubled the output of the groundwater basin. Today, OCWD is managed by a ten-member Board of Directors, with three appointed from the cities of Anaheim, Fullerton and Santa Ana, and the remainder of the Board publicly elected from geographic divisions within the OCWD service area.

The groundwater basin, which underlies north and central Orange County, provides between 65 and 85 percent of the water needed in that area. Imported water meets the balance of the water demand. Groundwater is pumped by water utilities before being delivered to customers. Groundwater is a great value at approximately one-half the cost of imported water. OCWD purchases through Municipal Water District of Orange County (MWDOC) some imported water supplies for recharge operations and for operating and maintaining the seawater intrusion barrier.

OCWD is known internationally for its “tradition of innovation.” OCWD built the first advanced wastewater purification plant to provide water to prevent seawater intrusion into Orange County’s groundwater basin. Today, OCWD and OC San are partners in the world’s largest advanced wastewater purification project, called the Groundwater Replenishment System (GWRS) that is currently being expanded to provide 134,000 acre-feet per year (AF/yr) of water for seawater barrier and groundwater replenishment purposes.

One of OCWD’s core activities is refilling or replenishing the basin to balance the removal of groundwater by pumping. Sources of recharged water include Santa Ana River baseflow and storm flow, Santiago Creek flows, imported supplies purchased from Metropolitan, supplemental supplies from the upper Santa Ana River Watershed, and purified wastewater from the GWRS plant. OCWD works closely with the U.S. Army Corps of Engineers, which operates Prado Dam on the Santa Ana River in Riverside County, to conserve storm water on lands behind the dam for use in OCWD’s recharge efforts. The basin is not operated on an annual safe-yield basis, which means the water withdrawn may exceed replenishment in any given year; however, over the long-term, the basin must be maintained in an approximate balance to ensure long-term viability.

B.3 HAZARDS

This section is intended to profile the hazards and assess the vulnerabilities that OCWD faces, distinct from that of the county-wide planning area. The hazard profiles in the base plan discuss overall impacts to the planning area and describe the hazard problem description, hazard extent, magnitude/severity, previous occurrences of hazard events, and the likelihood of future occurrences. For more information on risk assessment methodologies, see **Section 3**.

OCWD’s service area is subject to most of the other hazards identified for the planning area. Many of these hazards are dispersed and may affect the entire region, including power outages, drought,

seismic shaking, and windstorms. Based on the risk assessment, the OCWD development team discussed which hazards should or should not be profiled in the base plan. This discussion resulted in the identification of the following hazards that affect OCWD and summarized their probability of future occurrence, level of impact and significance as outlined in **Exhibit B-3.** Detailed hazard profiles for the planning area are provided in **Section 3** of the base plan.

Exhibit B-3. OCWD Hazard Identification

Hazard Type	Probability	Impact			Total Score	OCWD Hazard Planning Consideration	Countywide Hazard Consideration
		Affected Area	Primary Impact	Secondary Impact			
Human-Caused Hazards: Contamination/Saltwater Intrusion	4	4	4	4	64	High	Low
Coastal Hazards: Sea Level Rise	4	2	4	4	51.2	High	Medium
Flood	4	3	4	2	49.6	High	Medium
Dam/Reservoir Failure	3	4	4	3	45	High	Medium
Geological Hazards: Land Subsidence	3	4	4	3	45	High	Low
Human-Caused Hazards: Terrorism (Cyber Threat)	4	3	3	2	44	High	High
Geological Hazards: Expansive Soils	3	3	4	4	43.2	High	Low
Seismic Hazards: Fault Rupture	3	3	4	4	43.2	High	Medium
Seismic Hazards: Seismic Shaking	3	3	4	4	43.2	High	High
Seismic Hazards: Seismic Liquefaction	3	3	4	4	43.2	High	High
Severe Weather: Windstorm	4	4	2	1	40.8	Medium	Medium
Severe Weather: Extreme Heat	3	3	3	3	36	Medium	Medium
Severe Weather: Drought	4	4	1	1	35.2	Medium	Medium
Urban Fire	3	3	2	3	31.8	Medium	Low
Human-Caused Hazards: Hazardous Materials	3	2	3	2	28.2	Medium	Low
Human-Caused Hazards: Power Outage	3	2	3	2	28.2	Medium	High
Human-Caused Hazards: Terrorism (MCI)	2	3	4	3	26.8	Medium	Low
Wildfire	3	2	2	2	24	Medium	High
Coastal Hazards: Coastal Storm	1	2	1	2	6.6	Low*	Medium
Coastal Hazards: Coastal Erosion	1	1	1	1	4	Low*	Medium
Coastal Hazards: Tsunami	1	1	1	1	4	Low*	Low
Geological Hazards: Landslide and Mudflow	1	1	1	1	4	Low*	Medium

Orange highlights indicate differences between hazard planning consideration levels for OCWD and the overall planning area.
**Any hazards identified as a low priority for OCWD have not been analyzed nor have mitigation strategies been developed.*

Exhibit B-3. OCWD Hazard Identification (cont.)

Geographic Affected Area ▪ 1 = Isolated, less than 10% of planning area ▪ 2 = Small, 10-30% of planning area ▪ 3 = Medium, 30-60% of planning area ▪ 4 = Large, 60-100% of planning area	**Primary Impacts** ▪ 1 = Negligible, little to no damage ▪ 2 = Limited, some damage, loss of service for days ▪ 3 = Critical, devastating damage, loss of service for months ▪ 4 = Catastrophic, catastrophic damage, uninhabitable conditions
Probability of Future Occurrences ▪ 1 = Unlikely, less than 1% chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years. ▪ 2 = Occasional, between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years. ▪ 3 = Likely, between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less. ▪ 4 = Highly Likely, near 100% chance of occurrence in next year or happens every year.	**Secondary Impacts** ▪ 1 = Negligible, no loss of function, downtime, and/or evacuations ▪ 2 = Limited, minimal loss of function, downtime, and/or evacuations ▪ 3 = Moderate, some loss of functions, downtime, and/or evacuations ▪ 4 = High, major loss of function, downtime, and/or evacuation

The Federal Emergency Management Agency (FEMA) Local Mitigation Planning Handbook requires each agency to identify the magnitude/severity of each hazard to their infrastructure. The identification of hazards provided in **Exhibit B-3** is highly dependent on the location of facilities within each agency's jurisdiction and takes into consideration the history of the hazard and associated damage (if any), information provided by agencies specializing in a specific hazard (e.g., FEMA, California Geological Survey), and relies upon each agency's expertise and knowledge. The table was created with input from the Water Emergency Response Organization of Orange County (WEROC), consultant staff, and OCWD.

Changes to Risk/Vulnerability between OCWD and the Planning Area

Hazard	Justification for Concern Adjustment
Coastal Hazards: Sea Level Rise	Many of OCWD's assets are located in close proximity to the coastline, increasing the probability of sea level rise impacting these assets. Additionally sea level rise may have adverse affects on the groundwater basin OCWD manages.
Dam/Reservoir Failure	OCWD has multiple dams within their service area that have hazard ratings of High or Extremely High, causing them to be concerned by the impacts to their vulnerable populations should one of these dams fail.
Flood	OCWD has multiple large rivers running through their service area with assets located within floodplains, increasing their potential impacts from a flooding event.
Geological Hazards: Expansive Soils	OCWD has an increased risk of expansive soils due to having assets located on soil types prone to this hazard.
Geological Hazard: Land Subsidence	OCWD has an increased risk of expansive soils due to having assets located on soil types prone to this hazard.
Human-Caused Hazards: Contamination/Saltwater Intrusion	With the rise in concern regarding PFAS contamination, OCWD has a higher concern for contamination in their product.

Hazard	Justification for Concern Adjustment
Human-Caused Hazards: Power Outage	OCWD has a slightly lower concern for power outage than some other MAs within the planning area due to the amount of backup power they have available to withstand power outages.
Human-Caused Hazards: Hazardous Materials	Multiple large highways and major transportation routes run through the OCWD service area with assets located along these routes. Hazardous materials may be transported along these routes, increasing the potential for spills to occur.
Human-Caused Hazards: Terrorism (MCI)	OCWD has an increased concern regarding terrorism attempts due to their proximity to high profile targets and increased civil unrest within their community.
Seismic Hazard: Fault Rupture	OCWD serves water throughout Orange County and has assets located in close proximity to large fault lines, increasing their impacts from fault rupture.
Urban Fire	OCWD's service area is heavily built out, increasing the risk of urban fires.
Wildfire	The risk of wildfires is slightly reduced for OCWD due to their assets being spread across the entire Orange County area, allowing them to locate assets further from the urban-wildland interface.
Low Priority Hazards	Due to the number of hazards identified in the Planning Area, these low priority hazards have not been analyzed further by OCWD to allow greater focus on the other hazards of concern.

B.4 HAZARD MAPS

The following maps show the location of hazard zones within the jurisdiction relative to potable water systems, as applicable.

Exhibit B-4. Fire Hazard and OCWD District Potable Water Infrastructure

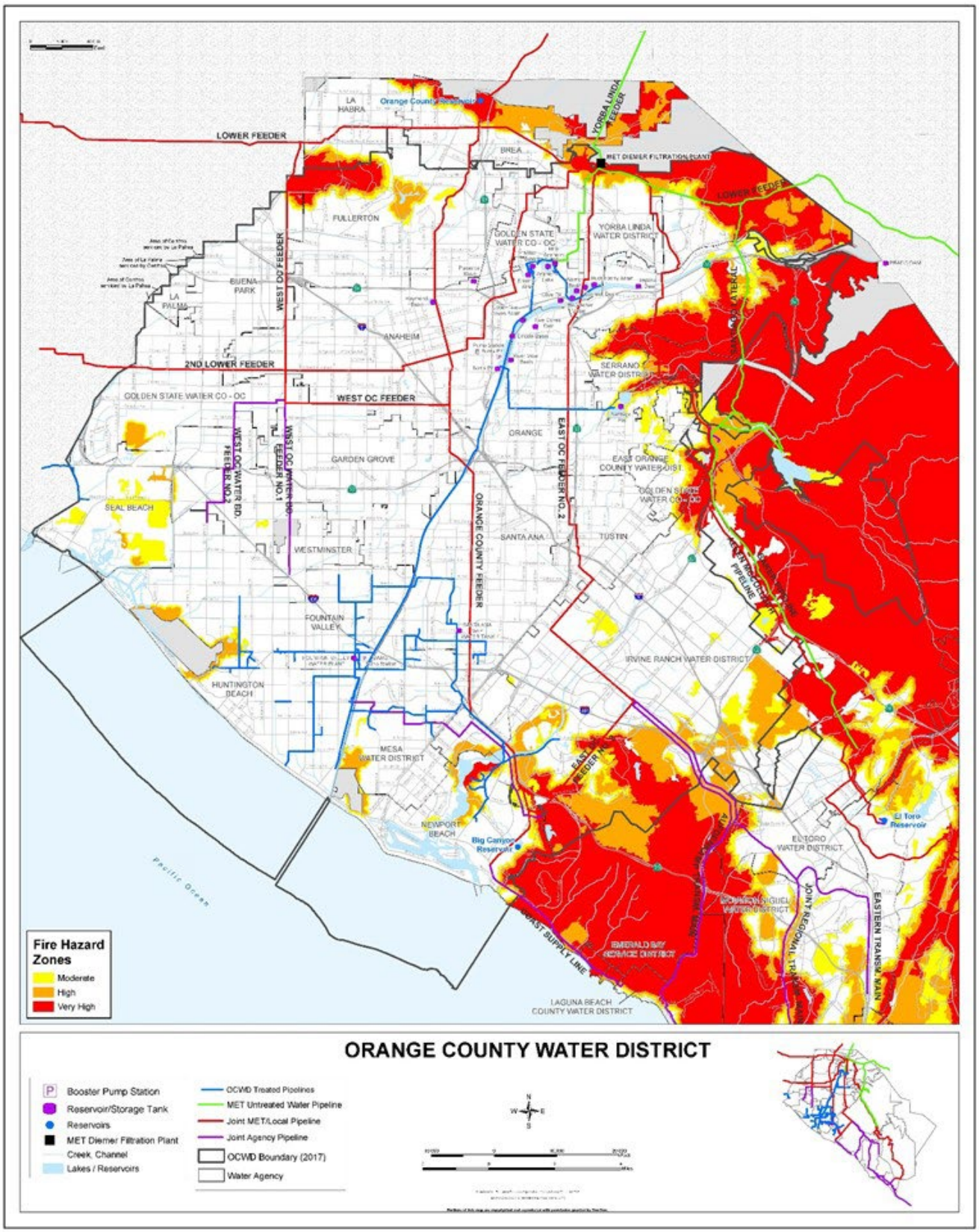


Exhibit B-5. Flood Hazard and OCWD Potable Water Infrastructure

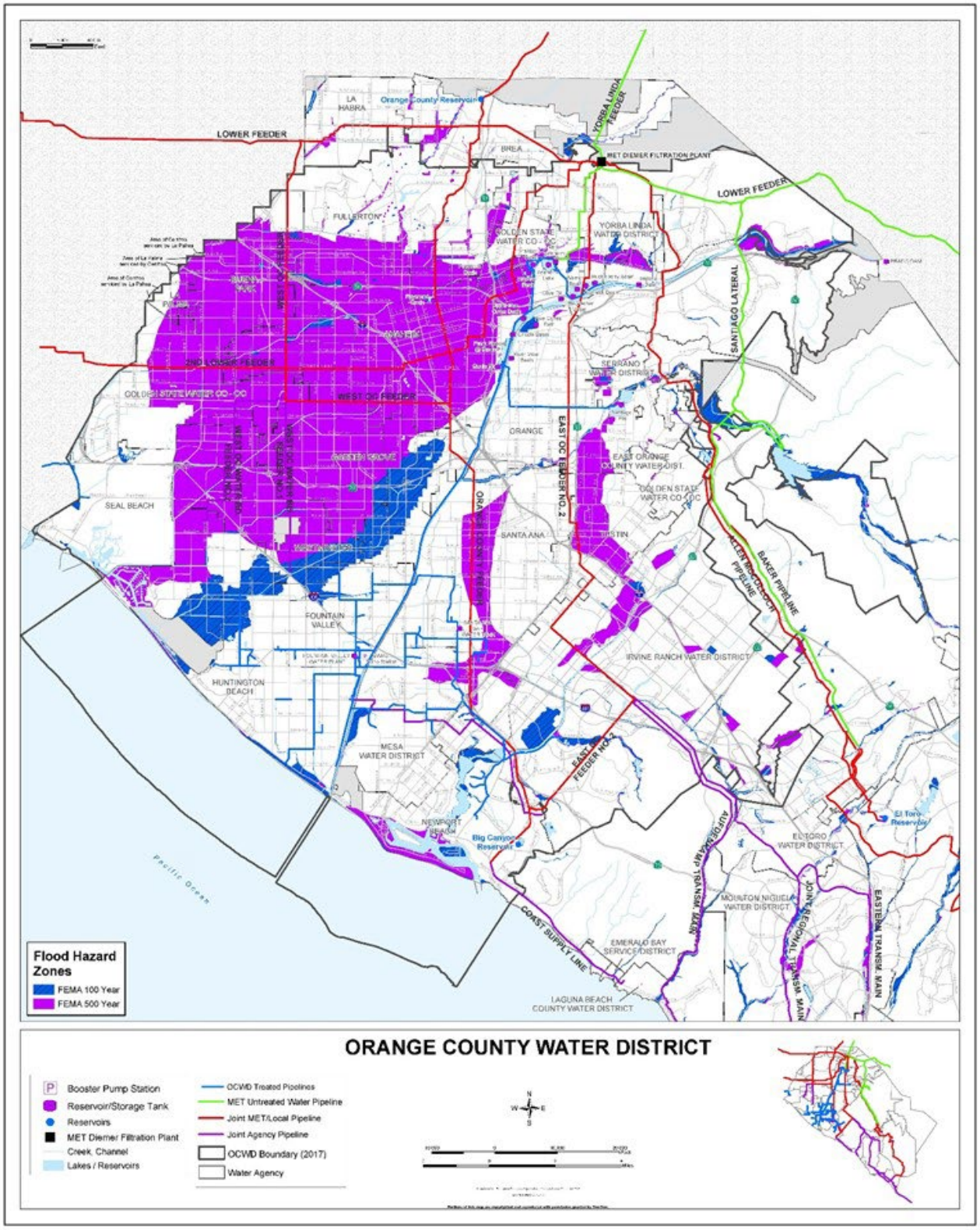


Exhibit B-6. Fault Rupture Hazard and OCWD Potable Water Infrastructure

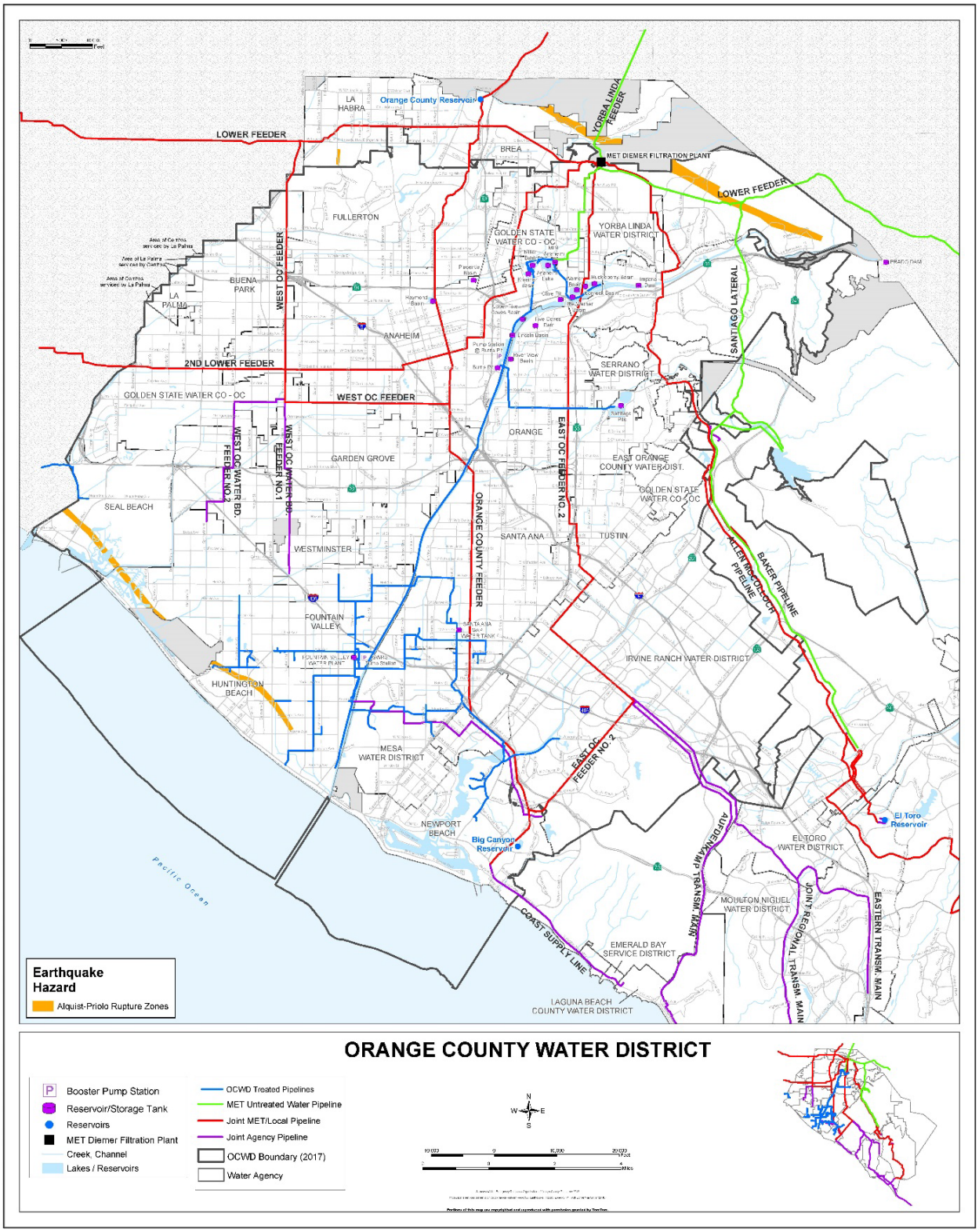


Exhibit B-7. Seismic Shaking Hazard and OCWD Potable Water Infrastructure

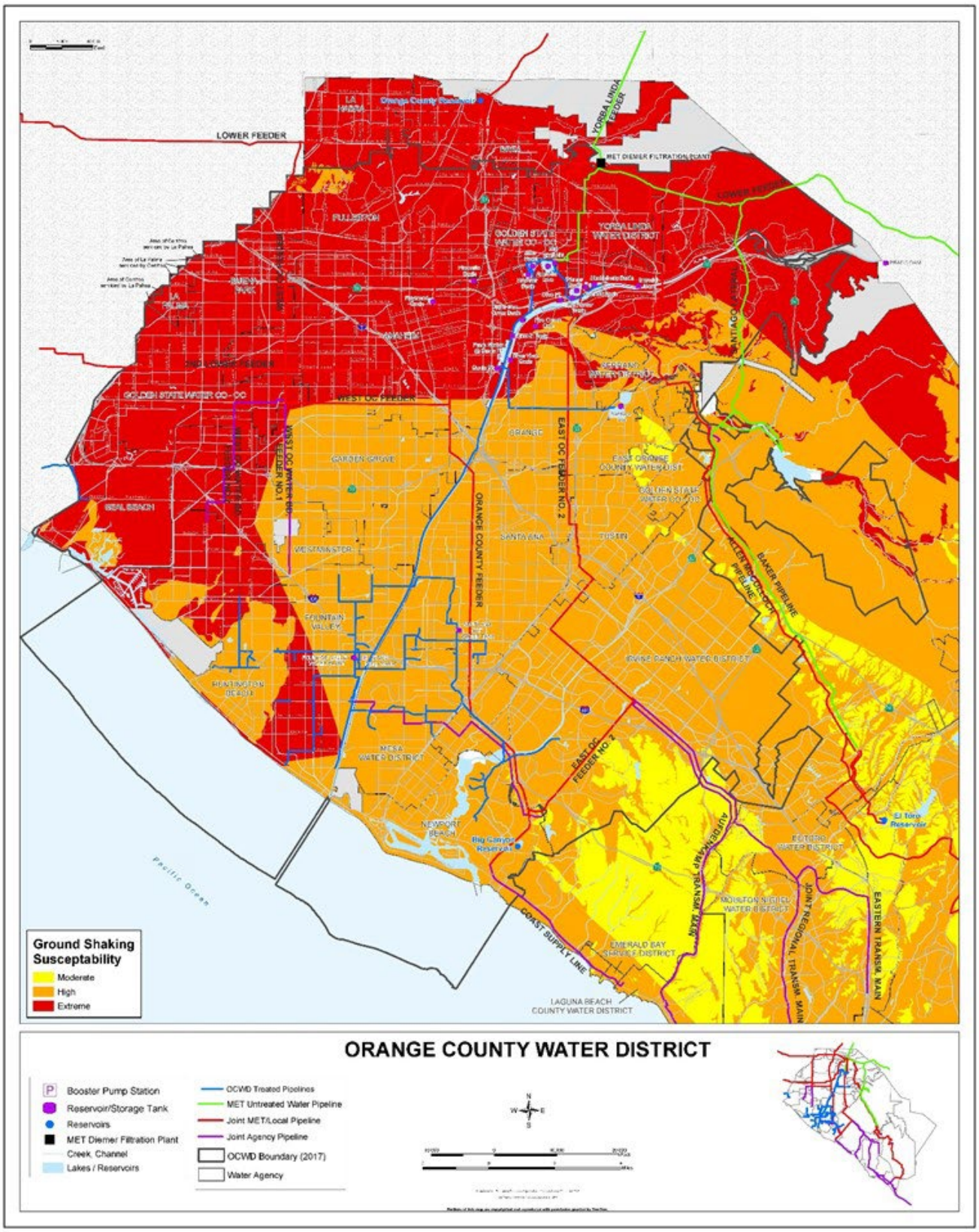


Exhibit B-8. Liquefaction Hazard and OCWD Potable Water Infrastructure

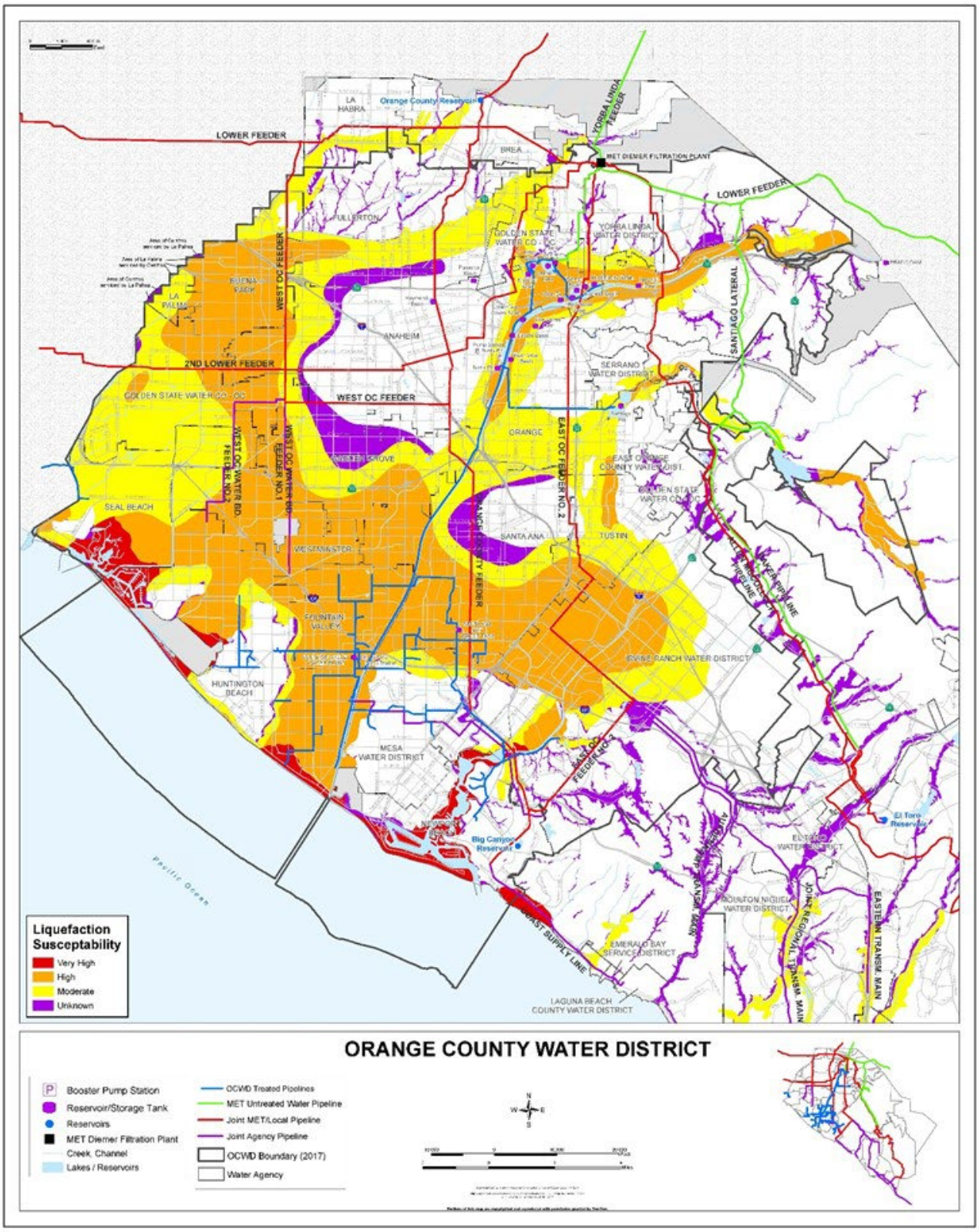


Exhibit B-9. Landslide Hazard and OCWD Potable Water Infrastructure

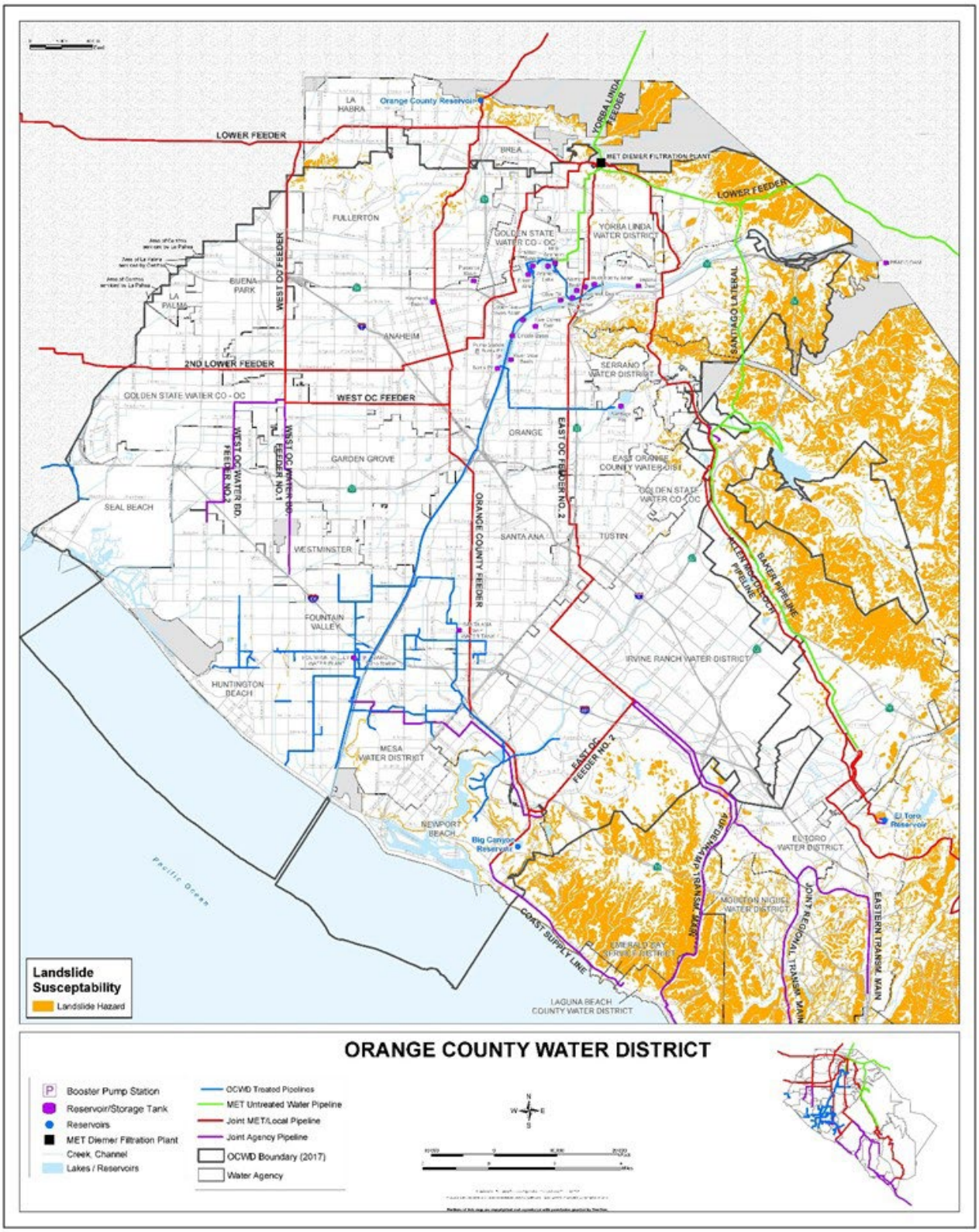
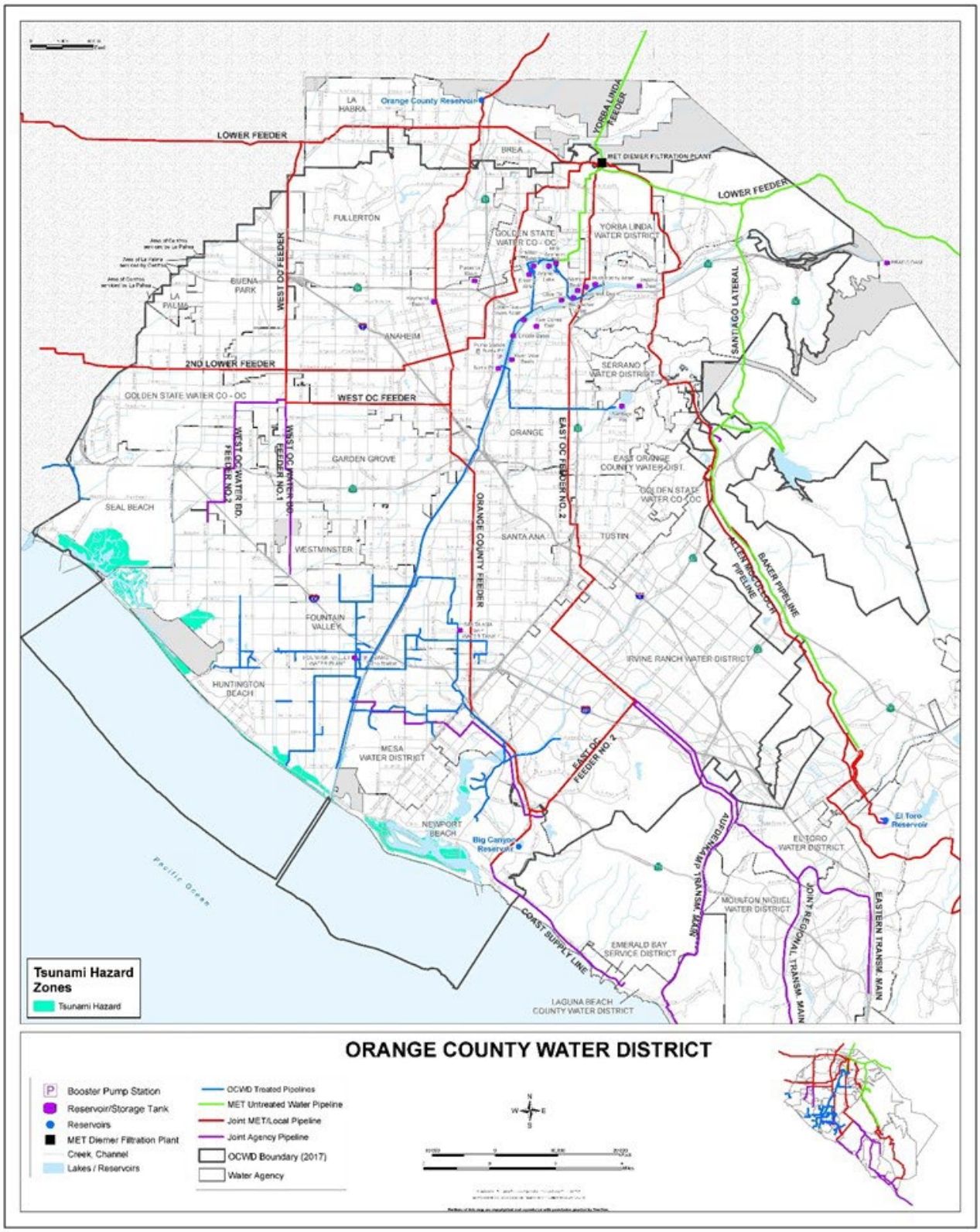


Exhibit B-10. Tsunami Hazard and OCWD Potable Water Infrastructure



B.5 VULNERABILITY AND RISK ASSESSMENT

Assessing vulnerabilities shows the unique characteristics of individual hazards and begins the process of narrowing down locations within OCWD's service area that are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities more in depth. Using these methods vulnerable populations, infrastructure, and potential losses from hazards can be estimated.

Assets Susceptible to Hazard Events

OCWD's infrastructure is outlined in **Exhibit B-11**, which lists the number of OCWD's infrastructure assets located within the mapped hazard zones identified above.

Exhibit B-11. OCWD Infrastructure and Exposure to Hazards

Hazard		Infrastructure Type						
		Administration Buildings (#)	Pump Stations (#)	Reservoirs (#)	Water Storage Tanks (#)	Wells (#)	Potable Pipelines (miles)	Wastewater Pipelines (miles)
Fire Hazard Zone	Moderate	0	0	1	0	0	0	0
	High	0	0	0	0	0	0	0
	Very High	0	0	0	0	0	0	0
FEMA Flood Zone	100-Year	0	0	15	0	0	11.6	0
	500-Year	0	0	0	0	0	0.4	0
Alquist-Priolo Rupture Zone		0	0	0	0	0	0	0
Seismic Shaking	Moderate	0	0	0	0	0	0	0
	High	1	1	1	1	1	12.1	0
	Extreme	1	1	17			5.7	0
Liquefaction	Moderate	0	0	2	0	0	3.8	0
	High	2	2	14	1	1	13.4	
	Very High	0	0	0	0	0	0	0.8
	Unknown	0	0	0	0	0	0.1	2.5
Landslide Zone		0	0	0	0	0	0	0
Tsunami Zone		0	0	0	0	0	0	0

Several miles of OCWD's potable pipeline system and reservoirs are in areas susceptible to flooding and within an area identified as having a high or extreme risk for seismic shaking and high risk of liquefaction during an earthquake.

Vulnerabilities/Impacts to Hazard Events

OCWD protects the large groundwater basin within Orange County and provides water from this basin to local providers. Approximately 2.4 million people reside within OCWD's service area.

Hazard	Impact on OCWD's Vulnerable Populations
Coastal Hazards: Sea Level Rise	Sea level rise does not have a direct impact on vulnerable populations within the service area.

Hazard	Impact on OCWD's Vulnerable Populations
Dam/Reservoir Failure	In the event of dam failure, the highest concern is from inundation of released water damaging buildings and infrastructure. Residents living within inundation zones for high or extremely high hazard dams are exceptionally vulnerable. Populations living in drainages (unhoused), those without access to transportation or limited options, individuals with limited mobility, and populations with language limitations may experience greater impacts.
Flood	Populations living in drainages (unhoused), those without access to transportation or limited options, individuals with limited mobility, and populations with language limitations may experience greater impacts.
Geological Hazards: Expansive Soils	Expansive soil does not have a direct impact on vulnerable populations within the service area.
Geological Hazards: Land Subsidence	Land subsidence does not have a direct impact on vulnerable populations within the service area.
Human-Caused Hazards: Contamination/Saltwater Intrusion	Contamination can be most impactful on populations without access to news outlets for do not use notifications and populations with language limitations that may not understand boil water notices or contamination announcements. Saltwater Intrusion does not have a direct impact on vulnerable populations within the service area.
Human-Caused Hazards: Hazardous Materials	All populations within the service area are equally vulnerable to this threat.
Human-Caused Hazards: Power Outage	The entire population within the service area is susceptible to potential outages, however increased vulnerabilities exist for residents and facilities reliant on electricity-dependent medical equipment such as ventilators and monitoring equipment.
Human-Caused Hazards: Terrorism (Cyber Threat)	All populations within the service area that use the internet are equally vulnerable to this threat.
Human-Caused Hazards: Terrorism (MCI)	All populations within the service area are equally vulnerable to this threat.
Seismic Hazards: Fault Rupture	Populations living along major fault lines are vulnerable to fault ruptures. The highest vulnerabilities exist for populations located directly on or next to the faults.
Seismic Hazards: Seismic Shaking	All populations within the service area are vulnerable to seismic shaking. The highest vulnerabilities exist for populations with older housing that has not been retrofitted to withstand strong earthquakes
Seismic Hazards: Seismic Liquefaction	Liquefaction zones occur across OCWD's service area, especially in the central western portion of the county, causing increased vulnerabilities to cities throughout.
Severe Weather: Drought	Drought does not directly impact populations within OCWD beyond potential restrictions in water usage and increases to water rates.
Severe Weather: Extreme Heat	All populations within the service area are vulnerable to extreme heat, especially those with no access to air

Hazard	Impact on OCWD's Vulnerable Populations
	conditioning such as populations living within older homes, trailer homes, or homeless populations.
Severe Weather: Windstorm	Populations living in unstable housing such as unhoused and mobile home populations are most vulnerable to damage caused by windstorms.
Urban Fire	The entire population within the service area is susceptible to potential outages, however increased vulnerabilities exist for residents and facilities in older housing that may not be equipped with smoke detectors or fire prevention systems.
Wildfire	Wildfire concerns exit along the eastern and southern portions of the service area where there are higher urban-wildland interface zones. All populations within these areas with increased vegetation have an increased risk to a wildfire threat.

Changes in Land Use and Development

Orange County is a highly developed county with expanding cities and growing population numbers. OCWD supplies groundwater to Orange County, meaning their service is impacted by land use changes and development that occurs across the 19 cities they serve. Some major developments that have happened include the construction of Orange Heights' 1,066 single family homes and 114 multifamily units. One major development project performed by OCWD in partnership with OC San was the expansion of the Groundwater Replenishment System.

Vulnerabilities Associated with Climate Change

Hazard	Climate Change Vulnerabilities
Hazards of High Concern	
Coastal Hazards: Sea Level Rise	The anticipated impacts to vulnerability to sea level rise for OCWD from climate change will mirror the impacts discussed in the base plan. Since managing the groundwater basin is a major priority for OCWD, impacts associated with sea level rise affecting groundwater resources will be closely monitored.
Dam/Reservoir Failure	There are no expected climate change impacts on dam/reservoir failure. However, fluctuations in the amount of precipitation and intensity of events could cause stress on dam/reservoir facilities not previously anticipated during initial design. These types of issues could increase the vulnerability of these facilities, which is described in the base plan.
Flood	Climate change is expected to cause some higher-level flood waters within OCWD, and the 100-year flooding event may expand into the 500-year flood zones on a more frequent basis.
Geological Hazards: Expansive Soils	Climate change is not expected to impact expansive soils within OCWD's service area. The vulnerability follows that described in the base plan.
Geological Hazards: Land Subsidence	OCWD's vulnerability to land subsidence is not expected to change due to climate change and is anticipated to be similar to those described in the base plan.

Hazard	Climate Change Vulnerabilities
Human-Caused Hazards: Contamination/Saltwater Intrusion	Changes in contamination and saltwater intrusion vulnerability due to climate change are expected to follow the changes outlined in the base plan.
Human-Caused Hazards: Terrorism (Cyber Threat)	Connections between climate change and cyber based terrorism have not been identified.
Seismic Hazards: Seismic Shaking	Climate change is not expected to cause any changes to the frequency or intensity of seismic shaking occurring within OCWD's service area.
Seismic Hazards: Seismic Liquefaction	Climate change is anticipated to impact liquefaction potential within the OCWD service area as periods of both intense rain and drought could potentially increase or decrease groundwater elevations affecting the risk of liquefaction, depending on the circumstances.
Seismic Hazards: Fault Rupture	There are no expected changes to the frequency or intensity of fault ruptures occurring within OCWD's service area as a result of climate change.
Hazards of Medium Concern	
Human-Caused Hazard: Power Outage	Climate change will likely increase OCWD's vulnerability to power outages as local electric companies implement protocols such as rolling blackouts or targeted shutoffs that may impact OCWD facilities.
Human-Caused Hazards: Terrorism (MCI)	Climate change has no direct link to human-caused hazards and is expected to follow the impacts described in the base plan.
Human-Caused Hazards: Hazardous Materials	Climate change has the potential of increasing hazardous materials releases resulting from transportation crashes or damage to storage vessels.
Severe Weather: Drought	Droughts are expected to increase in length and frequency due to climate change and impact OCWD as described in the base plan.
Severe Weather: Extreme Heat	Temperatures are expected to increase due to climate change and impact OCWD's service area as described in the base plan.
Severe Weather: Windstorm	The challenges to OCWD from climate change's impacts on Windstorms are expected to follow the impacts described in the base plan.
Urban Fire	There is no anticipated impact to how climate change could influence the ignition or behavior of urban fires.
Wildfire	Climate change is expected to increase the risk wildfires within OCWD's service area especially in the northeastern rural hill areas of OCWD.

B.6 CAPABILITIES ASSESSMENT

The capabilities assessment is designed to identify existing local agencies, personnel, planning tools, public policy and programs, technology, and funds that have the capability to support hazard mitigation activities and strategies outlined in this MJHMP. OCWD's internal development team revised the capabilities identified in the 2019 plan and collaborated to identify current local capabilities and mechanisms available to the MA for reducing damage from future hazard events. **Exhibits B-12a through B-12d** assess the authorities, policies, programs, and resources that the jurisdiction has in place that are available to help with the long-term reduction of risk through mitigation. These capabilities include planning and regulatory tools, administrative and technical resources, financial resources, and education and outreach programs. OCWD has the ability to expand on and improve existing emergency management policies and programs to implement mitigation programs. In some instances, methods of expansion and improvement have been

identified within a specific capability, while a majority of these capabilities are anticipated to be expanded and improved upon through additional projects/initiatives underway by the agency. These have been included at the bottom of each table.

Exhibit B-12a. Planning and Regulatory Capabilities Summary

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Building Code	Engineering Department, OCWD	OCWD complies with applicable building codes and works with the cities within the service area. **Expansion and Improvement:** As retrofits and replacement projects are identified, OCWD will anticipate meeting or exceeding the latest building codes to ensure greater resilience is incorporated into their infrastructure.
Zoning Ordinance	City/County	OCWD complies with applicable zoning ordinances and works with the cities within the service area.
Subdivision Ordinance or Regulations	City/County	OCWD complies with applicable subdivision ordinance or regulations and works with the cities within the service area.
Special Purpose Ordinance	City/County	OCWD complies with applicable special purpose ordinances and works with the cities within the service area.
Growth Management Ordinances	City/County	OCWD complies with applicable growth management ordinances and works with the cities within the service area. **Expansion and Improvement:** Growth management ordinances need to take into account water needs and available supplies for existing and future populations. Working closely with the Cities and County in the region, OCWD can help better understand how growth management ordinances could impact these resources.
Site Plan Review Requirements	City/County	OCWD complies with applicable site plan review requirements and works with the cities within the service area. **Expansion and Improvement:** Developing better methods and techniques to support site plan reviews within Orange County can help ensure adequate planning, design, and engineering analysis is available to Cities and the County when new subdivisions are proposed.
Urban Water Management Plan	City/County	Prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. **Expansion and Improvement:** Integration of future projects from Urban Water Management Plans (UWMPs) into Local Hazard Mitigation Plans can ensure both plans are supporting the necessary improvements needed to ensure future water supplies and minimize risks to hazards and disasters.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Capital Improvements Plan	Engineering, Hydrogeology, Field Headquarters	Construction Projects, Well Construction, Infrastructure Improvement Projects. Annual Board approval. **Expansion and Improvement:** Incorporation of mitigation strategies into the Capital Improvement Program (CIP) can help support future funding of improvements necessary to enhance water/wastewater systems.
Emergency Response Plan	Risk & Safety, OCWD	Maintains Emergency Response Plan. **Expansion and Improvement:** Continued improvement and enhancement of emergency response plans can help ensure OCWD is better prepared for future incidents and can anticipate their communities' needs.
Post-Disaster Recovery Plan	Risk & Safety, OCWD	Business Continuity Plan; Partial recovery information in the Emergency Response Plan.
Water Discharge Requirements	Regional Water Quality Control Board (RWQCB); Regulatory Affairs; Water Quality & Technical Resources, Water Production	Permits related to GWRS and Green Acres Operations; RWQCB.

How can these capabilities be expanded and improved to reduce risk?

- Conduct a risk and resilience assessment (RRA) and create corresponding Emergency Response Plan (ERP) per the America's Water Infrastructure Act of 2018 (AWIA). Consider this plan as a resource to meet the AWIA requirements.
- Conduct disaster response fuel analysis and contingency planning with WEROC as a component of the Southern California Catastrophic Plan.
- Evaluate ability to contract with local fuel distributors and gas stations for emergency back-up supply.
- OCWD will update their Business Continuity Plan.
- OCWD will participate in a Forecast Informed Reservoir Operations study to improve weather projections and the operations of Prado Dam to capture water supplies and prevent flooding in Orange County.
- OCWD will include a "Production Limitation" on annual groundwater pumping by its member agencies to ensure unexpected large amounts of groundwater are not pumped, keeping more water for storage in critical periods.

Exhibit B-12b. Administrative and Technical Capabilities Summary

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
Planner(s) or Engineer(s) with Knowledge of Land Development and Land Management Practices	Planning & Natural Resources and Property Management, OCWD	Environmental Planners with expertise in land development practices. Collaborate with Engineering and cities to comply with all requirements.
Engineer(s) or Professional(s) Trained in Construction Practices Related to Buildings and/or Infrastructure	Engineering Department; OCWD	Licensed Civil Engineers and certified building evaluators (Safety Assessment Program certified by Cal OES). Evaluators certification through 2019.
Planners or Engineer(s) with an Understanding of Natural	Engineering, Planning & Natural	Regional General Plan (RGP).

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
and/or Human-Caused Hazards	Resources, and Risk & Safety	
Surveyors	Engineering; OCWD	GPS Surveying Capabilities.
Staff with Education or Expertise to Assess the Community's Vulnerability to Hazards	Risk & Safety; OCWD, WEROC	California Accidental Release Prevention Tank Assessment.
Personnel Skilled in GIS and/or HAZUS	Hydrogeology	Dedicated GIS staff.
Emergency Manager	Risk & Safety; OCWD	Prepare, implement, and provide emergency training to staff. Trained personnel in the following: Emergency Response Team; Confined Space Rescue Team; HAZMAT.
Grant Writers	Engineering Department; OCWD, Planning Department	Prepared, submitted, and received several grants for various projects. Includes but not limited to Proposition 1, Proposition 84, Measure M.
Water Quality Lab	Water Quality	Collects and analyzes water samples from ground water wells on routine basis. Samples include ground water, surface water, and treatment plant.

How can these capabilities be expanded and improved to reduce risk?
▪ Evaluate participation in MWDOC Water Loss Control Program, including meter testing and leak detection through training of internal staff or through MWDOC's Choice program. ▪ Have all agency-registered engineers and other qualified individuals attend California Governor's Office of Emergency Services) Safety Assessment Program (SAP) training for building inspections. ▪ OCWD will enter into the Santa Ana River Conservation and Conjunctive Use program with four other watershed agencies to store excess water supplies in the groundwater basin for drought periods. ▪ OCWD will purchase and train staff to operate drones which can be used to assess damage from natural disasters.

Exhibit B-12c. Financial Capabilities Summary

Financial Resources	Agency or Department	Description/Comments
Capital Improvements Project Funding	Engineering and Finance Departments, OCWD	Prepared, submitted, and received funding for various construction projects. Includes but not limited to State Revolving Fund Loan. **Expansion and Improvement:** During annual budgeting OCWD can highlight MJHMP strategies that support funding needs for the CIP.
Fees for Water, Sewer, Gas, or Electric Service	Finance Department, OCWD	Charge producers for recycled and ground water. **Expansion and Improvement:** Analysis of future fees for services should analyze potential mitigation funding support opportunities to capture funding for these projects
Incur Debt Through Special Tax and Revenue Bonds	Finance Department, OCWD	Use revenue refunding bonds to refinance existing debts.

How can these capabilities be expanded and improved to reduce risk?
▪ Learn about how to utilize post-disaster mitigation grants (Section 406) and incorporate it into the utility's disaster recovery strategy. ▪ Funding will be increased and annually included in the water reserve fund to give OCWD additional options to increase amounts of reported water purchased and stored in the groundwater basin for critical periods. ▪ OCWD will increase its rate to generate additional annual funding for necessary capital projects.

Exhibit B-12d. Education and Outreach Capability Summary

Resource/ Programs	Agency or Department	Description/Comments
Agency Website and Social Media	Administration Staff and Public Affairs; OCWD	The district informs residents of special events, emergency information, and news. **Expansion and Improvement:** Increase use of social media resources for hazard mitigation related content and information.
Great ShakeOut	Risk & Safety and Public Affairs Department; OCWD	Participation in the annual drill, training and social media.
WEROC	Risk & Safety and Public Affairs Department; OCWD	Participation in WEROC.
Public Agency Safety Management Association (PASMA) and Red Cross Disaster Program/Conference	Risk & Safety Department; OCWD	PASMA and Red Cross emergency training and Conferences.
Workplace Violence Program	Risk & Safety Department; OCWD	Education and training provided to OCWD staff.

How can these capabilities be expanded and improved to reduce risk?
▪ Participation in WEROC-led efforts to develop standardized messaging for water outages, dam events, and general disaster response. Ensure that messaging will work for the general community, as well as the Access, Disability, and Functional Needs community specific to OCWD. ▪ OCWD will stress the importance of water infrastructure at the annual Orange County Water Summit. ▪ Tours of the OCWD facilities will include information on the critical nature of the water treatment facilities. ▪ Implement employee emergency alert system via Alert OC & WEROC.

B.7 MITIGATION STRATEGY

B.7.1 Mitigation Goals

OCWD adopts the hazard mitigation goals developed by the planning team; refer to **Section 4**.

B.7.2 Mitigation Actions

The internal development team reviewed the mitigation actions identified in the 2019 plan and the updated risk assessment to determine if the mitigation actions were completed, required modification, should be removed because they are no longer relevant, and/or should remain in the MJHMP update. New mitigation actions to address the updated risk assessment and capabilities identified above were also considered and added. **Exhibit B-13,** OCWD Mitigation Actions,

identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.

Exhibit B-13. OCWD Mitigation Actions

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
HIGH PRIORITY							
Stream bank erosion threatening Villa Park Road in Santiago reservoirs' Smith pit.	Smith pit in Orange/Villa Park.	Dam/Reservoir Failure	$4 M	Engineering/ Operations	Short Term (3-5 years)	General Fund	In Progress
Upgrade pipeline along Ellis to seismic standards.	Fountain Valley	Seismic Hazard-Seismic Shaking	$6 M	Engineering	Long Term (>5 years)	General Fund	Ongoing
Sunset Seawater Barrier.	Sunset Barrier	Coastal Hazards – Coastal Storms and Sea Level Rise	Unknown	Engineering/ Operations	Long Term (>5 years)	General Fund	New
PFAS Treatment Project.	Water Treatment Plant	Human-Caused Hazards – Contamination/Saltwater Intrusion	Unknown	Engineering/ Operations	Long Term (>5 years)	General Fund	New
MEDIUM PRIORITY							
Seismic structure assessment for Administration Building.	Administration building in Fountain Valley.	Seismic Hazard-Seismic Shaking	$40,000	Engineering	Short Term (3-5 years)	General Fund	Ongoing
Seismic structure assessment for Field Headquarters (FHQ) Building.	FHQ building in Anaheim.	Seismic Hazard-Seismic Shaking	$20,000	Engineering	Short Term (3-5 years)	General Fund	Ongoing
Construct fencing on all sites. Ensure regular maintenance.	All Locations	Human-Caused Hazards – Terrorism (MCI)	$25,000	Engineering/ Operations	Immediate (1-2 years)	General Fund	In Progress
Update Supervisory Control and Data Acquisition (SCADA) System to ensure anomalies in the water system are detected.	All Locations	Human-Caused Hazards – Terrorism (Cyber Threat)	$50,000	Engineering/ Operations	Short Term (3-5 years)	General Fund	In Progress

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
Enforce sea water barrier	All locations	Coastal Hazards – Coastal Storms and Sea Level Rise	$5 M	Engineering	Long Term (>5 years)	General Fund	In Progress
Monitor Prado Dam run off. Ensure maintenance is completed after each rainstorm.	Prado Dam	Dam/Reservoir Failure	$10,000	Engineering/ Operations	Short Term (3-5 years)	General Fund	In Progress
Investigate installing back-up power supplies at the Burris Pump Station and the Forebay Headquarters	Burris Pump Station and Forebay Headquarters	Human-Caused Hazards: Power Outage	Unknown	Engineering	Short Term (3-5 years)	General Fund	Ongoing
Participate in WEROC training and exercises to identify required improvements in response and operations to reduce impact of hazardous events.	All Locations	All Hazards	Unknown	Engineering/ Operations	Immediate (1-2 years)	General Fund	New

B.7.3 Completed or Removed Mitigation Initiatives

The following mitigation actions from the 2019 plan have been completed or are in progress and therefore are removed from this plan update.

- **Mitigation:** Completion of the Santiago saddle repair following the 2010 storms.
  - **Status:** Complete.
- **Mitigation:** Reconstruction/maintenance of levees & diversion structure in Prado Wetlands.
  - **Status:** Completed in 2019.
- **Mitigation:** Acquire mobile emergency power generator system.
  - **Status:** Removed in 2019. OCWD no longer needed this action due to back-up power supply.

B.8 PLAN INTEGRATION

OCWD's Capital Improvement Program is used to implement mitigation initiatives identified in this annex. After adoption of the MJHMP, the district will continue to integrate mitigation priorities into this document.

The OCWD Capital Improvement Program (CIP) Projects have the following progression of stages:

- A project is budgeted and included in the fiscal year CIP budget.
- A feasibility study is prepared which describes the project with potential alternatives, a cost estimate and schedule.
- Once approved by our Board of Directors, an Engineer's Report and the environmental documentation are prepared.
- Upon approval, a design services request for proposals is advertised, an agreement awarded for design services, and project plans and specifications prepared.
- The construction project is publicly advertised, awarded and the construction activities performed to completion.

Since the previous plan update, OCWD incorporated information from the MJHMP in its CIP, in addition to the following planning mechanisms:

- Orange County Reliability Study (2016 and 2018 update) identifies threats to local water supplies and new planning scenarios to potentially address those threats.
- The risk assessment information was used to update the hazard analysis in OCWD's Emergency Response Plan.

OCWD will continuously monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions will be incorporated into updates of this plan.

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/A. Waite

Budgeted: Yes
Proposed Budget: $12,000,000
Cost Estimate: $12,000,000
Funding Source: CIP
Program/Line Item No.: C24011
General Counsel Approval: Yes
Engineers Report: Completed
CEQA Compliance: Cat. Ex.

Subject: FULLERTON MAIN PLANT (WELLS 5, 6 & 8) AND WELL 7A PFAS WATER TREATMENT PLANT ENGINEERS REPORT; CATEGORICAL EXEMPTION, CONTRACT NO. FUL-2025-1 NOTICE INVITING BIDS, AND AUTHORIZATION TO REIMBURSE CITY OF FULLERTON FOR WELL 7A PFAS WATER TREATMENT PROJECT

SUMMARY

The final plans and specifications for the City of Fullerton Main Plant (Wells 5, 6 & 8) PFAS Water Treatment Plant are complete. Additionally, the City of Fullerton is expanding the existing Main Plant PFAS treatment system to accommodate treatment of their new Well 7A. Staff recommends filing a Categorical Exemption for the project, issuing a Notice Inviting Bids for Contract Number FUL-2025-1 Main Plant (Wells 5, 6 & 8), and authorizing reimbursement to the City of Fullerton for the Main Plant PFAS treatment system expansion associated with Well 7A.

Attachment: Engineer's Report for the City of Fullerton Main Plant (Wells 5, 6 & 8) and Well 7A PFAS Water Treatment Plant Projects.

RECOMMENDATION

Agendize for June 18 Board meeting:

1. Approve the Engineer's Report for the City of Fullerton Main Plant (Wells 5, 6 & 8) and Well 7A PFAS Water Treatment Projects and determine the projects feasible, necessary and beneficial to the lands of the District;

2. Authorize filing of a Categorical Exemption for the City of Fullerton Main Plant (Wells 5, 6 & 8) in compliance with the California Environmental Quality Act (CEQA) guidelines;

3. Authorize publication of Notice Inviting Bids for Contract No. FUL-2025-1, Fullerton Main Plant (Wells 5, 6 & 8) PFAS Water Treatment Plant; and,

4. Authorize reimbursement to the City of Fullerton for constructing the Main Plant Well 7A PFAS Water Treatment Project in an amount not to exceed $750,000.

BACKGROUND/ANALYSIS

To restore the use of groundwater supplies impacted by PFAS contaminants with minimal delay, Tetra Tech began design of the Fullerton Main Plant PFAS treatment plant expansion in September 2024. These projects expand the existing Main Plant PFAS treatment system constructed in July 2024, which is currently treating only Well 3A, to treat existing Wells 5, 6, 7A and 8. Granular Activated Carbon (GAC) was selected as the treatment process at the Main Plant to match the existing treatment system and remove trace concentrations of co-contaminant volatile organic compounds found in these wells. The number of vessels and required support systems needed for GAC allow for less area to be occupied by the treatment plant than would be required for Nanofiltration (NF) or Reverse Osmosis (RO). Sufficient space is available on site for the new treatment system. Figure 1 shows the location of the City of Fullerton's Main Plant:

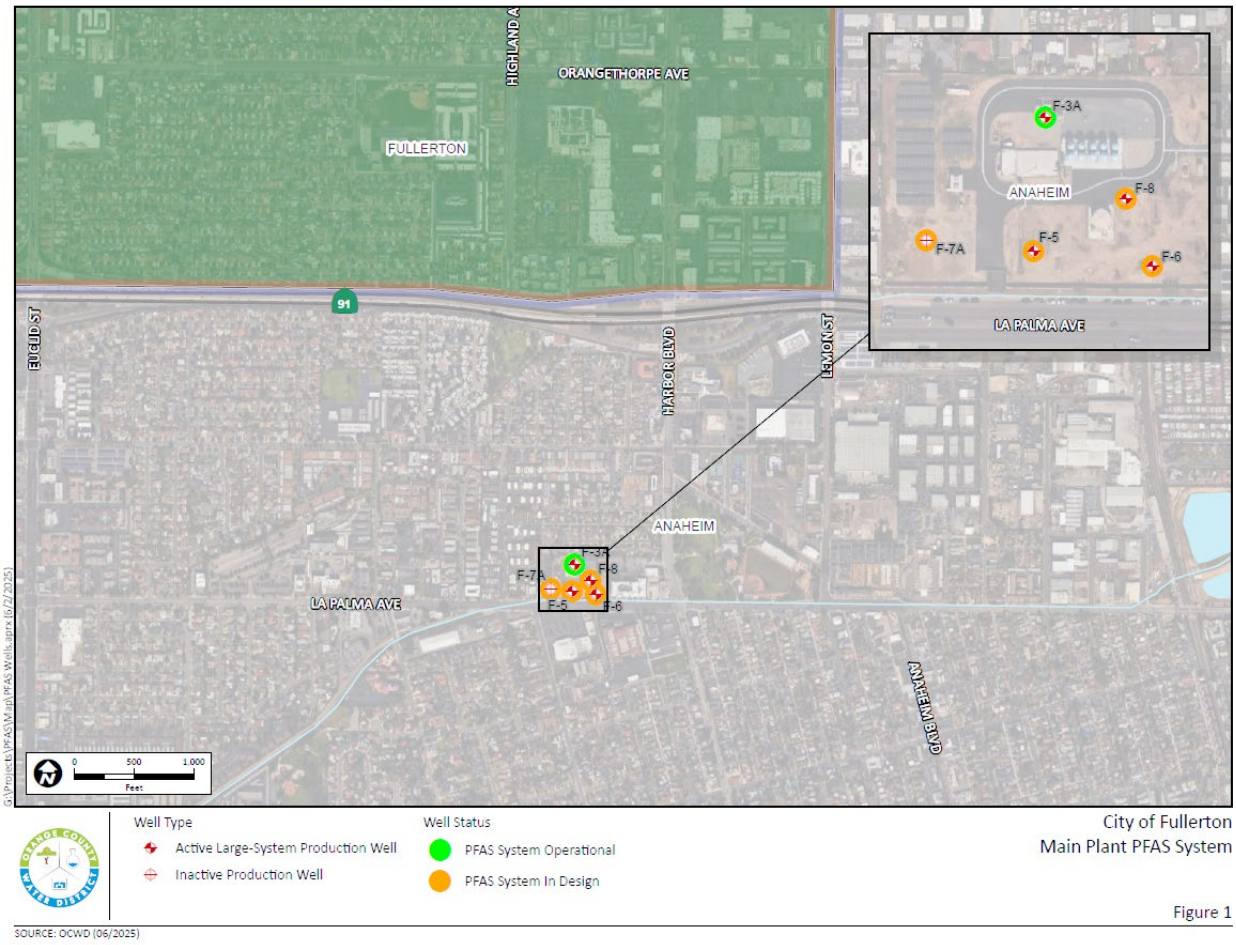


Figure 1: City of Fullerton Main Plant PFAS Well Treatment Site

Tetra Tech has completed design of the PFAS treatment plant for Wells 5, 6, 7A & 8. Review of the Main Plant expansion is underway at the State Division of Drinking Water (DDW) in preparation for issuance of an amendment to Fullerton's Domestic Water Supply Permit.

The City of Fullerton Main Plant (Wells 5, 6 & 8) PFAS Treatment Plant Project will include installing new GAC vessel systems and all site piping, well modifications,

electrical upgrades, and other appurtenances. The City is also progressing expansion of the existing Main Plant for treating Well 7A under a separate construction contract held by the City. Two idle systems (four vessels) were installed with the original plant construction, and this expansion will install the necessary site piping, valving, and control integration to integrate the idle vessels into the existing treatment system. Utilizing the existing contract will expedite completion of the treatment system expansion and restore 4,500 acre-feet of groundwater production at least one year earlier than would be possible if combining this construction with a construction contract for the Wells 5, 6 & 8 treatment system. This is expected to save the City approximately $3.5 million in avoided imported water costs and generate approximately $3.2 million in revenue for OCWD. The Main Plant Well 7A PFAS treatment expansion is anticipated to cost approximately $750,000. Staff recommends reimbursing the City for the costs associated with the Well 7A PFAS treatment expansion construction.

Staff has determined that the Main Plant (Wells 5, 6 & 8) PFAS Treatment Plant project is consistent with the Categorical Exemption for New Construction or Conversion of Small Structures (Class 3) because it consists of the construction and operation of a limited number of new, small facilities or structures. The expected project schedule is shown in Table 1.

Table 1: Fullerton Main Plant Wells 5, 6 & 8 and Well 7A PFAS Treatment Projects Schedule Summary

Description	Date
Fullerton Main Plant (Wells 5, 6 & 8) and 7A PFAS Treatment Projects	
Design	Sep 2024 – June 2025
DDW Permitting	June 2025 – April 2026
Wells 5, 6 & 8 Main Plant Construction Contract	Nov 2025 – June 2027
Well 7A Main Plant Expansion Construction (City Contract)	June 2025 – Mar 2026

The Engineer's Report for the City of Fullerton Main Plant (Wells 5, 6 & 8) and Well 7A PFAS Water Treatment Projects has been written. Staff recommends approving the Engineer’s Report, authorizing the filing of a Categorical Exemption, authorizing Publication of the Notice Inviting Bids for Contract No. FUL-2025-1, Fullerton Main Plant (Wells 5, 6 & 8) PFAS Water Treatment Plant, and authorizing reimbursement to the City of Fullerton for constructing the Main Plant Well 7A PFAS Water Treatment Project for an amount not to exceed $750,000.

PRIOR RELEVANT BOARD ACTION(S)

N/A

ENGINEER'S REPORT

FOR

FULLERTON MAIN PLANT (WELLS 5, 6 & 8) AND WELL 7A PFAS WATER TREATMENT PLANT PROJECTS

Prepared By:

Alex Waite, P.E.

June 2025

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1.0 EXECUTIVE SUMMARY

The purpose of this Engineer's Report is for Orange County Water District (OCWD; the District) and City of Fullerton (City) to evaluate the need, benefits, and cost of constructing a Per- and Polyfluoroalkyl Substances (PFAS) treatment system for the City's Main Plant production Wells 5, 6, 7A, and 8, specifically to remove perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

In April of 2024, the United States Environmental Protection Agency (EPA) issued final National Primary Drinking Water Regulation for six PFAS. The EPA established enforceable maximum contaminant level (MCL) and non-enforceable maximum contaminant level goal (MCLG) for the following PFAS.

Compound	Final MCLG	Final MCL (enforceable levels)
PFOA - perfluorooctanoic acid	Zero	4.0 parts per trillion (ppt)
PFOS - perfluorooctane sulfonate	Zero	4.0 ppt
PFHxS - perfluorohexanesulfonic acid	10 ppt	10 ppt
PFNA - perfluorononanoic acid	10 ppt	10 ppt
HFPO-DA - hexafluoropropylene oxide dimer acid (Commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS[1])	1 Hazard Index[2]	1 Hazard Index[2]

[1] - perfluorobutane sulfonic acid (PFBS)

[2] $Harad\ Index\ (unitless) = \frac{PFBS\ ppt}{2{,}000\ ppt} + \frac{PFHxs\ ppt}{10\ ppt} + \frac{PFNA\ ppt}{10\ ppt} + \frac{HFPO{-}DA\ ppt}{10\ ppt}$

On May 15, 2025, the EPA announced proposed changes to the PFAS regulation. The changes included maintaining the final MCLs for PFOA and PFOS but reconsidering the regulatory determinations for the PFHxS, PFNA, and HFPO-DA, as well as the associated individual MCLs and the hazard index MCL. A revised proposed rule may be issued by the EPA in fall 2025 and a finalized rule in spring 2026.

In February 2020, the State Water Resources Control Board's Division of Drinking Water (DDW) issued revised drinking water response levels of 10 parts per trillion (ppt) for PFOA and 40 ppt for PFOS. In March 2021, DDW issued a drinking water response level of 5 parts per billion (5,000 ppt) for PFBS and in October 2022 DDW issued a response level of 20 ppt for PFHxS. DDW recommends that sources exceeding these limits be taken out of service, treated, or blended. When groundwater sources are taken out of service, their production is commonly replaced with more expensive imported water from the Metropolitan Water District of Southern California (MWD). Water quality results indicate the presence of PFAS concentrations above the response level for PFOA in Wells 5, 7A, and 8, and above the MCLs for PFOA and PFOS in Wells 5, 6, 7A, and 8, which required the wells to be taken out of service.

In 2019, the District hired Carollo to conduct a PFAS Planning Study to evaluate options for the treatment of groundwater wells that are potentially impacted by PFAS, including the City, and to develop preferred alternatives. The five alternatives evaluated in the Planning Study were shutting down the potentially impacted well and replacing the source with imported water, blending well water with imported water, blending well water with other groundwater, packing part of the well to avoid zones with PFAS, and engineered treatment. It was determined that engineered treatment, specifically ion exchange (IX) or granular activated carbon (GAC), would be the preferred treatment for the City's Main Plant Wells (5, 6, 7A, and 8). The District also hired Jacobs in 2019 to perform pilot testing and life-cycle cost analysis of various treatment technologies. Results from the Jacobs study confirm that IX and GAC are efficient technologies to remove PFAS. The City has selected to utilize GAC treatment at the Main Plant Wells due to the presence of trace concentrations of volatile organic compounds (VOCs), which are also removed by GAC.

This project will expand the existing GAC vessel system installed for treating Well 3A at the Main Plant. This project will consist of installing four new GAC vessel systems in lead-lag configuration (eight vessels) to treat the combined production of Wells 5, 6. and 8, including the necessary piping, backwash facilities and related appurtenances. A separate project managed by the City will also install connecting piping to two of the existing five GAC vessel systems at the Main Plant to treat the combined production of Wells 3A and 7A.

Benefits of constructing a PFAS Treatment System at the Main Plant include:

- Allowing the City to continue to utilize its well and infrastructure investment.
- Allowing the City to maintain a diversified water supply portfolio with a substantial local supply component by restoring approximately 10,100 acre-feet (AF) per year of production.
- Saving the OCWD service territory approximately $13 million per year in water supply costs.
- Saving OCWD over $5.6 million per year by paying for the treatment plant instead of losing RA revenue.
- Avoiding approximately $7.4 million of imported water costs incurred by the City by utilizing groundwater instead of imported water.

In November 2019, the District adopted a PFAS policy to design and construct the lowest reasonable cost but efficient treatment system to remove PFOA and PFOS compounds for Groundwater Producers, such as the City. Additionally, the policy states that OCWD will provide a 50 percent subsidy for future operation and maintenance expenses up to $92.20 per AF.

The current estimated capital cost of this project is $14,326,000. The current estimated Operation and Maintenance cost is $149.90 per AF per year, to be split between OCWD and the City. These costs will be adjusted as the engineering details are finalized and construction is completed.

2.0 BACKGROUND

In 2009, the United States Environmental Protection Agency (EPA) established a provisional health advisory of 400 ppt for PFOA and 200 ppt for PFOS to assess the potential risk for short-term exposure through drinking water. The EPA later released a non-regulatory health advisory level of 70 ppt for PFOA and PFOS (combined) in 2016.

In March 2019, the DDW issued mandatory PFAS testing orders to 12 public water systems (Groundwater Producers) in the District's service area. Dozens of wells in the District's service area had water quality testing results exceeding the DDW Notification Levels. Affected Producers were required to provide governing body notifications for exceedances of the Notification Level. Later in 2019, DDW lowered the Notification Limits to 5.1 ppt for PFOA and to 6.5 ppt for PFOS. In February 2020 DDW lowered the Response Levels to 10 ppt for PFOA and 40 ppt for PFOS. In March 2021, DDW issued a drinking water response level of 5 parts per billion (5,000 ppt) for PFBS and in October 2022 DDW issued a response level of 20 ppt for PFHxS.

In April of 2024, the EPA issued final National Primary Drinking Water Regulation for six PFAS. EPA established enforceable MCLs and non-enforceable MCLGs for the following PFAS.

Compound	Final MCLG	Final MCL (enforceable levels)
PFOA - perfluorooctanoic acid	Zero	4.0 parts per trillion (ppt)
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PFNA - perfluorononanoic acid	10 ppt	10 ppt
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Mixtures containing two or more PFHxS, PFNA, HFPO-DA, and PFBS[1])	1 Hazard Index[2]	1 Hazard Index[2]

[1] - perfluorobutane sulfonic acid (PFBS)

[2] $Hazard\ Index\ (unitless) = \frac{PFBS\ ppt}{2{,}000\ ppt} + \frac{PFHxs\ ppt}{10\ ppt} + \frac{PFNA\ ppt}{10\ ppt} + \frac{HFPO{-}DA\ ppt}{10\ ppt}$

On May 15, 2025, the EPA announced proposed changes to the PFAS regulation. The changes included maintaining the final MCLs for PFOA and PFOS but reconsidering the regulatory determinations for the PFHxS, PFNA, and HFPO-DA, as well as the associated individual MCLs and the hazard index MCL. A revised proposed rule may be issued by the EPA in fall 2025 and a finalized rule in spring 2026.

In preparation for the impacts of PFAS to groundwater supplies, the District adopted a PFAS policy in November 2019. Among other items, the policy states that OCWD will fund the lowest reasonable and efficient treatment system design and construction costs to remove PFAS compounds for Groundwater Producers. Additionally, the policy

states that OCWD will provide a 50 percent subsidy for operation and maintenance expenses up to $75 per AF. The rate is adjusted annually each July 1 (beginning July 1, 2021) and the maximum subsidy for operation and maintenance has been updated to $92.20 per AF for fiscal year 2025/2026.

Water quality results for Wells 5, 6, 7A, and 8 indicate the presence of PFAS concentrations above the response level for PFOA in Wells 5, 7A, and 8, and above the proposed MCLs for PFOA and PFOS in Wells 5, 6, 7A, and 8, which required the wells to be taken out of service. When groundwater sources are taken out of service, their production is commonly replaced with more expensive imported water from the Metropolitan Water District of Southern California (MWD). Water quality results for PFAS concentrations in Wells 5, 6, 7A, and 8 are summarized in Table 1.

Table 1: City of Fullerton Wells 5, 6, 7A, and 8 PFAS Water Quality Results

		Well 5		Well 6		Well 7A[1]		Well 8	
PFAS	**Units**	**Avg**	**Range**	**Avg**	**Range**	**Avg**	**Range**	**Avg**	**Range**
PFOA	ng/L	7.6	6.3 - 10.1	5.6	5.0 - 6.3	13.6	2.0 - 19.2	8.1	6.5 - 10.8
PFOS	ng/L	13.9	12.3 - 15.7	11.4	10.5 - 12.9	36.3	4.0 - 48.1	13.1	11.9 - 15.3

PFOA = perfluorooctanoic acid; PFOS = perfluorooctane sulfonic acid;
Avg = Average; ND = Non-Detect
Notes:
1) Well 7A is currently being equipped under separate City contract and is expected to have a similar water quality profile as Well 3A.
2) “ND” means the constituent was not detected below the reporting detection limit.

Wells 5, 6, 7A, and 8 are all located at the City’s Main Plant site which is located in the City of Anaheim. The site is owned by the City of Fullerton. An existing five GAC treatment systems (ten vessels total) were constructed in 2024, with two systems not connected and sitting idle, for the treatment of Well 3A. Treated effluent from Well 3A is disinfected and delivered directly to the distribution system. The site also houses the well head and discharge piping, communication equipment, electrical equipment, and disinfection facilities for Wells 5, 6, and 8. These wells currently discharge to a wet well and pumped into the City’s distribution system. Well 7A has been drilled and is in the process of being equipped under a separate City contract. The City’s wells currently under consideration for PFAS treatment systems are shown in Figure 1.

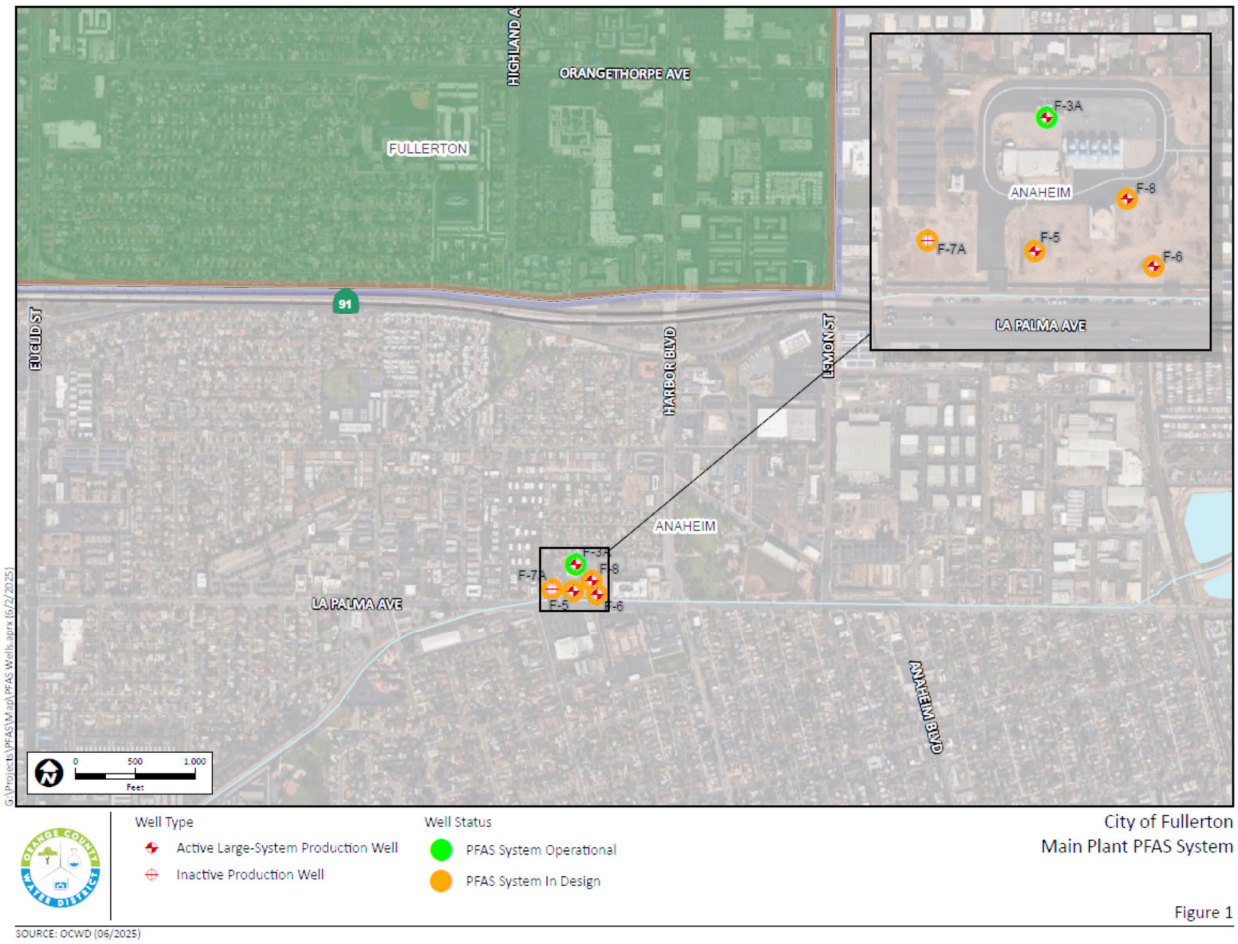

Figure 1: City of Fullerton Main Plant

In 2019, the District hired Carollo to conduct a PFAS Planning Study to evaluate options for the treatment of groundwater wells that are potentially impacted by PFAS – including the City's Wells 5, 6, 7A, and 8 – and to develop preferred alternatives. The five alternatives evaluated in the Planning Study were shutting down the potentially impacted well and replacing the source with imported water, blending well water with imported water, blending well water with other groundwater, packing part of the well to avoid zones with PFAS, and engineered treatment. It was determined that engineered treatment, specifically IX or GAC, would be the preferred treatment for the City's Main Plant Wells. The District also hired Jacobs in 2019 to perform pilot testing and life-cycle cost analysis of various treatment technologies. Results from the Jacobs study confirmed that IX and GAC are efficient technologies to remove PFAS.

The City has selected to utilize GAC treatment at the Main Plant Wells as the preferred and most efficient treatment process for several reasons. First, the wells contain trace concentrations of VOCs, specifically trichloroethylene and tetrachloroethylene, which are also effectively removed by GAC but not by IX. Second, GAC would be more cost-effective than Nanofiltration (NF) or Reverse Osmosis (RO). RO is a treatment technology that ensures high reliability for PFAS removal but would generate a liquid

waste stream containing PFAS that would require disposal and be more expensive than the other best available technologies. Additionally, a RO plant would likely require additional City staff with the appropriate water treatment certifications to operate. Although RO would be the most effective option for long-term removal of PFAS from drinking water supplies, the costs and staffing constraints associated with RO make GAC the most feasible treatment choice for the Main Plant. Finally, an existing GAC treatment system is already constructed and operating at the Main Plant for treating Well 3A, and maintaining consistent treatment processes across the facility is desired by the City.

3.0 PROJECT PURPOSE AND DESCRIPTION

This section outlines the project purpose and description of the project.

3.1 Project Purpose

The purpose of this project is to design, permit, construct, and operate PFAS removal systems for the well sites in accordance with the District PFAS policy. The proposed GAC treatment system is to remove PFOA and PFOS to less than 2 ppt (the current non-detect limit). Use of this PFAS removal treatment system will ensure the groundwater supplied by the Main Plant wells can be served in compliance with PFAS regulations.

3.2 Project Site

The proposed treatment system will be located at 627 La Palma Avenue in the City of Anaheim. The land is owned by the City of Fullerton and currently houses Well 3A, 5, 6, and 8 discharge piping, communication equipment, electrical equipment, and storm drainage piping. GAC treatment systems (five systems [ten vessels] with two systems currently idle) are already constructed and operating for treating Well 3A. Well 7A is also located on the site and is in the process of being equipped under a separate City project. The site is surrounded on three sides by residential land uses and fronts La Palma Avenue.

3.3 Project Components

The PFAS treatment plant will install four new GAC systems (8 vessels) operating in a lead/lag configuration to treat the combined flows from Wells 5, 6, and 8. The treatment plant will be sized to treat a target production rate of 3,500 gallons per minute (gpm) and maximum production of 4,000 gpm. In addition, under a separate construction contract managed by the City, connecting pipelines will also be installed for the existing two idle GAC systems allowing for flows from Well 7A to combine with Well 3A and treat a target production rate of 5,000 gpm. Wells will be cycled or throttled to meet target production rates. The project will increase annual production from the Main Plant by approximately 10,100 AF per year for a total annual production of approximately 13,700 AF per year. Production capacity from each well and treatment system is shown in Table 2. A site plan is shown in Figure 2.

Table 2. Main Plant Well and Treatment Systems Production Capacity

Well	Design Flow (gpm)	Annual Production (AF)
3A	2,800	3,600
7A	3,000	4,500
North Treatment Production	**5,000**	**8,100**
5	1,700	2,000
6	1,600	2,000
8	1,900	1,600
South Treatment Production	**3,500**	**5,600**
Total Main Plant Production	**8,500**	**13,700**

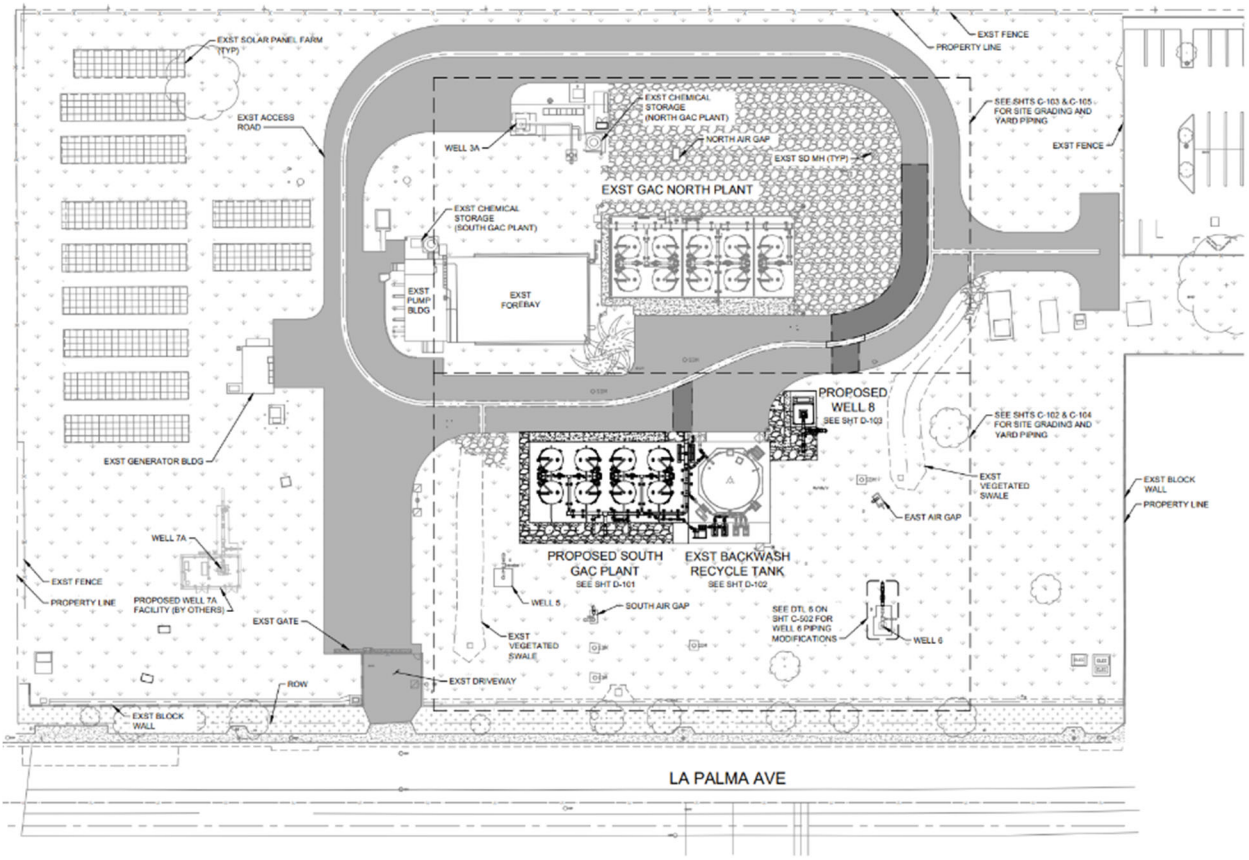

Figure 2. Main Plant PFAS Treatment System Site Plan

The project will install a new well pump, motor, enclosure, piping, valving and electrical equipment, including a variable frequency drive, for the existing Well 8. An automatic well throttling valve will also be installed on the discharge from Well 6. By cycling

through different well combinations and automatically controlling flows from Wells 6 and 8, the City will achieve target production of 3,500 gpm.

To match the existing GAC treatment system, the GAC vessels installed under this project will measure approximately 25 feet tall by 12 feet in diameter. The influent and effluent supply pipelines can be operated in a way to switch which vessel is the lead and lag by operating manual valves. The lead/lag configuration is beneficial because once the PFAS constituents reach a predetermined threshold in the lead vessel's effluent, the lead vessel media can be removed and replaced with new media, and the lead vessel be switched to the lag position. The previous lag vessel becomes the new lead vessel, allowing its adsorptive capacity to be maximized before media change-out. Sample ports will be located at several positions indicating various media depths so the media performance can be monitored through the media bed volume. The new treatment system will use the Calgon Carbon F400 media; this media was shown to be effective for PFAS removal through the 2019 pilot study with Jacobs.

The existing backwash recycle tank will be utilized to receive backwash waste from both existing and new GAC treatment systems. A pre-filtration system is not required, but to prolong the useful life of the media backwashing is utilized to remove accumulated sediment that inhibits PFAS adsorption. Backwash water will be provided from the City's distribution system by operating manual valves. Backwash waste will then be routed to the backwash recycle tank. Any suspended sediments will be allowed to settle, and backwash recycle pumps will return filtered backwash water to the treatment system influent instead of wasting the water to the sewer.

Treated flows from Wells 5, 6, and 8 will be routed to the City's existing Product Water Forebay where the treated water is dosed with sodium hypochlorite to maintain a chlorine residual and finally pumped into the distribution system. No work is anticipated on this project for the City's existing product water forebay, disinfection system, and product water pump station.

Electrical and telemetry systems will be integrated into the treatment plant to convey information into the existing SCADA system. Flow rates, pressure differential, and flood alarms are included in the list of proposed instrumentation.

3.4 Permits and Regulatory Issues

The City's drinking water system operates under a DDW permit that would need to be amended for operation of the proposed Main Plant PFAS treatment system. Submittals for the amendment have been sent to DDW for review. The permit amendment is not officially granted until after the system's construction is inspected by DDW.

Several permits will be required from the City of Fullerton:

- A right of entry permit will be required to grant the District and its consultants control of the site during construction.
- Encroachment, public works, building, and grading permits may be required to construct the treatment system and appurtenances.

The City of Fullerton Main Plant site is located within the City of Anaheim. Government Code 53091(d) and (e) exempt the project from City of Anaheim building and zoning ordinances for on-site work because the project consists of the construction of facilities for the production, treatment, and transmission of water by a local agency.

In accordance with the California Environmental Quality Act (CEQA) guidelines, it is proposed to file a Categorical Exemption for the project. The project is consistent with the Categorical Exemption for New Construction or Conversion of Small Structures (Class 3) because it consists of the construction and operation of a limited numbers of new, small facilities or structures.

4.0 FINANCIAL ANALYSIS

This section provides the financial analysis regarding this project including total construction cost estimates, capital and operation and maintenance cost estimates, comparisons of the project costs using GAC versus RO, and finally an evaluation of economic effectiveness for this project.

4.1 Construction Cost Estimates

The estimated construction cost for the GAC project is $11,088,000, as detailed in Table 3.

Table 3: GAC Construction Cost Estimate

Description	Quantity	Units	Unit Cost ($/Unit)	Cost ($)
Mobilization	1	LS	$ 321,000	$ 321,000
General Conditions	1	LS	$ 134,000	$ 134,000
GAC Vessel Systems, Appurtenances, and Install	1	LS	$ 5,770,000	$ 5,770,000
GAC Media (480,000 pounds)	1	LS	$ 1,160,000	$ 1,160,000
Yard Piping & Mechanical	1	LS	$ 1,247,000	$ 1,247,000
Site Work	1	LS	$ 131,000	$ 131,000
Well 8 Replacement	1	LS	$ 830,000	$ 830,000
Electrical and Communication	1	LS	$ 745,000	$ 745,000
Well 7A Main Plant Expansion - Vessels 4 & 5 Tie-In	1	LS	$ 750,000	$ 750,000
			Total =	$ 11,088,000

As stated previously, the Well 7A Main Plant expansion construction that will connect the existing idle GAC vessels 4 and 5 will be constructed under a separate contract managed by the City. Costs associated with this effort will be reimbursed by OCWD.

The estimated construction cost for the Reverse Osmosis system is $51,177,000 as detailed in Table 4.

Table 4: RO Construction Cost Estimate

Description	Quantity	Units	Unit Cost ($/Unit)	Cost ($)
Mobilization	1	LS	$ 2,330,000	$ 2,330,000
General Conditions	1	LS	$ 2,330,000	$ 2,330,000
Pre-Filtration System	1	LS	$ 1,910,000	$ 1,910,000
RO Treatment Systems & Pumps	1	LS	$ 22,460,000	$ 22,460,000
RO Membranes	1	LS	$ 1,040,000	$ 1,040,000
Chemical Storage	1	LS	$ 1,790,000	$ 1,790,000
Sewer Connection & Fees	1	LS	$ 3,250,000	$ 3,250,000
Yard Piping & Mechanical	1	LS	$ 5,120,000	$ 5,120,000
Building	1	LS	$ 6,610,000	$ 6,610,000
Site Work	1	LS	$ 200,000	$ 200,000
Well 8 Replacement	1	LS	$ 830,000	$ 830,000
Electrical and Communication	1	LS	$ 3,270,000	$ 3,270,000
			Total =	$ 51,177,000

4.2 Capital Cost Estimate

The estimated total capital cost for the GAC project is $14,326,000, as shown in Table 5. The estimated total capital cost for a RO treatment plant is $71,703,000 as shown in the same table. The table includes the cost of constructing the site improvements for the PFAS treatment system, engineering services for design and construction phases, construction management and the cost associated with meeting regulatory requirements.

Table 5: Capital Cost Estimate

Item	GAC Cost	RO Cost
Engineering, Permitting & CEQA	$ 1,170,000	$ 10,290,000
Construction	$ 11,088,000	$ 51,177,000
Contingency (~20%)*	$ 2,068,000	$ 10,236,000
Total =	$ 14,326,000	$ 71,703,000

*Contingency not included in Well 7A Main Plant Expansion work as construction is occurring as a change order under a separate contract managed by the City of Fullerton.

4.3 Annual Operation and Maintenance Cost Estimate

The estimated annual Operation and Maintenance (O&M) cost for the GAC project is $1,514,000 per year, as detailed in Table 6. It conservatively assumes that visual

inspection will be performed daily, and analytical testing will be performed by an outside entity instead of OCWD.

The five-year average of annual production from the City's Wells 5, 6, 7A, and 8 is approximately 10,100 AF. Using this value results in a unit O&M cost of $149.90 per AF. Per the District's PFAS policy, the O&M costs will be split evenly between OCWD and City with OCWD's portion being no larger than $92.20 per AF based on FY 25/26. The estimated $149.90 per AF O&M unit cost would cause OCWD to incur $74.95 per AF and City to incur $74.95 per AF.

Table 6: GAC Annual O&M Cost Estimate

Description	Quantity	Units	Unit Cost ($/Unit)	Cost ($)
Power	12	Month	$ 47,000	$ 564,000
Labor	1	Year	$ 150,000	$ 150,000
Maintenance	1	Year	$ 100,000	$ 100,000
Analytical Testing	12	Month	$ 10,000	$ 120,000
Media Replacement	1	Year	$ 580,000	$ 580,000
			Total =	$ 1,514,000

Table 7 shows an itemized breakdown of O&M cost for a RO treatment plant. Using an annual volume of 10,100 acre-feet, the RO O&M unit cost is estimated to be $285.15 per AF.

Table 7: RO Annual O&M Cost Estimate

Description	Quantity	Units	Unit Cost ($/Unit)	Cost ($)
Power	12	Month	$ 126,000	$ 1,512,000
Chemicals	12	Month	$ 25,000	$ 300,000
Labor	1	Year	$ 250,000	$ 250,000
Maintenance	1	Year	$ 300,000	$ 300,000
Analytical Testing	12	Month	$ 12,000	$ 144,000
Brine Disposal	12	Month	$ 2,000	$ 24,000
Media Replacement	1	Year	$ 350,000	$ 350,000
			Total =	$ 2,880,000

4.4 Cost Comparisons

Three methods to evaluate the economic effectiveness of the GAC project are presented below. All three methods indicate that there is a financial benefit to move forward with this project.

1) OCWD Service Territory Perspective - The total project cost of providing water to the OCWD service territory via treated groundwater versus purchasing MWD imported water.

2) OCWD Perspective - The OCWD lost revenue due to no City groundwater production versus the OCWD cost to construct and operate the treatment plant.
3) City Perspective – The cost of providing treated groundwater versus purchasing MWD imported water.

Method 1: OCWD Service Territory Perspective

The unit cost for the City to acquire treated imported water through MWD will be $1,518 per AF $1,395 Full Service Treated + $123 readiness to serve) on January 1, 2025. An annual volume of 10,100 AF would cost $15,326,789.

If the capital cost is amortized over 30 years at a 4% interest rate, the annual payment for the PFAS treatment plant would be $828,500, or $82 per AF for 10,100 AF. The PFAS treatment system's O&M expense is estimated to be $150 per AF. As shown in Table 8, the total unit cost of the treated groundwater would be $232 per AF, or $2,342,500 per year for 10,100 AF. Note that the Replenishment Assessment (RA) is not considered in this calculation because it would be both paid and received by agencies within the OCWD Service Territory.

Implementation of the PFAS treatment system at the City's Wells is estimated to save the OCWD service territory approximately $13 million per year in water supply costs.

Table 8: OCWD Service Territory Cost Perspective

Groundwater			MWD Import		
Description	**Annual Cost**	**Unit Cost ($/AF)**	**Description**	**Annual Cost**	**Unit Cost ($/AF)**
Project Capital	$ 828,500	$ 82	Tier 1 Full Service	$14,089,500	$ 1,395
Project O&M	$1,514,000	$ 150	Readiness to Serve	$ 1,237,289	$ 123
Total	**$2,342,500**	**$ 232**	**Total**	**$15,326,789**	**$ 1,518**

Method 2: OCWD Perspective

Taking the City's wells out of service would reduce the RA payments made by the City to OCWD. This assumes that other wells are not available to pump the same volume to replace that production. At an annual volume of 10,100 acre-feet and the RA of $711 per AF for FY 25/26, OCWD would incur an annual revenue loss of $7,181,100.

The District's expenses to construct the PFAS treatment plants at the City's Main Plant includes the capital expense and 50% of the O&M expenses up to $92.20 per AF for FY 25/26. As previously discussed, the amortized unit capital expense is $828,500 per AF and OCWD's portion of the estimated O&M expense is $75 per AF. The resulting unit cost of constructing and operating PFAS treatment at the Main Plant for Wells 5, 6, 7A,

and 8 would be $157 per AF, or $1,585,500 per year producing 10,100 AF per year. The OCWD cost analysis perspective is tabulated in Table 9.

Table 9: OCWD Cost Perspective

Project Cost			Lost Revenue		
Description	**Annual Cost**	**Unit Cost ($/AF)**	**Description**	**Annual Cost**	**Unit Cost ($/AF)**
Project Capital	$ 828,500	$ 82	Replenishment Assessment	$ 7,181,100	$ 711
Project O&M	$ 757,000	$ 75			
Total	**$1,585,500**	**$ 157**	**Total**	**$ 7,181,100**	**$ 711**

Implementation of PFAS treatment systems at the City's Main Plant is estimated to save OCWD approximately $5.6 million per year by utilizing the treatment plant instead of losing RA revenue.

Method 3: City of Fullerton Perspective

Given the need for the City to acquire water supplies to meet the demands of its customers, it is faced with a situation to utilize the PFAS treatment system or to purchase MWD imported water. As previously discussed, the cost to the City to purchase 10,100 acre-feet of MWD water would be $15,326,789 per year, or $1,518 per AF.

The costs for the City to produce groundwater from the Wells 5, 6, 7A and 8 and operate the PFAS treatment plant include payment of the RA ($711 per AF), their portion of the O&M expenses and well power costs ($75 per AF). The total unit cost would be $786 per AF, or $7,938,100 per year producing 10,100 AF. The City of Fullerton's cost analysis perspective is summarized in Table 10.

Table 10: City of Fullerton Cost Perspective

Groundwater			MWD Import		
Description	**Annual Cost**	**Unit Cost ($/AF)**	**Description**	**Annual Cost**	**Unit Cost ($/AF)**
Replenishment Assessment	$7,181,100	$ 711	Tier 1 Full Service	$14,089,500	$ 1,395
Project O&M	$ 757,000	$ 75	Readiness to Serve	$ 1,237,289	$ 123
Total	**$7,938,100**	**$ 786**	**Total**	**$15,326,789**	**$ 1,518**

Implementation of a PFAS treatment system at the City's Main Plant is estimated to save the City approximately $7.4 million per year by utilizing groundwater instead of MWD imported water.

4.5 Granular Activated Carbon versus Reverse Osmosis Unit Cost

RO would provide a more robust, comprehensive, and reliable treatment for long-term removal of PFAS. However, the capital and operating cost of the treatment system are more expensive. If the estimated RO capital cost of $51,177,000 is amortized over 30 years at a 4% interest rate, the annual payment for the RO PFAS treatment plant would be $4,146,600, or $411 per AF for 10,100 AF of production. The RO PFAS treatment system's O&M expense is estimated to be $285 per AF for 10,100 AF. As shown in Table 11, the total unit cost of the RO treated groundwater would be $696 per AF, or $7,026,600 per year for 10,100 AF. The GAC project costs are also summarized in the same table.

Table 11: GAC versus RO Unit Cost

GAC			RO		
Description	**Annual Cost**	**Unit Cost ($/AF)**	**Description**	**Annual Cost**	**Unit Cost ($/AF)**
Project Capital	$ 828,500	$ 82	Project Capital	$ 4,146,600	$ 411
Project O&M	$1,514,000	$ 150	Project O&M	$ 2,880,000	$ 285
Total	**$2,342,500**	**$ 232**	**Total**	**$ 7,026,600**	**$ 696**

5.0 CONCLUSIONS AND RECOMMENDATIONS

Constructing the proposed GAC PFAS treatment systems at the City's Main Plant to treat Wells 5, 6, 7A, and 8 will:

- Allow the City to continue to utilize its well and infrastructure investment.
- Allowing the City to maintain a diversified water supply portfolio with a substantial local supply component by restoring approximately 10,100 AF per year of production.
- Save the OCWD service territory approximately $13 million per year in water supply costs.
- Save OCWD approximately $5.6 million per year by paying for the treatment plant instead of losing RA revenue.
- Save the City approximately $7.4 million per year by utilizing groundwater instead of imported water.

Given the financial benefits to the OCWD service territory, OCWD, and the City to utilize a less expensive treated groundwater supply instead of MWD water, it is recommended that OCWD proceed with the City of Fullerton Main Plant (Wells 5, 6 & 8) and Well 7A PFAS Water Treatment Plant Projects. Additionally, the City would be able to continue using their well investment and maintain their local water component of their supply portfolio.

6.0 PROPOSED IMPLEMENTATION SCHEDULE (TENTATIVE)

Date	Activity
June 2025	Board authorizes Notice Inviting Bids
July 2025	Advertise for construction bids
September 2025	Board awards construction contract
June 2027	Completion of construction

7.0 REFERENCES

Carollo, *PFAS Treatment Systems Planning Study – City of Fullerton*, 2020

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Patel/R. Raley

Budgeted: Yes
Budgeted Amount: $70,000
Cost Estimate: $58,620
Funding Source: 1060.53001
Program/ Line Item No.: Gen. Fund.
General Counsel Approval: N/A
Engineers/Feasibility Report: N/A
CEQA Compliance: N/A

Subject: AMENDMENT TO ABM ELECTRICAL POWER SERVICES, LLC AGREEMENT NUMBER 1586 FOR FIELD HEADQUARTERS SITE WIDE ELECTRICAL MAINTENANCE AND TESTING

SUMMARY

The District operates the Forebay recharge operations to maximize surface recharge of stormwater, baseflow, GWRS, and imported water. The Forebay sites and conveyances rely on electrical equipment for power, to operate flow control structures, pumps, and to monitor these operations via the District's Supervisory Control and Data Acquisition (SCADA) system. The electrical equipment periodically requires preventative maintenance as prescribed in the NETA MTS specification and the NFPA 70B standard.

RECOMMENDATION

Agendize for June 18 Board meeting: Authorize issuance of Amendment No. 1 to ABM Electrical Power Services, LLC in the amount of $4,260 for services to inspect, clean, test and certify 12 sites' power distribution equipment and increase Agreement 1586 total cost to $58,620.

BACKGROUND/ANALYSIS

The District's surface water recharge program includes approximately 26 distinct facilities across approximately 1,600 acres. An annual average of 260,000 acre-feet of water percolates through the program's sites. The program includes 11 pump stations, 4 rubber dams, level and flow instrumentation, cameras, and a SCADA system. The electrical equipment used to power these devices and equipment requires periodic preventative maintenance and inspection to ensure its longevity and reliability. While staff performs these activities for lower voltage electrical equipment, the District outsources the work for medium voltage and 480-volt components. Sites containing this equipment includes the Burris Basin Pump Station, Anaheim Lake Pump Station, Kraemer-Miller Pump Station, Warner Basin Pump Station, Imperial Rubber Dam, Five Coves Rubber Dam, Field Headquarters, Weir #3, Weir #4, Miraloma Basin, La Palma Basin, and La Jolla Basin.

In November 2023, staff released a Request for Proposals (RFP) to qualified contractors with specific invitations to three firms. Two firms responded before the January deadline. After review of the proposals and comparison of the fees, staff recommended awarding the scope of work to ABM Electrical Power Services, LLC in the amount of $54,350. The Board approved the award to ABM Electrical Power Services at the February 2024 Water Issues Committee and board meetings. Subsequently, agreement 1586 was issued to ABM Electrical Power Services on July 1, 2024 to complete the scope of work for an amount not to exceed $54,360. Due to unforeseen field conditions, an amendment in the amount of $4,260 was required to complete the scope of work. This cost increased the agreement cost from $54,360 to $58,260. Staff is requesting Board approval to increase the total budget for agreement 1586 to $58,260. The work under this agreement was completed in May 2025.

PRIOR RELEVANT BOARD ACTION(S)
N/A

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/M. Patel/A. Perry

Budgeted: No
Proposed Budget: $675,000
Cost Estimate: $519,628
Funding Source: PAYGO
Program/Line Item No.: R24038
General Counsel Approval: Yes
Engineers Report: N/A
CEQA Compliance: N/A

Subject: AWARD CONTRACT NO. GWRS-2025-2 MICROFILTRATION WEST BASEMENT ACOUSTIC PANEL PROJECT TO PACIFIC SOUND CONTROL

SUMMARY

A total of three construction bids were received on May 6, 2025 for the Microfiltration West Basement Acoustic Panel Project, Contract GWRS-2025-2. Based on a review of the bids received, staff recommends awarding a contract to Pacific Sound Control in the amount of $519,628. Staff also recommends establishing a total project budget of $675,000.

Attachment: Affidavit of Publication for Notice Inviting Bids for Contract GWRS-2025-2

RECOMMENDATION

Agendize for June 18 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract GWRS-2025-2 Microfiltration West Basement Acoustic Panel Project;

2. Ratify issuance of Addendum No. 1 and Addendum No. 2;

3. Accept bid and award contract GWRS-2025-2 to the lowest responsive bid and responsible bidder, Pacific Sound Control, in the amount of $519,628; and

4. Establish the Microfiltration West Basement Acoustic Panel Project budget in the amount of $675,000.

BACKGROUND/ANALYSIS

As part of the GWRS Final Expansion, MF West was expanded to fit twelve additional below grade concrete basins or cells. The expansion included extending the basement and ground floors of the building. Once the new cells were in operation, it was determined that the noise level in the MF West basement was considerably higher than the other existing areas of the basement. Several other areas of the GWRS plant utilize sound panels mounted to the concrete walls to absorb and prevent reflection of soundwaves generated by the pumps and other equipment in the plant in an effort to help prevent hearing damage for staff working in the facilities. This includes other

portions of the MF West basement and the entire MF East basement, both built previously. Staff requested Black and Veatch prepare construction exhibits and specifications for new acoustic panels to be installed in the MF West basement utilizing existing budget in their GWRS Final Expansion design agreement with OCWD. The new acoustic panels will match the existing aesthetic and layout of the existing panels throughout the existing MF basement and will allow staff to work in the basement under safer conditions.

The bid advertisement period commenced February 26, 2025 and spanned 69 calendar days. Addendum No. 1 was issued March 27, 2025 to provide responses to potential bidder's questions and extend the advertising period. Addendum No 2 was issued April 18, 2025 with revisions to the technical specifications and to extend the advertising period an additional two weeks. Three construction bids were received on May 6, 2025 for contract GWRS-2025-2.

A summary of the three bids is shown below in Table 1.

Table 1: MF West Basement Acoustic Panel Bid Summary

Contractor	Bid Amount
Pacific Sound Control	$519,628
Innovative Construction Solutions	$628,500
Vicon Enterprise	$750,000

Staff reviewed the bid of Pacific Sound Control and confirmed that its contractor's license is current, active, and in good standing with the State of California.

The project budget for the project is summarized in Table 2.

Table 2: MF West Basement Acoustic Panel Budget Summary

Description	Budget
Design	
Black and Veatch	$38,000
Design Subtotal	**$38,000**
Construction	
Contract GWRS-2025-2	$519,628
Permits and Advertisement Costs	$50,000
Staff Expenses	$40,000
Construction Subtotal	**$609,628**
Project Contingency (5% of Contract Amount)	$27,372
Total Project Budget	**$675,000**

Installation of the panels will be continuous once materials are onsite. Due to the scope of work, no shutdowns of the MF facility are expected to occur throughout the duration of the project. Table 3 shows the proposed project schedule.

Table 3: MF West Basement Acoustic Panel Project Schedule Summary

Description	Completion Date
Design	October 2024
Advertise for Bids	February 2025
Bid Opening	May 2025
Construction	Fall 2025

PRIOR RELEVANT BOARD ACTION(S)

11/14/24, R24-11-144: Creating a New R&R Project and Authorizing Issuance of a Notice Inviting Bids for the MF West Basement Acoustic Panel Project Construction Contract

THE ORANGE COUNTY
REGISTER
The Orange County Register
1920 Main Street, Suite 209
Irvine, California 92614
(714) 796-7000

0011721872

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:

02/27/2025

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

Dated at Irvine, California

On this 27th day of February, 2025.

Sandra Campos
Signature

NOTICE INVITING BIDS
MICROFILTRATION WEST BASEMENT ACOUSTIC PANEL
CONTRACT NO. GWRS-2025-2

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), no later than 3:00p.m. PT. local time on April 8, 2025 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 Contractor shall furnish all labor, materials, equipment and incidentals required to complete construction of the MF West Basement Acoustic Panel Project per the plans and specifications, including installation of acoustic panels and site cleanup. The work is within the existing Microfiltration West building within the treatment facility at the District's main office. The address is 18700 Ward Street, Fountain Valley, CA 92708. The Contractor shall complete Work in sequence listed below. Completion dates of the various stages shall be in accordance with the approved construction schedule submitted by the Contractor.

1. Preparation of a construction schedule and schedule of values.
2. Construction of a temporary work area and staging area for use during construction.
3. Installation of acoustic panels.
4. Site cleanup and demobilization.

NON-MANDATORY PRE-BID CONFERENCE: A pre-bid conference will be held at the District Office, 18700 Ward Street, Fountain Valley, CA on Thursday, March 18, 2025 at 2:00pm. PT. All potential bidders, contractors and other interested parties are required to attend this conference conducted by the District and Engineer. Any potential bidder that does not attend the pre-bid conference will be charged with knowledge of all information that was available at the pre-bid conference.

PROJECT ADMINISTRATION: All questions regarding the Bid must be submitted in writing before the deadline due date of Thursday, March 20, 2025 at 2PM PT. Questions received after the questions due date may not be considered. All questions relative to this project prior to the opening of bids shall be directed, in writing, to OCWD:

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

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

Attention: Audrey Perry, Project Manager
Telephone: (714) 378-3369
Email : procurement@ocwd.com

COMPLETION OF WORK AND LIQUIDATED DAMAGES: All Work must be substantially completed within ONE-HUNDRED TWENTY (120) 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 cashier's 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.

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: February 27, 2025

ORANGE COUNTY WATER DISTRICT

By: John C. Kennedy
John C. Kennedy, General Manager

The Orange County Register
Published: 2/27/25

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Plumlee/M. Pannu

Budgeted: Yes
Budgeted Amount: $231,500
Cost Estimate: $231,500 (Net Cost $0)
Funding Source: Grant Funding/General Fund
Program/Line Item No. 1040.53001 / 51555 / 51113.2035
General Counsel Approval: Yes
Engineers/Feasibility Report: N/A
CEQA Compliance: N/A

Subject: PROJECT FUNDING AGREEMENT WITH THE WATER RESEARCH FOUNDATION FOR PILOT STUDY ON PFAS TREATMENT

SUMMARY

The District has been awarded $300,000 in grant funding through the Water Research Foundation's (WRF) 2024 Tailored Collaboration Program for a project titled *"Estimating Per- and Polyfluoroalkyl Substances (PFAS) Using Total Fluorine Methods in Influent and Effluent from a Pilot-Scale Adsorption System."* The grant includes a $150,000 funding match from WRF, $50,000 in cash co-funding from Tucson Water, and a $100,000 cash contribution from the District. The funding will support a combination of District staff labor, advanced analytical laboratory services, and subawards to project partners, including Kleinfelder for technical advisory support and a subcontractor for regeneration of spent ion exchange (IX) resins.

Attachment: Project Funding Agreement #5340 with The Water Research Foundation for Study "Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System"

RECOMMENDATION

Agendize for June 18 Board meeting:

1. Approve and authorize agreement with The Water Research Foundation (WRF) in the amount of $300,000 for the study titled "Estimating PFAS using total fluorine methods in influent and effluents from a pilot-scale adsorption system";
2. Authorize $100,000 pre-payment to WRF for study co-funding (District cash contribution); and,
3. Approve and authorize contractor agreements with Kleinfelder for an amount not to exceed $18,000 and regeneration subcontract for an amount not to exceed $20,000.

BACKGROUND/ANALYSIS

In June 2024, Research and Development (R&D) staff submitted a pre-proposal to the Water Research Foundation (WRF) Tailored Collaboration Program for a study evaluating performance of PFAS treatment medias at pilot scale using both conventional and advanced laboratory testing methods to measure PFAS levels in groundwater used for

drinking water. The pre-proposal was selected to advance to the next round; hence R&D submitted a full proposal in September 2024. Following a review by the WRF selection committee, the District's study was chosen for funding.

The WRF Tailored Collaboration Program requires cash co-funding contributions from third parties and/or grant recipients, with WRF providing a 1:1 match up to $150,000. District staff secured a $50,000 cash contribution from Tucson Water, which will serve as a co-funding partner. Tucson Water is impacted by PFAS in their service area and is interested in treatment solutions including regenerable resins, which will be evaluated in the study. The District plans to contribute $100,000, which has been budgeted in the R&D budget for the upcoming fiscal year (FY25-26). WRF will collect the cash contributions from the District and Tucson Water to administer the funding as part of the overall grant. OCWD will also provide an in-kind cost-share of $39,352 through in-house analytical services conducted at the District's Philip L. Anthony Water Quality Laboratory (OCWD Lab in table below). Furthermore, key project partners, including the State Water Resources Control Board (SWRCB), Yorba Linda Water District (YLWD), Xylem, Forever Analytical Services (FAS), and Babcock Analytical Laboratories, have committed in-kind support valued at $99,400. Altogether, these contributions bring the total value of this two-year project to $438,752.

A project funding and budget table is presented below.

Project Funding Sources	**Cash**	**In-Kind as Cost-share**
WRF cash match	$150,000	$39,352 (OCWD Lab)
Tucson Water	$50,000	
OCWD	$100,000	
SWRCB, YLWD, Xylem, FAS and Babcock Analytical Laboratories		$99,400
Subtotal	**$300,000**	**$138,752**
Total Project Value (Cash + In-kind)	**$ 438,752**	

The $300,000 in cash funds (grant funds) will be dispersed by WRF as the grant administrator to the lead investigator, which is the District. The District will apply the award funds as described in the table below.

Application of Funds/Subawards	**Cost ($)**
R&D Staff Labor	$168,500
Miscellaneous supplies	$3000
Babcock Laboratory Analytical Services	$78,500
Bioanalytical Laboratory cost	$12,000
Kleinfelder (Subaward)	$18,000
Regeneration services (subaward/fees)	$20,000
Total	**$300,000**

Study Objectives

Over a 24-month period beginning July 2025, the study will evaluate the removal of PFAS from groundwater in a pilot-scale system featuring adsorption-based technologies, including granular activated carbon (GAC), single-use Ion Exchange (IX) resins, a single-use alternative adsorbent, and novel regenerable IX resins. Importantly, it will include the use of newer broad-spectrum PFAS measurement methods that are being considered by the state of California and other regulatory bodies for incorporation into future PFAS regulations. PFAS in the source water (influent) and in the treated waters (effluents) will be analyzed using currently required laboratory methods targeting specific individual PFAS and also several broad-spectrum methods that can measure a greater fraction of total PFAS, including: the Adsorbable Organic Fluorine – Combustion Ion Chromatography (AOF-CIC) and AOF-PIGE methods, a PFAS-relevant bioassay, and a method targeting multiple ultra-short chain PFAS that are currently unregulated.

Additionally, the study will evaluate PFAS removal efficiency of single use versus regenerable adsorbents by quantifying PFAS removal using the above broad spectrum and conventional targeted PFAS measurement methods. The SWRCB Division of Drinking Water (DDW) is a key partner in this study and previously agreed to fund a significant portion of the broad-spectrum method testing costs; DDW previously identified and selected the newer methods, along with a supporting commercial laboratory, for use in an ongoing statewide assessment of PFAS in wells serving Disadvantaged Communities (DACs). Both OCWD and DDW are interested in understanding how well the broad-spectrum PFAS methods quantify source water occurrence and treatment effectiveness compared to the currently required targeted analytical methods.

The pilot will be located at the YLWD PFAS treatment plant near OCWD Field Headquarters, which is also the location of the R&D Department Field Research Laboratory. District staff will be responsible for project management and oversight, and will commission, maintain, and collect samples from the PFAS pilot system. They will also coordinate efforts with YLWD staff, DDW representatives, and analytical laboratories. Additionally, District staff will take the lead in preparing both interim and final reports for submission to WRF. Kleinfelder will serve as a technical advisor, while the regeneration subcontractor will support the regeneration of the IX products.

PRIOR RELEVANT BOARD ACTIONS

05/15/2024, R24-5-54, Research grant subaward to Ovivo USA LLC and Kennedy Jenks for study on separation and destruction of PFAS from GWRS RO concentrate.

02/9/2022, R22-2-17, Project funding contract with the Water Research Foundation for study of bench-scale methods to predict performance of IX and novel adsorbents for PFAS.

Project Funding Agreement 5340

Titled

"Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System"

This Project Funding Agreement ("PFA") is entered into on _____, (the "Effective Date") by and among The Water Research Foundation ("WRF"), a Colorado non-profit corporation, whose place of business is located at 6666 W. Quincy Ave., Denver, Colorado 80235, and Orange County Water District ("Sub-recipient"), whose principal place of business is located at 18700 Ward Street, Fountain Valley, CA 92708. WRF and Sub-recipient are each a "Party" and together the "Parties."

WRF has selected Sub-recipient to receive a research and development contract as more specifically detailed in this PFA, which includes the following Exhibits attached hereto:

Exhibit A – Project Plan
Exhibit B – Task, Timelines & Contacts
Exhibit C – Budget Summary
Exhibit D – Invoice Form

The parties mutually agree as follows:

I. DEFINITIONS. The following defined terms shall apply in this PFA:

A. "Code" means the U.S. Code of Federal Regulations Title 2 (Grants and Agreements) Part 200: Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards (a/k/a/ Uniform Grants Guidance or UGG).

B. "Cost Share" means the portion of allowable costs that Sub-recipient or Subcontractor funds in kind toward completing the Project. All Cost-Share accounting must comply with the Code.

C. "Deliverables" are the items required to be delivered to WRF as listed in Exhibit B, including all Reports and all Work Products.

D. "Expenses" means any WRF approved Expenses incurred by Sub-recipient in performing under this PFA.

E. "Intellectual Property" or "IP" is all rights to copyrights, trademarks, service marks, patents, inventions, trade secrets, know how, and confidential information, including the right to enforce, divest, license, seek registration, prosecute infringers, and commercially or otherwise exploit such rights.

F. "Participating Utility" is a utility that is or may provide data or information for the Project, and the input and approval of which Sub-recipient must obtain to complete the Project, as described in this PFA.

G. "Principal Investigator" or "PI" is the Sub-recipient employee identified in Exhibit B, who is primarily responsible for ensuring that all terms and conditions of this PFA are met and to whom WRF shall give all

notices intended for Sub-recipient. If more than one PI is designated in Exhibit B, the additional PIs shall be referred to as a Co-PI(s), though the PI shall remain the primary point of contact under this PFA.

H. "Project" is the work to be completed by Sub-recipient, as described more specifically in the Project Plan attached hereto as Exhibit A.

I. "Project Administrator" is WRF's staff member who supports the WRF Research Manager.

J. "Project Funds" are the aggregate maximum amount of cash award which WRF agrees to provide to Sub-recipient to fund its performance of the Project pursuant to this PFA.

K. "Project Plan" is the description in Exhibit A of the tasks and Deliverables to be completed by Sub-recipient for the Project, for which WRF will disburse the Project Funds and monitor progress pursuant to this PFA.

L. "Proposal Guidelines" are WRF's written guidelines, currently maintained at www.waterrf.org/guidelines-and-forms, in which the procedures, criteria, and requirements for eligibility, proposal, performance, administration, reporting, and other matters governing the proposal of and performance of the Project are set forth. The Proposal Guidelines were provided to Sub-recipient prior to its submission of a Project Proposal, and its terms and requirements are incorporated in this PFA by this reference. The terms "Deliverable," "Periodic Report," "Draft Report," and "Final Report" appearing in this PFA shall have the definitions, and be governed by the requirements applicable thereto, as set forth in the Proposal Guidelines.

M. "Reports" are the Periodic Reports, Draft Report, and/or Final Report, individually or collectively.

N. "WRF Research Manager" is WRF's staff member identified in Exhibit B who will be the primary point of contact for WRF and will oversee the Principal Investigator's performance of the Project.

O. "Subcontractor" is any third party identified by Sub-recipient in the Project Plan as assisting in the performance of the Project under this PFA.

P. "Sub-recipient Funds" is any portion of the Project Funds, if so identified in Exhibit C, as being provided by Sub-recipient to fund the Project under this PFA.

Q. "Subject Data" shall mean all non-patented original and raw research data, originated or assembled by Sub-recipient in performance of this PFA, but specifically excluding WRF Intellectual Property or Sub-recipient Intellectual Property as defined within this PFA. Subject Data also excludes financial reports, receipts, costs, analysis, and similar information incidental to contract administration. Subject Data is copyrightable database Work Product and IP under this PFA.

R. "Work Product" is copyrightable works of authorship created by Sub-recipient or its Subcontractors in the course of performing under this PFA or the Project, including, without limitation, the Project Plan, all Reports and other Deliverables, all interim drafts of the foregoing, and any computer software and related documentation developed under the Project.

II. GENERAL OBLIGATIONS OF THE PARTIES

A. Sub-recipient.

1. Sub-recipient agrees to complete the research, prepare and deliver written Reports, provide all Deliverables to WRF, and perform such other functions, all in accordance with the schedules and other requirements set forth in the Exhibits and this PFA. Sub-recipient shall itself, and shall require all its Subcontractors to, perform the Project and all related activities in full compliance with all laws, regulations, ordinances, and other requirements governing them. All Reports and invoices shall be sent to the WRF Research Manager with a copy to the Project Administrator.

2. Sub-recipient may not use any portion of the Project Funds for any purpose other than as expressly detailed in the Project Plan as necessary to perform the Project.

3. Sub-recipient shall be solely responsible for payment of any Subcontractors, and for procurement of all equipment, materials, and other resources necessary for performance of the Project, out of the Project Funds it receives from WRF.

B. WRF. WRF will disburse the Project Funds to Sub-recipient as detailed in this PFA and Exhibit C.

III. DISBURSEMENT OF PROJECT FUNDS

A. Project Funds. WRF will disburse the Project Funds in installments directly to Sub-recipient. The amount of the Project Funds was set based on Sub-recipient's budget attached in Exhibit C and is a "not to exceed" amount. WRF will not make any payments in excess of such amount. Disbursement of all Project Funds is subject to Sub-recipient's compliance with this Section III and Exhibit C. Any increase in a budget line item by more than 10% of such line item's stated budget may require an amendment, even if other budget decreases offset such increase and there is no overall increase to the required Project Funds

B. Invoicing and Payments.

1. Beginning three months after the Project Start Date identified in Exhibit B, and every three months thereafter during the term of this PFA, Sub-recipient shall submit to WRF a detailed invoice itemizing the Expenses incurred by Sub-recipient in the three months prior to the invoice date in the performance of the Project and identifying all Cost Share and third-party, in-kind contributions as well as the contributing parties. The invoice shall be sent to the Project Administrator with a copy to the WRF Research Manager.

2. Each invoice shall reference the line items in Exhibit B, and be in the form required in the link provided on Exhibit D. Only Expenses actually incurred by Sub-recipient, in accordance with the Code, may be invoiced under this PFA.

3. WRF will disburse Project Funds based upon Sub-recipient timely submitting Deliverables meeting the requirements of this PFA. No portion of the Project Funds will be disbursed unless and until WRF receives, approves, and accepts each corresponding invoice and Deliverable. If WRF approves and accepts the invoices and Deliverables, Sub-recipient will be paid as follows:

a) Regardless of the actual amounts invoiced, WRF will at all times during this PFA, hold back 20% of the Project Funds and will only disburse same as follows: 10% of the Project Funds will be disbursed to Sub-recipient when WRF receives and accepts the Draft Report. The remaining held

back 10% of the Project Funds will be disbursed to Sub-recipient after Sub-recipient has completely and adequately responded to all of WRF's queries on the Final Report, has made all revisions reasonably requested by WRF to finalize the Final Report, and submitted a final invoice.

b) No conditions, notations, acknowledgements, comments, or terms other than the items required to be included and itemized on Sub-recipient's invoice shall be binding on WRF.

c) Written communication of itemized deduction amounts or withheld payments to Sub-recipient shall be properly communicated and written out prior to implementation.

IV. COMPLIANCE MONITORING

A. Financial Management System. Sub-recipient shall maintain an accounting system and accurate and complete accounting records that, at a minimum but without limitation, allow for the identification, tracking, and verification of Expenses, Cost Share, invoiced items, and funding received, all in a manner that is segregated and allocable solely to performance of the Project. All Expenses incurred must be supported by receipts and be made available to WRF upon request.

B. U.S. Federal Administrative, Cost, and Audit Requirements. Regardless of the nature or funding source for the Project, WRF is categorized as a Pass Thru Entity (PTE) because of the federal funding it receives. To stay in procurement compliance, WRF must comply with applicable federal regulations and requirements governing federal funding and must pass through compliance to its funding recipients. Accordingly, Sub-recipient represents and certifies that the budget disclosures in the Project Plan were prepared by Sub-recipient in full compliance with WRF Guidelines and all relevant U.S. laws, regulations, and agreement terms and conditions related to U.S. Federal Financial Assistance including, but not limited to, the Code. Cost Principles specifically applicable for awards to for-profit organizations are set forth in the Federal Acquisition Regulations System (FARS, at 48 CFR 31.2) to determine allowable costs under WRF PFAs. Sub-recipient shall throughout the Project, and in the preparation of every invoice, report, and maintenance of its accounting system, remain in compliance with the above regulations. It shall be Sub-recipient's obligation to determine and comply with its governing cost principles, including, without limitation, those governing survey costs, and to ensure all of its Subcontractors' invoices are equally in compliance with these requirements.

C. Indirect Costs and Allocation of Costs. If Sub-recipient proposes to invoice for indirect costs, substantiation of those charges must be in compliance with WRF's "Guidelines for Research Priority Program Proposals," (https://www.waterrf.org/guidelines-and-forms), which include compliance with the applicable cost principles referenced in Section IV.B above.

D. Record Retention. Sub-recipient shall retain all original books and records pertinent to this PFA and the Project for at least three years from the termination of this PFA.

E. Audit and Monitoring.

1. Sub-recipient's use of the Project Funds under this PFA shall be in compliance with the Code, including its Subpart F, Audit Requirements, and may be audited by WRF and its designee. Furthermore, WRF shall have the right, itself or through a designee, to visit Sub-recipient premises or anywhere else performance of the Project takes place, to observe, review, and monitor performance of the Project, as well as application and use of the Project Funds. Accordingly, following a two-business-day prior notice from WRF, Sub-recipient shall provide WRF and its

designee access to its premises, technical staff, supervisors, knowledgeable personnel, computer systems and databases, assistance, original documents, including those required to be maintained under this PFA, and any information related to Sub-recipient's use of the Project Funds and performance under this PFA, to enable WRF's audit and monitoring. WRF's audit rights shall survive termination of this PFA by three years.

2. WRF will keep any proprietary financial, technical, and/or scientific information obtained in the course of performing an audit under this Section in confidence, provided that such material, (a) is appropriately marked as "Confidential," (b) is not already generally known to the public, (c) is not required to be disclosed as a result of a legal proceeding or applicable legal requirement, (d) is not already known to WRF or others without a confidentiality obligation, and (e) is not a Deliverable or Work Product under this PFA.

3. Any deficiencies or non-compliance in Sub-recipient's systems, procedures, record keeping, finances, and performance of other obligations under this PFA discovered in the audit review or monitoring process, or discovered otherwise, shall be a material breach of this PFA subject to the procedures and remedies in Section VII below.

V. PROCUREMENT STANDARDS

A. Procurement Standards. Sub-recipient shall at all times remain in compliance with Subpart D, Procurement Standards, of the Code. Sub-recipient represents and warrants that it is familiar with and able to comply with these standards, which include but are not limited to:

1. Sub-recipient's procurement policies must adhere to the Uniform Grants Guidance.

2. Sub-recipient shall maintain and enforce with its officers, employees, and agents (including Subcontractors) a code of conduct designed to enhance goodwill, ethics, and compliance with laws while performing under this PFA.

3. Sub-recipient shall conduct all procurement transactions in a manner that maximizes open and free competition and in compliance with the restrictions and limitations in this PFA.

4. Sub-recipient shall ensure that its Subcontractors comply with the requirements and restrictions in this Section and in this PFA generally.

5. Sub-recipient shall notify WRF, within two months of the Project Start Date, of all Subcontractor agreements executed between Sub-recipient and the Subcontractors identified in the Project Plan.

VI. IP RIGHTS AND PUBLICATION

A. Work Product.

1. Copyrights. WRF shall own all worldwide copyrights in all the Work Products, including the Project Plan, all Deliverables, and all interim drafts of the foregoing. Sub-recipient shall and hereby does assign exclusively to WRF all right, title, and interest in and to the Work Product and the copyrights embodied therein, and subject to provisions of the Code and 37 CFR 401 which are made part of this PFA by reference except where superseded by this Section VI or the U.S. Federal Grant Agreement.

2. **Distribution Permission**. WRF will provide Sub-recipient with a PDF copy of the Final Report. The Work Product may not be copied, published, adapted, modified, transferred, posted on an intranet or website, or disclosed in any manner except with WRF's prior written approval. WRF granting approval will not be unreasonably withheld, though it may be conditioned. WRF has provided approval in certain circumstances prior to publishing the Final Report. To request approval, refer to our copyright page at www.waterrf.org/Copyright.

3. **License Granted to Sub-recipient**. WRF hereby grants Sub-recipient a non-exclusive, irrevocable, perpetual, royalty-free license to create derivative works, including the use of the Subject Data which is produced as a result of this PFA.

4. WRF Intellectual Property Guidelines for PIs are available at www.waterrf.org/guidelines-and-forms#intellectual-property.

5. PI guidelines for Periodic Report Format and Content and Preparation of Research Reports are available at www.waterrf.org/guidelines-and-forms#deliverable-guidelines.

B. Inventions and Patents.

1. All proprietary or patentable ideas, devices, methods, formulations, designs, and other inventions developed or conceived by or on behalf of Sub-recipient during performing under the Project, including, but not limited to, the right to apply for patent protection thereon and all patents issuing on such applications (collectively, "Inventions"), shall remain the property of Sub-recipient.

2. Sub-recipient shall not withhold any information on, or descriptions of Inventions, whether or not patentable, from Work Products or any Deliverable. Sub-recipient's rights in Inventions shall not limit, delay, restrict, or in any other manner interfere with WRF's right to own, publish, and exercise all other copyrights in the Work Product.

3. All IP rights that were owned and developed by Sub-recipient or third parties prior to the Project Start Date and outside the scope of the Project (collectively, "Preexisting IP"), and which Sub-recipient will use in the performance of the Project or incorporate in whole or in part into any Deliverables, has been fully disclosed and identified by Sub-recipient in the Project Plan. Sub-recipient represents that all Preexisting IP is used with full authorization and permission from its respective owner, and copies of such permissions and licenses shall be provided to WRF by the Project Start Date. Sub-recipient shall obtain all appropriate permissions on WRF's behalf to the extent necessary to enable WRF to exercise its ownership and publication rights in the Work Product, including the Final Report. Such right shall be transferable, sublicensable, and shall not be subject to any payment, restriction, or other obligation on the part of WRF. Such agreements to procure rights for WRF shall be subject to WRF's prior review and approval, at its sole discretion.

4. Sub-recipient hereby grants WRF a fully paid-up, royalty-free, perpetual, irrevocable, world-wide, nonexclusive license, with the right to grant sublicenses, to utilize the Inventions and Preexisting IP for educational or other non-profit purposes.

C. Publication. As the owner of the Work Product, all rights to publish, distribute, publicly perform, publicly display, and publicly present the Work Product belong solely to WRF. Notwithstanding the foregoing, Sub-recipient may publish or present based on the Work Product, in whole or in part, and subject to this Section VI, with the prior written permission of WRF prior to the Final Report being published. Any such

request for permission from WRF must be made to WRF at least three weeks prior to the requesting party's proposed date of publication or presentation based on any portion of the Work Product, and the request must be accompanied by copies of the proposed publication or presentation material. All copies of or presentations based on the Work Product authorized to be made by WRF shall furthermore conspicuously display the following notice:

Source: Author, Title of The Water Research Foundation Work
Copyright [year of publication],
The Water Research Foundation. Reproduced with permission.

D. Student Thesis. In the event a college or graduate student is a part of Sub-recipient work on the Project contemplated by this PFA, and that student completes a thesis, dissertation, or report relating to this Project, solely as part of such student's college or graduate course work submitted to the instructor or educational institution, and in no event for online publication, the student may utilize Subject Data, and/or WRF Intellectual Property.

E. Acknowledgement. Any public presentation or publication by Sub-recipient, including a student writing a thesis, dissertation, or report, based on the Inventions or any portion of the Work Product, if permitted by WRF, shall include a statement substantially as follows:

"Orange County Water District gratefully acknowledges that The Water Research Foundation, Tucson Water, and Orange County Water District are funders of certain technical information upon which this [publication] [manuscript] [presentation] is based. Orange County Water District thanks The Water Research Foundation, Tucson Water, and Orange County Water District for their financial, technical, and administrative assistance in funding the project through which this information was discovered. This material does not necessarily reflect the views and policies of the funders, and any mention of trade names or commercial products does not constitute the funders' endorsement or recommendations thereof."

F. Originality. Sub-recipient represents that it, and its Subcontractors, are the sole creator(s) and originator(s) of all Work Product, Inventions, and Preexisting IP; none of those rights have been bargained, sold, encumbered, licensed, or otherwise transferred to any other party in a manner that would limit or interfere with the requirements and covenants of Sub-recipient under this PFA. Further, Sub-recipient shall ensure that no portion of this Project, including any portion completed by Subcontractors, infringes upon the IP rights of any other person or entity or violates the common law or statutory right, title, or interest of any person or entity. Sub-recipient shall execute and deliver to WRF, and shall cause its Subcontractors and agents to execute and deliver to WRF, all documents and instruments reasonably requested by WRF to further evidence or memorialize the assignment of rights to WRF set forth in this PFA.

VII. TERM AND TERMINATION

A. Term. This PFA is effective as of the Effective Date, and shall continue for the duration of the Project, ending on WRF's delivery to Sub-recipient of the final disbursement of the Project Funds in accordance with Section III.B above. The term of this PFA governing only Sub-recipient's obligations and WRF's rights may be extended beyond final disbursement of the Project Funds, if expressly so stated in an Exhibit to this PFA. This PFA may be terminated earlier for the following reasons:

1. WRF may terminate this PFA by written notice to Sub-recipient at any time in the event of Sub-Recipient's or a Subcontractor's material breach of this PFA or any requirements or timelines in the Project, which breach is not cured within 30 days of WRF's written notice of such breach.

2. WRF may terminate this PFA effective immediately by written notice to Sub-recipient if WRF reasonably determines that the Project is no longer feasible or its performance desired, or that if Sub-recipient is not likely to complete the Project on time.

3. If Sub-recipient, after reasonable consultation with WRF and sufficient exploration of other options and possible mutual agreements to amend this PFA, determines that circumstances beyond its control prevent it from continuing the Project, Sub-recipient may terminate this PFA at any time by written notice to WRF.

4. Any change in legal requirements or entitlements which materially alter Sub-recipient's performance under this PFA, or any change in the availability of funds to WRF, shall warrant good faith renegotiation of the provisions of this PFA impacted by such change. If the parties cannot agree to an amendment to this PFA, at WRF's option, Sub-recipient's performance of the Project may be suspended, or this PFA may be terminated effective immediately by WRF's written notice.

5. If termination occurs under this Section, Sub-recipient shall cease all work as of the notice of termination and shall prepare and submit to WRF a final invoice and accounting of expended and non-cancellable funds as of the date of receipt of the notice of termination. Any portion of the Project Funds that was prepaid to Sub-recipient, but which remains unspent, or which corresponds to Deliverables rendered unusable by Sub-recipient's material breach or termination of this PFA, shall be returned to WRF with the final invoice. WRF shall pay any amount owed under the final invoice, if reasonably accepted by WRF. Sub-recipient shall be entitled to compensation for all satisfactory and authorized work completed as of the termination date, provided that all Work Product corresponding to the invoiced amounts have been delivered to WRF, and do not exceed the total project funds.

6. **Return of IP**. Sub-recipient shall provide to WRF legible copies of all Work Product (including unencrypted source code and object code of any computer software program and programmer's notes and documentation) in a format reasonably designated by WRF within 30 days of any party's delivery of a notice of termination hereunder, whether or not a cure period is provided. Further, at the same time, Sub-recipient shall provide copies and originals in whatever medium and format is reasonably designated by WRF. No further payments will be made unless Sub-recipient fully complies with the foregoing requirements.

VIII. DISPUTE RESOLUTION

A. The parties have chosen to remain silent.

IX. STANDARD TERMS AND CONDITIONS

A. Survival. All terms which by their nature and intent are required to be performed after termination of this PFA shall survive to the extent necessary to enable their fulfillment.

B. Quality Assurance. Sub-recipient shall use its best efforts to ensure that all data and test results, regardless of the source of such data and test results, developed or collected during this PFA and

included, or relied upon, in the Final Report, are verified and accurate to the best of its knowledge, information, and belief.

C. Standard of Performance. At all times, all obligations performed by Sub-recipient or by any Subcontractors pursuant to this PFA shall be performed in a manner consistent with professional and industry standards, and in compliance with all laws, regulations, and other requirements governing such activities.

D. Indemnification. Sub-recipient shall be responsible for, and shall hold harmless and indemnify WRF, all other co-funders of the Project, and their officers, directors, affiliated organizations, employees, agents, volunteers, and publisher, if any, from any and all liability, obligation, damage, loss, cost, claim, lawsuit, cause of action, or demand whatsoever of any kind or nature, including, but not limited to, attorneys' fees and costs ("Claims"), arising from (1) any negligent actions, or omissions, or willful misconduct of Sub-recipient, its officers, directors, Subcontractors, employees, independent contractors, agents, or other related entities or individuals; (2) any use or misuse of IP claimed to be owned by another; or (3) any breach of this PFA by Sub-recipient. If Sub-recipient or any Subcontractor is a governmental or quasi-governmental entity that is by law prohibited from indemnifying others, this Section IX.D is modified to the extent that will impose the maximum available liability and responsibility on Sub-recipient. Sub-recipient shall require all parties involved in the performance of this PFA that are not prohibited from indemnifying others to so indemnify WRF through a written agreement acceptable to WRF.

E. Insurance. Sub-recipient shall maintain a financially sound program of self-insurance or commercially purchased liability insurance covering Sub-recipient if it is negligent and failed to adhere to generally accepted industry standards and negligent actions or omissions of any and all of Sub-recipient's officers, directors, employees, agents, and independent contractors, and/or Subcontractors in the amount of $1,000,000.00. Proof of such insurance shall be presented to WRF pursuant to the schedule detailed by Exhibit B. The proof of insurance document shall clearly specify the Project by number and title on the insurance certificate.

F. Worker's Compensation. Sub-recipient and all Subcontractors shall maintain Worker's Compensation Insurance which complies with the applicable state laws. Proof of such insurance shall be presented to WRF pursuant to the schedule detailed by Exhibit B.

G. Authority. The individuals executing this PFA on behalf of their respective parties hereby represent and certify that they have the right, power, legal capacity, and appropriate authority to enter into this PFA on behalf of the entity for which they sign below.

H. Modifications. No provision, requirement, or term of this PFA may be modified, supplemented, or amended, nor may it be waived or discharged, except in writing, signed by all parties. A written waiver of a breach of one provision in this PFA shall not operate as a waiver of a subsequent breach of the same provision.

I. No Assignment. Sub-recipient shall not assign this PFA in whole or in part, including by operation of law, merger, reorganization, or change in ownership or control. Any unauthorized assignments shall be void.

J. Sub-Contracting. Sub-recipient may only utilize Subcontractors under this PFA that have been disclosed in the Project Plan and are pre-approved by WRF.

1. Sub-recipient shall require any and all Subcontractors to comply with all applicable qualifications and terms of this PFA prior to working on the Project in any manner. All obligations of Sub-recipient apply equally to the Subcontractor(s). Sub-recipient shall at all times remain primarily responsible and liable to WRF for the acts and omissions and performance of this PFA by its Subcontractors, and their agents, employees, officers, directors, affiliates, and other representatives.

K. Integration. This PFA, including all attachments hereto, and the documents and requirements referenced herein, contains the entire understanding between the parties relating to this PFA. This PFA supersedes all prior and contemporaneous understandings, representations, negotiations, and agreements between the parties whether written or oral. In the event of a conflict between the terms of an Exhibit or other document referenced herein and this PFA, the terms of this PFA shall control.

L. Severability. The provisions of this PFA shall be severable, and the invalidity, illegality, or unenforceability of any provision of this PFA shall not affect the validity or enforceability of any other provisions. If any provision of this PFA is found to be invalid, illegal, or unenforceable, such provision shall be modified to the extent necessary to render it enforceable, and as modified, this PFA shall remain in full force and effect.

M. Notices. Any notice, request, demand, or communication required or allowed under this PFA shall be sent in writing to the addresses and contact information for the parties set forth in Exhibit B, and shall be deemed sufficiently given upon delivery, if delivered by hand (signed receipt obtained), or three days after posting if properly addressed and sent certified mail return receipt requested, or upon receipt if sent via facsimile or email, if delivery can be confirmed by the sender.

N. Force Majeure. No party will be liable for any delay or default in performance caused by conditions beyond its control, including, but not limited to, acts of God; Government restrictions; continuing domestic or international problems such as wars, threats of terrorism, or insurrections; strikes; fires; floods; work stoppages and embargoes; provided; however, that any party will have the right to terminate this PFA upon 30 days prior written notice if another party's delay or default due to any of the above-mentioned causes continues for a period of two months.

O. Limitation of Liability. IN NO EVENT SHALL WRF OR ANY OF ITS OFFICERS, DIRECTORS, EMPLOYEES, AFFILIATES, AGENTS, OR REPRESENTATIVES BE LIABLE TO ANY OTHER PARTY, OR ANY THIRD PARTY FOR ANY SPECIAL, INDIRECT, INCIDENTAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES OR LOSS OF GOODWILL OR EXPECTED PROFITS OR REVENUES, IN ANY WAY RELATING TO THIS PFA, INCLUDING, WITHOUT LIMITATION, THE FAILURE OF ESSENTIAL PURPOSE, EVEN IF IT HAS BEEN NOTIFIED OF THE POSSIBILITY OR LIKELIHOOD OF SUCH DAMAGES OCCURRING, AND WHETHER SUCH LIABILITY IS BASED ON CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, STATUTE, PRODUCTS LIABILITY, OR OTHERWISE. IN NO EVENT SHALL WRF'S LIABILITY HEREUNDER EXCEED THE FUNDING ALREADY MADE UNDER THIS PFA.

P. Applicable Law/Venue. This PFA is written and shall be construed in accordance with and governed by the laws of Colorado unless U.S. Federal law applies. However, if Sub-recipient is exclusively governed by U.S. Federal or state laws overriding Colorado laws (e.g., if Sub-recipient is a quasi-public or public entity), this PFA shall be construed and interpreted in accordance with such laws to the extent of such exclusivity. Any arbitration action under this PFA must be brought in Denver, Colorado and enforcement of arbitration decisions and injunctive relief must be brought in a State Court or U.S. Federal District Court located in Denver, Colorado.

Q. Counterparts. This PFA may be executed and delivered in counterparts, and by facsimile and email, and each shall be valid as if all parties had executed the same document.

R. Relationship. The parties are independent contractors, and no agency, employer-employee partnership, or joint venture relationship is intended or created by this PFA. No party shall have any right or authority to assume or create any obligation, commitment, or responsibility for or on behalf of the others, except as the other may expressly authorize in writing. No party shall be eligible to participate in another's benefit program. Sub-recipient shall be solely responsible for the performance and compensation of its employees, for withholding taxes, and providing unemployment and other benefits.

S. WRF maintains a non-discrimination policy. For more information, please see the following link: www.waterrf.org/non-discrimination-policies-and-complaint-procedures.

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Project 5340

Title: Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System

IN WITNESS, WHEREOF, the parties have caused this PFA to be signed and dated as shown below.

The Water Research Foundation

By: Peter C. Grevatt, PhD
Title: Chief Executive Officer

Date: _____

Orange County Water District

By: John Kennedy
Title: General Manager

Date: _____

The Water Research Foundation

By: Lola Olabode, MPH, BCES
Title: WRF Research Manager

Date: _____

Above signed has read and understands the terms, conditions, and deliverables of this PFA.

Orange County Water District

By: Meeta Pannu, PhD
Title: Principal Investigator

Date: _____

Above signed has read and understands the terms, conditions, and deliverables of this PFA.

EXHIBIT A
PROJECT PLAN

Project 5340

Title: Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System

(PLEASE SEE ATTACHMENT BELOW)

EXHIBIT B
TASKS AND SCHEDULE

Project 5340

Title: Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System

TASK	**DUE DATE (1st or 15th of Month)**
Project Start	[Start date]
Project Information Summary	30 days after start date
Proof of Insurance	30 days after start date
Periodic Report 1 & Invoice	3 months after start date
Periodic Report 2 (Technical Summary & Web Update) & Invoice	6 months after start date
Periodic Report 3 & Invoice	9 months after start date
Periodic Report 4 (Technical Summary & Web Update) & Invoice	12 months after start date
Periodic Report 5 & Invoice	15 months after start date
Periodic Report 6 (Technical Summary & Web Update) & Invoice	18 months after start date
Periodic Report 7 & Invoice	21 months after start date
Periodic Report 8 (Technical Summary & Web Update) & Invoice	24 months after start date
Draft Deliverables & Invoice	27 months after start date
Final Deliverables	5 months after draft report
Letter of Confirmation from each Participating Utility review & in kind	5 months after draft report
Final Invoice & Project End	5 months after draft report
(End of Deliverables)	

Note: *Please submit one* ***electronic copy*** *of each Periodic Report and Draft Report. Submit the Final Report in electronic copy in* ***MS Word format****. With each of these Reports, you must submit an invoice using the form in Exhibit D, accompanied by a cover letter on your company letterhead. All Reports and Invoices should be sent to the WRF Research Manager with a copy to the Project Administrator identified in Exhibit B WRF Key Contacts.*

CONTACTS

WRF Key Contacts:
The Water Research Foundation
6666 West Quincy Avenue
Denver, CO 80235

Name	Title	Phone	Email
Lola Olabode, MPH, BCES	WRF Research Principal	571-384-2109	lolabode@waterrf.org
Pam Prott	Project Administrator	571-384-2113	pprott@waterrf.org
Justin Papka	Director, Contracts Administration	303-734-3478	jpapka@waterrf.org
Olivia Painter	Contracts Administrator	303-734-3424	opainter@waterrf.org

Sub-recipient Key Contacts:

Name & Title	Project Role	Organization & Address	Phone	Email
Meeta Pannu, PhD	PI	Orange County Water District 4060 E. La Palma Ave Anaheim, CA 92807	714-378-3370	mpannu@ocwd.com
John Kennedy, General Manager	Authorized Rep.	Orange County Water District 18700 Ward Street Fountain Valley, CA 92708	714-378-3304	jkennedy@ocwd.com
Melissa Ochoa, Controller	Accounting	Orange County Water District 18700 Ward Street Fountain Valley, CA 92708	714-378-3283	mochoa@ocwd.com
Ashlie Valencia, Contracts Administrator	Contracts	Orange County Water District 18700 Ward Street Fountain Valley, CA 92708	714-378-3230	avalencia@ocwd.com

Co-Principal Investigator(s):

Name & Title	Organization & Address	Phone	Email
Megan Plumlee	Orange County Water District 18700 Ward Street Fountain Valley, CA 92708	714-378-3270	mplumlee@ocwd.com

Each party shall provide written notice of changes in contact persons, addresses, telephone, and email addresses. The Principal Investigator, Co-Principal Investigator, or any Subcontractor may only be changed with the prior written approval of WRF.

EXHIBIT C
BUDGET SUMMARY

Project 5340

Sub-recipient: Orange County Water District

Title: Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System

WRF shall not have any obligation for payment of invoices for costs incurred by Sub-recipient after the foregoing end date. All Report and invoice submittals shall be sent to the WRF Research Manager with a copy to the Project Administrator identified as WRF Key Contacts in Exhibit B.

Payments to Sub-recipient will be issued to Sub-recipient organization and mailed to the address shown in the first paragraph of this funding agreement. If payment of an invoice requires a purchase order number, Sub-recipient agrees to provide such number.

Project Start Date TBD **End Date:** TBD

Financial Obligations for Project

a. WRF agrees to provide Award Funds:	$150,000.00
b. Co-funder(s) agree to provide to WRF:	$150,000.00
c. Sub-recipient agrees to provide Cost Share:	$39,352.00
d. Sub-recipient agrees to provide in-kind:	$99,400.00
e. Total Project budget is:	$438,752.00

All amounts are in U.S. dollars.

ORGANIZATION	Award Amount/Cash to WRF	Cost Share	In-Kind Amount
Participants			
Tucson	$50,000	$0.00	$0
Xylem	$0.00	$0.00	$15,500
Forever Analytical Services (PIGE)	$0.00	$0.00	$5,400
State Resources Control Board via Babcock	$0.00	$0.00	$68,500
Yorba Linda Water District	$0.00	$0.00	$5,000
Babcock Analytical cost	$0.00	$0.00	$5,000
Sponsor/Sub-recipient			
Orange County Water District Manmeet ("Meeta") Pannu	$100,000.00	$39,352.00	$0
The Water Research Foundation	$150,000.00	$0.00	$0
TOTALS	**$300,000.00**	**$39,352.00**	**$99,400**

Total Project Budget	**$438,752.00**		

Award Funds Not To Exceed:	**$300,000.00**
Draft Report & Invoice Retainage:	**$30,000.00**
Final Report & Invoice Retainage:	**$30,000.00**

EXHIBIT D
INVOICING REQUIREMENTS

Project 5340

Title: Estimating PFAS Using Total Fluorine Methods in Influent and Effluents from a Pilot-Scale Adsorption System

Invoices must be submitted in the form posted on the guidelines and forms page under Project Contract Exhibits:

www.waterrf.org/guidelines-and-forms#exhibit-d

12

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Patel/A. Waite

Budgeted: Yes
Budgeted Amount: $200,000
Cost Estimate: $200,000
Funding Source: General Fund
Program/Line Item No. 1050.53001
General Counsel Approval: N/A
Engineers/Feasibility Report: N/A
CEQA Compliance: N/A

Subject: AUTHORIZE ISSUANCE OF REQUEST FOR PROPOSALS FOR FLOW REVERSAL REVERSE OSMOSIS RETROFIT CONSTRUCTABILITY STUDY

SUMMARY

Pilot testing conducted by Staff from 2021 – 2023 of flow reversal reverse osmosis (FRRO) proved the technology could consistently operate at 90% recovery and potentially increase GWRS production by 9,000 acre-feet per day, and preliminary cost estimates indicate retrofitting the existing reverse osmosis (RO) process to FRRO may be economically viable. Since additional electrical and mechanical equipment is required to facilitate retrofitting a full-scale RO unit, and the GWRS is fully built-out following final expansion completion in 2023, a study is necessary to validate preliminary cost estimates and evaluate the benefits of retrofitting one RO unit versus all 27 of the existing RO units. This effort is part of OCWD's Resilience Plan Priority Project No. 6c: "Demonstration Scale Test of Flow Reversal RO to Enhance GWRS Recovery via Retrofit of One RO Unit," and staff recommends authorizing issuance of a Request for Proposals to study the constructability of retrofitting the existing GWRS RO units to FRRO.

Attachments:
- Presentation
- Draft Request for Proposals for the Flow Reversal Reverse Osmosis Retrofit Constructability Study

RECOMMENDATION

Agendize for June 18 Board meeting: Authorize issuance of Request for Proposals for the Flow Reversal Reverse Osmosis Retrofit Constructability Study.

BACKGROUND/ANALYSIS

The RO process is a major component of the GWRS multi-barrier treatment system, removing salts, viruses, and bacteria to produce distilled permeate water. Each of the 27 existing RO units produce 5 million gallons per day (mgd) of permeate water for a total production of 130 mgd of purified water. Purified water production from the GWRS is predominantly limited by the RO system's current maximum recovery of 85%, leaving

15% of the RO concentrate discharged via OC San's ocean outfall. Increasing RO recovery represents a significant opportunity to increase GWRS production and OCWD's water supply resilience.

Staff have investigated various high-recovery reverse osmosis technologies through literature reviews, bench-scale tests, and pilot scale tests. One of these technologies is FRRO, offered by ROTEC, Ltd. FRRO operates based on the concepts of flow reversal and block rotation that disrupt membrane scale formation, the primary factor limiting RO recovery. Feed flow reversal reverses the flow direction of the pressure vessel, and block rotation switches a 1st stage "block" to 3rd stage and vice versa at a regular frequency. By operating in this sequence, additional permeate can be squeezed from the RO process, and concentrate discharge is minimized. The major advantage of FRRO versus other high-recovery RO technologies is its ability to retrofit existing RO units without increasing the overall unit's footprint. The retrofit would typically include additional pressure vessels, booster pump and actuated valves for flow reversal and block rotation as well as ancillary electrical and pneumatic equipment to facilitate the additional equipment.

A pilot-scale test of FRRO was conducted at OCWD over an 18-month period from 2021 to 2023. The test system was able to mimic the operations of a full-scale system with a 3-stage array. Results from the pilot system found that 90% recovery was achievable when receiving the full-scale micro/ultrafiltration (MF/UF) effluent that was supplied by either OC San Plant No. 1 secondary effluent only (typically lower total dissolved solids [TDS]) or combined OC San Plant No. 1 and 2 secondary effluent (typically higher TDS and representing the blend that OCWD receives today and in the future) with a block rotation time of 1 hour for the first and third stage pressure vessels. At higher recoveries, the pilot system pressures began significantly rising above acceptable thresholds, although further optimizations could improve system reliability. The pilot system was unable to operate in a "brine concentrator" mode where the unit treated concentrate from the full-scale RO unit operating at 85% recovery to produce permeate directly from concentrate. This was piloted as a potential alternative to retrofitting the main RO units.

Based on the pilot scale test, FRRO operating in a 3-stage array was able to meet the District's operational objectives while operating at a higher recovery. Staff also developed preliminary cost estimates to retrofit a full-scale RO unit to FRRO. The preliminary cost estimates showed a unit retrofit was economically viable. The next phase of operational tests that could be considered would require retrofitting one existing full-scale RO unit to FRRO and operating the unit for an extended period (e.g., one year). By operating at full-scale, the operational parameters identified in the pilot test can be further evaluated and optimized, operators will have the opportunity to receive hands-on experience, and real operating costs can be assessed. Further RO unit retrofits could be considered after successfully completing this full-scale operational test phase. A final build-out scenario could include all 27 existing RO units retrofitted to FRRO operating at a recovery of 90% or more. At 90% recovery, one full-scale FRRO unit could produce an additional ~0.3 mgd of purified water and all 27 units could produce an additional ~8 mgd, or 9,000 acre-feet per year, of purified water.

There are several constraints to consider prior to initiating a full-scale retrofit. First, the RO units constructed in the original GWRS construction (15 units), initial expansion (6 units), and final expansion (6 units) all differ from each in terms of mechanical, structural, and electrical configurations; therefore, retrofitting one unit may not be immediately replicable to other units. Second, the FRRO system block rotation process requires additional pumps, motors, valves, electrical equipment and pneumatic air compressor systems. The GWRS is fully built out and limited space remains for new equipment. Although space could be available to retrofit one unit, retrofitting the entire RO facility should be considered in advance. A constructability study assessing constraints and cost-benefits associated with retrofitting one unit as well as all 27 existing RO units, and to determine the ideal RO unit for a full-scale retrofit, is recommended before the District chooses to pursue full-scale construction of an FRRO retrofit at GWRS.

This effort is part of OCWD's Resilience Plan Priority Project No. 6c: "Demonstration Scale Test of Flow Reversal RO to Enhance GWRS Recovery via Retrofit of One RO Unit."

Staff recommends authorization to issue a Request for Proposals for the Flow Reversal Reverse Osmosis Retrofit Constructability Study.

PRIOR RELEVANT BOARD ACTION(S)

2/19/25, R25-2-19 – Receive and File OCWD Resilience Plan and Authorize Filing of a Notice of Exemption

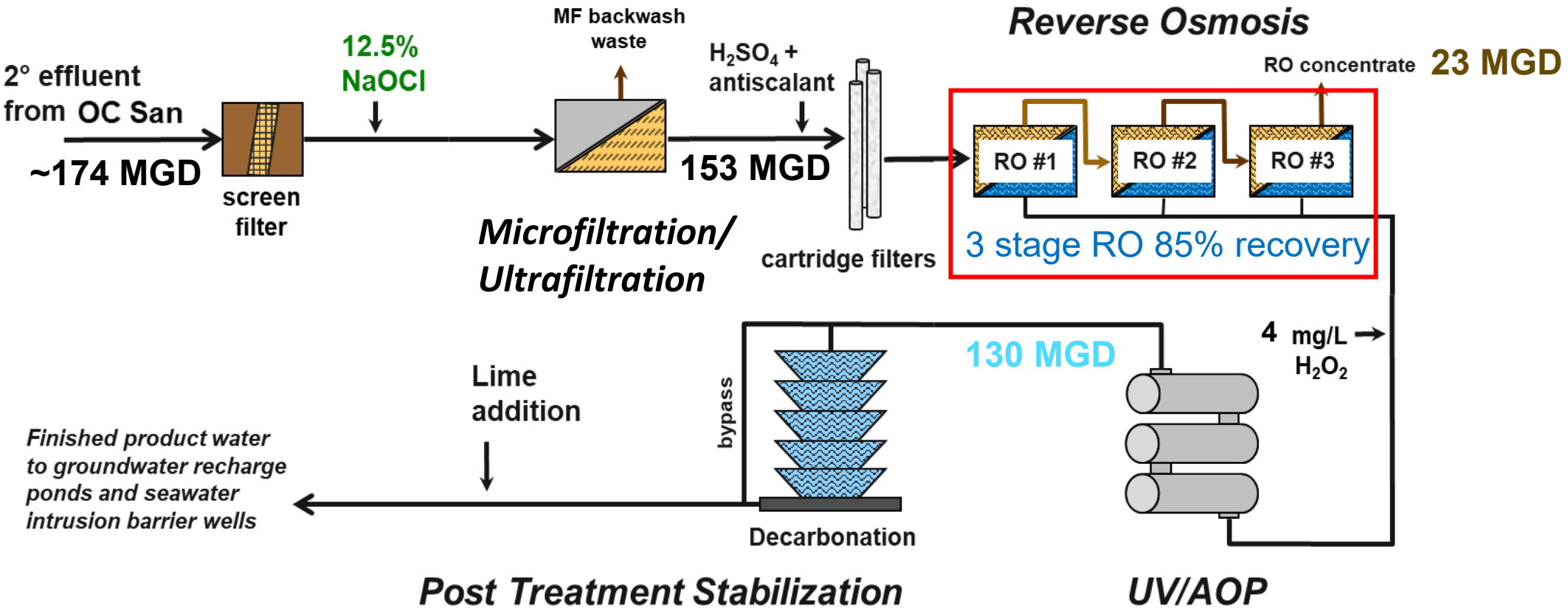
Flow Reversal Reverse Osmosis Retrofit Constructability Study

Water Issues Committee
June 11, 2025

Squeezing More Out of GWRS RO

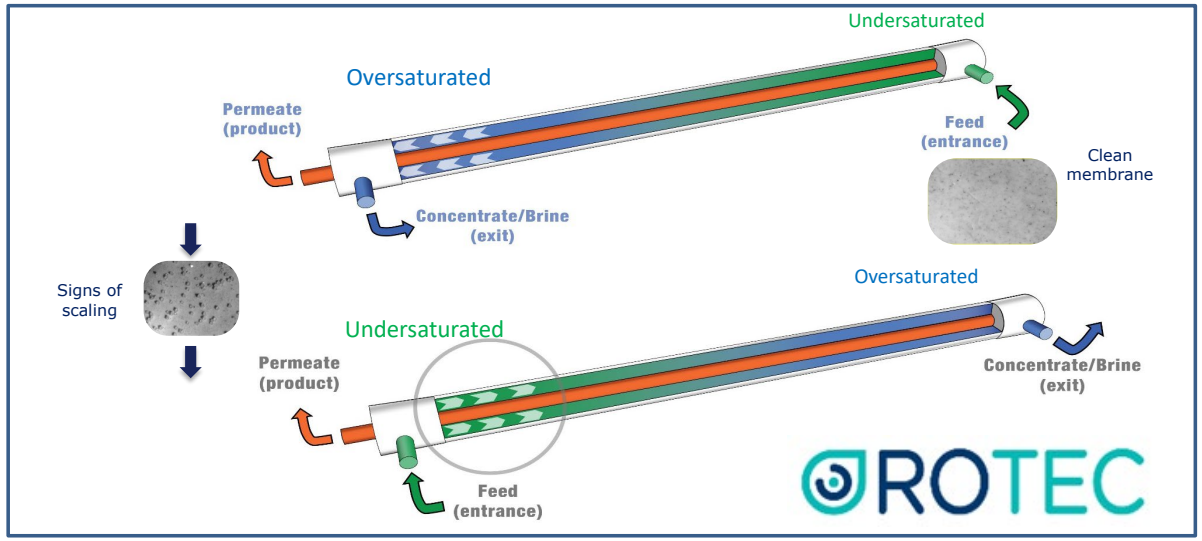
G | W | R | S

GROUNDWATER REPLENISHMENT SYSTEM

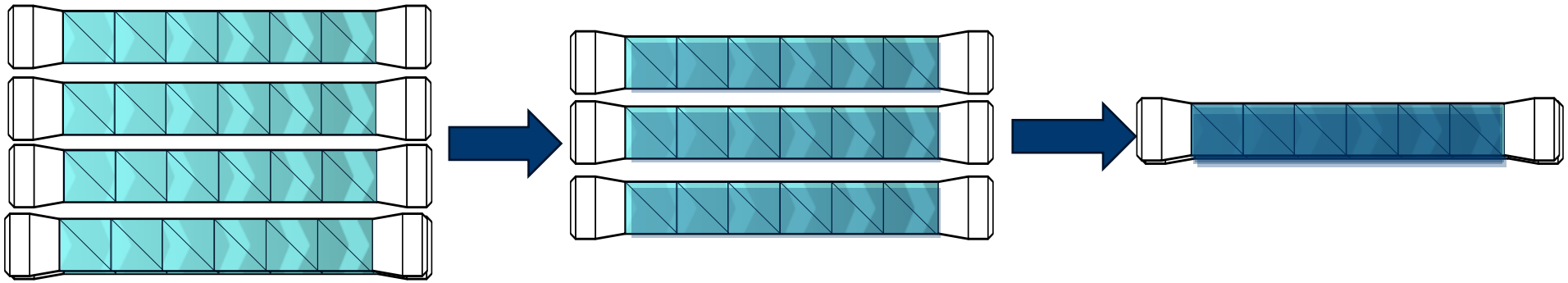


Flow-Reversal Reverse Osmosis (FRRO) Process Description

Feed Side Flow-Reversal



Block Rotation



Results from the 2021-2023 FRRO Pilot Study

- Achieved ~89-90% stable recovery treating GWRS MF/UF filtrate
- Membrane cleaning approach was optimized: 3-months between chemical cleanings (CIPs)
  - *GWRS RO CIP interval is 6-12 months*
- Treating RO concentrate directly with FRRO was ***not*** sustainable
- Initial unit cost (capital + O&M) estimates for full-scale retrofit: ~$800/AFY for additional 0.3 MGD (~8 MGD if retrofitting all RO units)

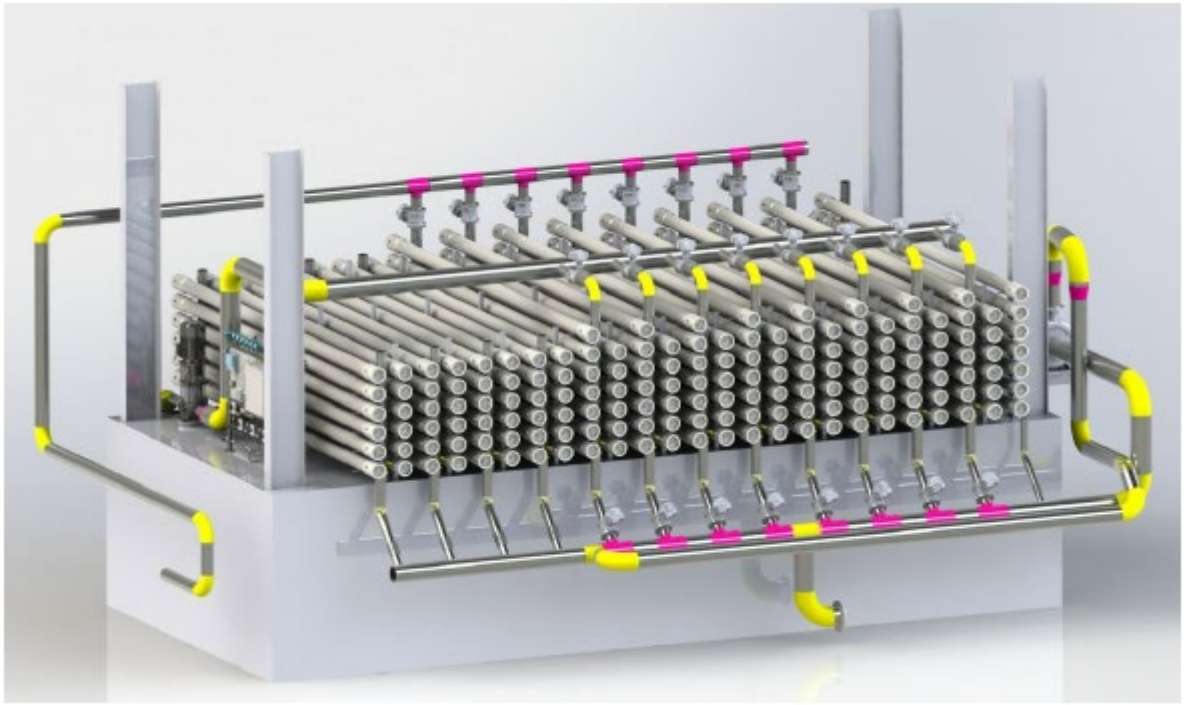
Resilience Plan Priority Project No. 6c: "Demonstration Scale Test of Flow Reversal RO to Enhance GWRS Recovery via Retrofit of One RO Unit."

Full-Scale Construction Constraints

- GWRS is fully built-out: space is very limited to install the necessary additional equipment to operate FRRO. Constructing one retrofit can be possible but it is unclear if the entire facility could be retrofitted without significant additional cost.
- Structural and mechanical systems vary significantly between the original construction (RO Trains A-E, 15 units), initial expansion (Trains F-G, 6 units), and final expansion (Trains H-I, 6 units). The construction for one retrofit may not be replicable to another.
- Other constraints like operator accessibility, automatic control coordination with a proprietary technology, and regulatory approval must also be considered.

Next Step:
Full-Scale FRRO Retrofit Constructability Study

- Conduct constructability study to evaluate:
  - Analyze costs and constraints to retrofit 1 RO train and identify best candidate for full-scale
  - Analyze costs and constraints to retrofit all 27 RO trains
  - Recommend contracting method (Original Equipment Manufacturer vs General Contractor)
  - Prepare life-cycle cost analysis
  - Develop conceptual design for 1 retrofit
- FY 25/26 Budget: $200k



Recommendation

- Authorize issuance of Request for Proposals for the Flow Reversal Reverse Osmosis Retrofit Constructability Study.

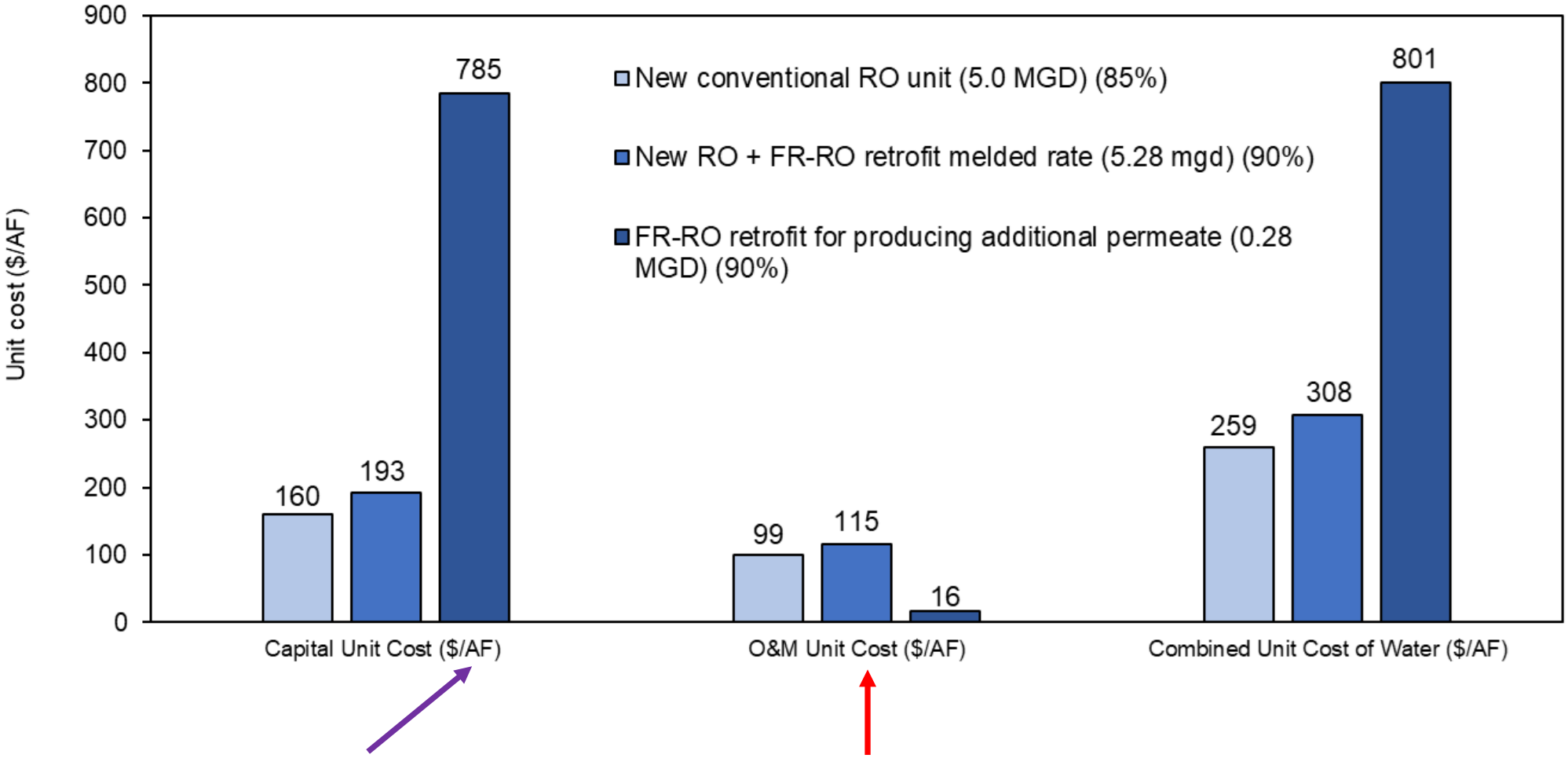
Thank You!

ocwd.com
(714) 378-3200

18700 Ward St.
Fountain Valley, CA 92708

@OCWaterDistrict

Preliminary Full-Scale FR-RO Retrofit Cost Estimate

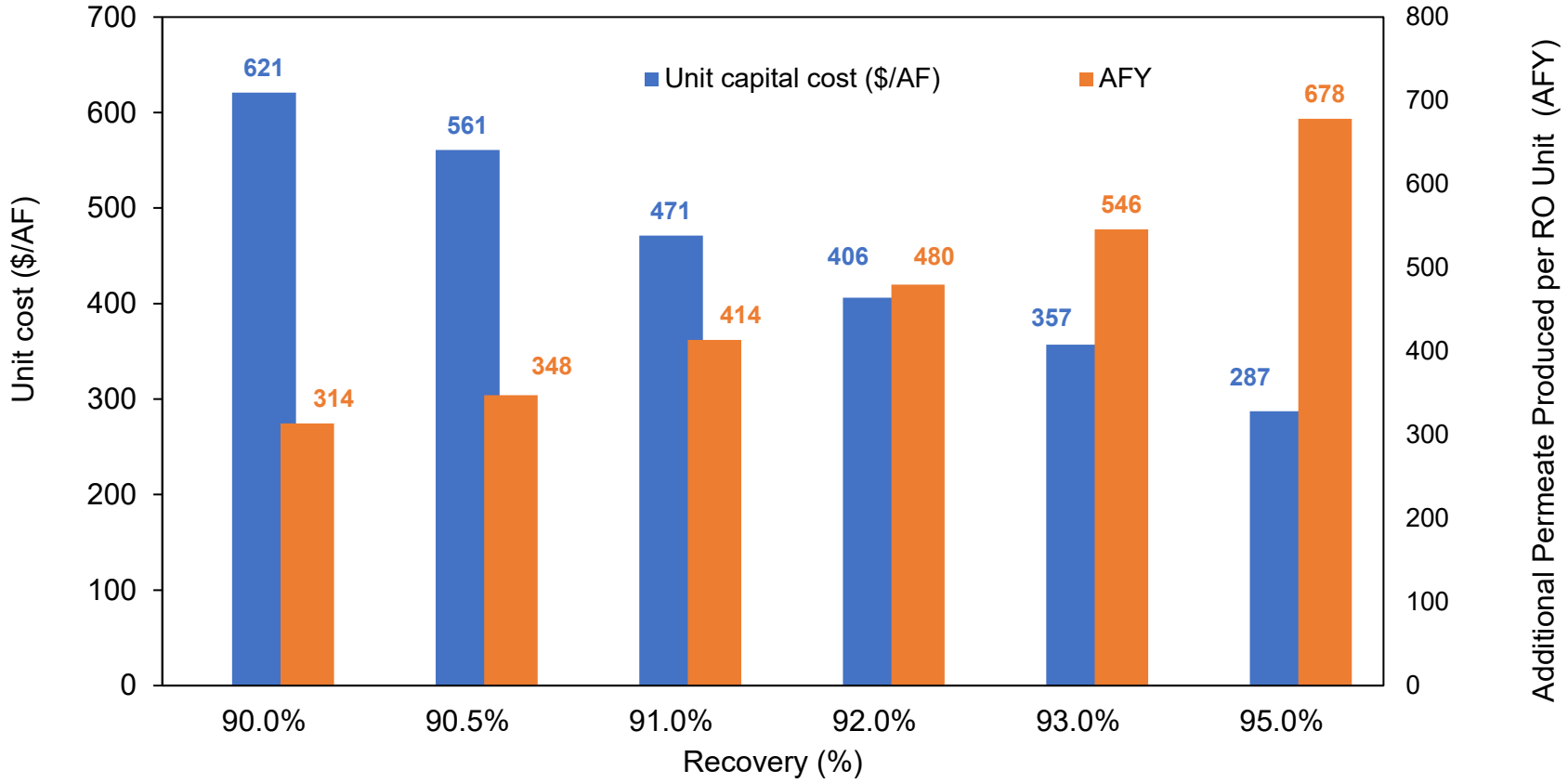


The melded rate new RO unit + retrofit capital cost

The O&M cost is higher due to more frequent cleanings and higher electrical power consumption (due to membrane fouling)

Preliminary Full-Scale FR Retrofit Cost Estimate

Capital cost for retrofit



Capital cost for retrofit heavily contingent on % recovery, i.e., additional permeate produced (AFY). If advancements in FR technology, antiscalant, or membrane performance led to increased recovery, the unit capital cost will greatly reduce.

"Squeeze out the last drop of water"

ORANGE COUNTY WATER DISTRICT

REQUEST FOR PROPOSALS
RFP-25-022

FOR
Flow Reversal Reverse Osmosis Retrofit Constructability Study

ISSUED: June 2025

PROPOSALS DUE:

July XX at 2 PM PT

TABLE OF CONTENTS

Section Page

TABLE OF CONTENTS

The Orange County Water District ("OCWD" or District) is seeking proposals from qualified and experienced firms to provide professional consulting services to develop a flow reversal reverse osmosis (FRRO) retrofit constructability study. The study will evaluate the constructability of retrofitting an existing 5-million gallon per day (mgd) permeate production potable reuse reverse osmosis unit at the OCWD Groundwater Replenishment System (GWRS) to high-recovery FRRO to increase recovery from existing 85% to 90% or more, complete a life-cycle cost estimate, and provide recommendations for full-scale retrofit. OCWD intends to evaluate the proposals received and enter into a One-Year Professional Services Agreement ("Agreement") with the qualified firm. The work is expected to commence on August 1, 2025. This Agreement will be for a minimum term of one (1) year for the period from August 1, 2025 to June 30, 2026. The Agreement will be monitored closely for acceptable services rendered throughout the Agreement term. OCWD will have the option to terminate the contract in whole or in part during the Agreement term, for any reason or no reason, without penalty, upon notice. The proposer will not be entitled to lost profits or any other compensation not earned prior to the time of termination.

This Request for Proposal ("RFP") describes the required scope of services, the information that must be included in the proposal, and the proposal selection process. Proposers are encouraged to carefully review this RFP in its entirety prior to submitting their proposals. Failure to submit information in accordance with these requirements and procedures may be cause for disqualification.

1. INTRODUCTION

The OCWD is an internationally recognized leader in the water industry that was formed in 1933 by the California State Legislature which entrusted OCWD to guard and protect the region's groundwater basin and limited water supply. OCWD's mission is to provide a reliable supply of high-quality water that is sourced in an environmentally responsible manner to the more than 2.5 million residents and businesses within the 270 square mile service area of Orange County, California that OCWD serves. OCWD manages three of Southern California's greatest water supplies, this includes protecting rights to the Santa Ana River, managing and replenishing the Orange County Groundwater Basin, and operating and maintaining the Groundwater Replenishment System (GWRS), the world's largest advanced water purification system for potable water reuse. More information regarding the OCWD can be found at www.ocwd.com.

2. SOLICITATION SCHEDULE

The solicitation schedule is summarized in the table below. OCWD reserves the right to modify the schedule below at its discretion. Proper notification changes will be made to interested proposers.

RFP Issued	June 2025
Optional Pre-Proposal Meeting	<ENTER DATE and TIME PT
Questions Due Date	<ENTER DATE and TIME PT>

Proposals Due	July XX at 2 PM PT
Agreement Award Date:	<Enter Date (e.g. Board approve month – October 2024)>

2.1. OPTIONAL PRE-PROPOSAL MEETING

The optional pre-proposal meeting will be held on <ENTER DATE and TIME PT, at the office of the Orange County Water District located at 18700 Ward Street, Fountain Valley, CA 92708. Firms interested in submitting proposals are required to attend the pre-proposal meeting.

Meeting participants will be required to sign in. A copy of the sign-in sheet will be posted on the OCWD website at, https://www.ocwd.com/working-with-us/rfp-contracts/, after the pre-proposal meeting.

2.2. QUESTIONS CONCERNING REQUEST FOR PROPOSALS

All questions regarding the RFP must be submitted in writing before the deadline due date of **<ENTER DATE and TIME PT>**. All questions must be titled "Question – RFP-25-022 Flow Reversal RO Retrofit Constructability Study". Responses to questions received from prospective proposers will be formally documented in a Question and Answer (Q&A) table that will be posted on the OCWD website: https://www.ocwd.com/working-with-us/rfp-contracts/. The Q&A table will be updated regularly as questions are received from prospective proposers. Questions received after the questions due date will not be considered.

Attention: Ashlie Valencia, Contracts Administrator
Email: procurement@ocwd.com

2.3. DEADLINE FOR PROPOSALS

Three (3) hard copies and one (1) electronic flash drive copy of the proposal must be received in a sealed envelope by OCWD no later than **July XX at 2 PM PT** or such later time that OCWD may announce by an addendum at any time prior to the proposal deadline. The envelope shall be plainly marked on the exterior "Proposal for **RFP-25-022 Flow Reversal Reverse Osmosis Retrofit Constructability Study**" and with the name, company name, and address of the proposer.

Proposals must be mailed or delivered in person or via courier services at the District office listed below. To deliver submittal packages in person or via courier, please notify the guard at the main gate for proposal drop off. Sealed envelopes will be timestamped upon receipt at the receptionist desk.

Orange County Water District
Administration Office Building
Attention: Ashlie Valencia, Contracts Administrator
Address: 18700 Ward Street

Fountain Valley, CA 92708

It is the Proposer's responsibility to ensure that proposals are received prior to the submittal deadline. Proposal packages should also include all signed Acknowledgment of Addendum forms that may be issued by OCWD as part of this RFP process, as further described below. Proposals received after the deadline will not be considered under any circumstances. FAXED OR E-MAILED SUBMISSIONS WILL NOT BE ACCEPTED. The OCWD will not be responsible for the proper identification and handling of any proposals submitted incorrectly. Only responses properly submitted to OCWD will be considered. OCWD reserves the right to reject any and/or all responses received. There will be no formal opening of the proposals.

2.4. PRE-SUBMITTAL ACTIVITIES

The District reserves the right to revise the RFP prior to the date the Proposals are due. Addendums to the RFP shall be posted on the OCWD website: https://www.ocwd.com/working-with-us/rfp-contracts/ for all interested Proposers. The District reserves the right to extend the date by which the Proposals are due.

3. PROJECT BACKGROUND AND DESCRIPTION

The OCWD GWRS Advanced Water Purification Facility located in Fountain Valley, California, is a globally recognized potable reuse facility capable of producing up to 130 mgd of high-quality recycled water to support water demands of a population of approximately 2.5 million people. The GWRS employs a multi-barrier treatment process to purify a blend of secondary effluent provided by the Orange County Sanitation District (OC San) Plant 1 activated sludge systems and Plant 2 trickling filter systems. The multi-barrier process includes microfiltration or ultrafiltration, RO, and ultraviolet-advanced oxidation process (UV-AOP) utilizing hydrogen peroxide and ultraviolet light. Partial decarbonation and lime addition are utilized after UV-AOP to reduce water corrosiveness. Finished purified water is used for groundwater recharge and to supply a seawater intrusion barrier. A process schematic of the treatment system is shown in Figure 1.

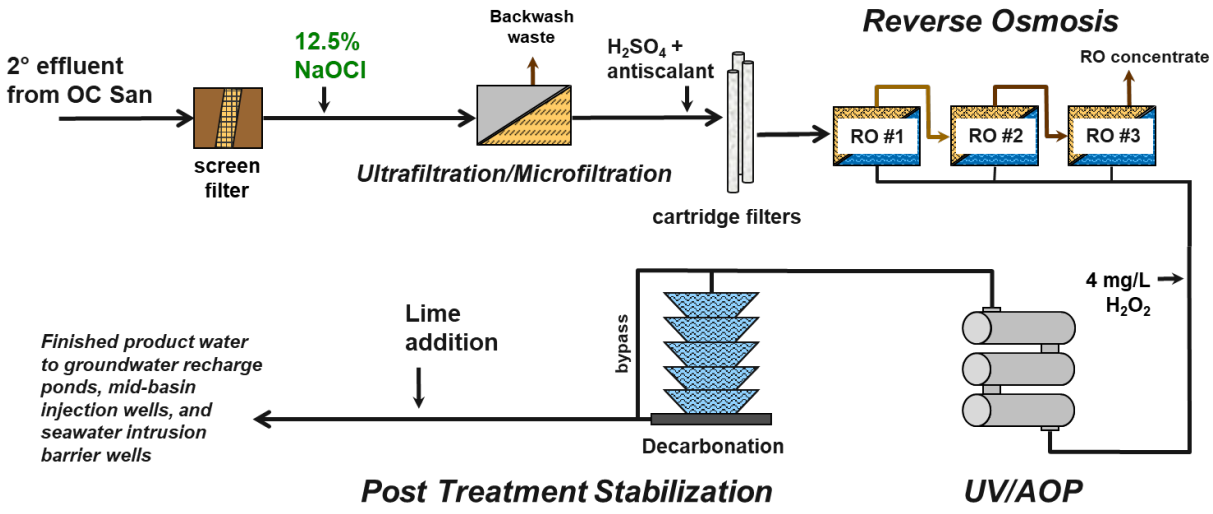


Figure 1. OCWD GWRS Advanced Water Purification Facility Process Schematic

The RO process at GWRS encompasses 27 parallel RO units, each producing 5 mgd of high-quality RO permeate at 85% recovery. RO units are arranged in banks of three parallel units labeled Trains A through I. Each RO unit operates in a three-stage array. Pressure vessels in RO Trains F through I (12 units) are arranged in an array of 77, 49, and 24 vessels in Stages 1, 2, and 3, respectively, for a total of 150 pressure vessels per unit. Trains A through E have a similar three stage array but with a slightly different vessel arrangement of 78, 48, 24 vessels in Stages 1, 2, and 3, respectively. Each pressure vessel contains seven, 8-inch diameter by 40-inch-long membrane element units. High-pressure pumps boost pre-filtered influent up to 300 psi, and interstage booster pumps between Stages 1 and 2 boost the pressure up to 60 psi. By modulating pump pressures and RO concentrate control valves, each RO unit recovery can vary between 70-85% with current operations maintaining 85% recovery for all units. Typical influent water quality to the RO process is shown in Table 1.

Table 1. Average GWRS RO Influent Water Quality

Analyte	Unit	Average Concentration[1]
Total dissolved solids	mg/L	1364
Electrical conductivity	µS/cm	2352
pH	-	6.9
Total organic carbon	mg/L	7.1
Silica (as SiO_2)	mg/L	20.3
Sodium	mg/L	306.2
Calcium	mg/L	82.0
Magnesium	mg/L	39.9
Potassium	mg/L	22.3

Barium	µg/L	54.5
Iron	µg/L	95.2
Manganese	µg/L	57.7
Zinc	µg/L	20.7
Aluminum	µg/L	12.2
Sulfate	mg/L	224.3
Chloride	mg/L	434.3
Bicarbonate (as HCO^{3-})	mg/L	263.2
Orthophosphate (as $PO4^{3-}$)	mg/L	0.3
1. Based on RO plant feed stream during 2023, Phase 3 Pilot operations. See Exhibit A-2 for reference.		

Construction of the RO facility was completed in three phases, and the RO units structural, mechanical, and electrical components constructed in each phase differ from each other. Trains A through E (15 RO units total) were constructed in 2008 with the original GWRS construction. A structural concrete shell was constructed under each unit to support the weight of the unit and appurtenances, and all pipelines and valving underneath the skid are routed around this shell. Any modifications to these trains are significantly limited by available space due to the structural support. Electrical equipment for the high-pressure RO pumps is located across the street in a separate building. Trains A through E were not originally installed with booster pumps. With the final expansion of GWRS completed in 2023, a booster pump was added to each unit between Stages 1 and 2. A separate prefabricated motor control center (MCC) enclosure to house the required electrical equipment for the new booster pumps was constructed on the north exterior of the RO building due to lack of available space in the existing RO electrical rooms.

Trains F and G (6 RO units total) were constructed with the GWRS initial expansion in 2015. Space underneath these trains for pipelines, pumps, and other appurtenances was significantly improved from the original trains with a column-based support structure. Each unit was equipped with a combined turbine energy recovery device and booster pump (supplied by Fedco) between Stages 1 and 2. The energy recovery device was intended to utilize excess pressure from the RO concentrate to drive the booster pump; however, maintaining effective Stage 2 boost pressures proved unreliable. The booster pump motors were replaced with higher capacity motors with the final expansion in order to maintain consistent pressure. The MCCs for these trains are located in an RO electrical room constructed on the southwest corner of the RO building.

Trains H and I (6 RO units total) were constructed with the final GWRS expansion in 2023. Similar to Trains F and G, space underneath these trains for pipelines, pumps, and other appurtenances was significantly improved from the original trains with a column-based support structure. Each unit was equipped with an interstage booster

pump between Stages 1 and 2. No energy recovery devices were installed on these units. The MCCs for these trains are located in the RO electrical room constructed during the initial expansion. Space in this electrical room is extremely limited for any additional equipment. With the completion of the GWRS final expansion at a total production capacity of 130 mgd, the site is completely built out.

OCWD is motivated to investigate potential opportunities to increase RO recovery for several reasons. First, without additional influent flows becoming available from the OC San treatment plants, improving RO recovery is the most feasible way for OCWD to increase total production capacity. Second, influent flows from OC San are projected to decline as additional water conservation measures are implemented. Increasing RO recovery allows OCWD to maintain target water production even as influent flows decline. Finally, reducing the volume of RO concentrate produced by the RO process provides OCWD flexibility if future conditions impact RO concentrate disposal, such as treatment for removal of constituents like PFAS from the concentrate before it can be disposed.

OCWD has investigated various high-recovery reverse osmosis technologies through literature reviews, bench-scale tests, and pilot scale tests. One of these technologies is FRRO, offered by ROTEC, Ltd.. FRRO operates based on the concepts of flow reversal and block rotation that disrupt the kinetics of scale formation, the primary factor limiting RO recovery. Flow reversal periodically switches the feed flow direction into the RO pressure vessel, reversing the concentration profile and solution saturation profile in the feed channel. Block rotation alternates which pressure vessel blocks operate as a first or third stage vessel. This distributes the salt and foulant loading rate more equivalently throughout the RO unit. After the system operates in a plug-flow mode for a period of time based on a proprietary crystallization induction clock, actuated valves and pump speeds are manipulated to complete the flow reversal and block rotation sequence. The system returns to plug-flow mode after completing this sequence, and the cycle repeats. The major advantage of FRRO versus other high-recovery RO technologies is its ability to retrofit existing RO units without increasing the overall unit’s footprint or requiring new facilities. The retrofit would typically include additional pressure vessels, booster pump and actuated valves for flow reversal and block rotation.

A pilot-scale test of FRRO at OCWD was conducted over an 18-month period from 2021 to 2023. Results of the pilot test are reported in Exhibit A-2. The test system was able to mimic the operations of a full-scale system with a 3-stage array. Results from the pilot system found that 90% recovery (at an average permeate flux of ~12 gallons per square foot per day) was achievable when receiving the full-scale micro/ultrafiltration (MF/UF) effluent that was supplied by either OC San Plant No. 1 secondary effluent only (typically lower TDS) or combined OC San Plant No. 1 and 2 secondary effluent (typically higher TDS and representing the blend that OCWD receives today and in the future) with a block rotation time of 1 hour for the first and third stage pressure vessels.

At higher recoveries, the pilot system pressures began significantly rising above acceptable thresholds, although further optimizations could improve system reliability. The pilot system was unable to operate in a “brine concentrator” mode where the unit treated concentrate from the full-scale RO unit operating at 85% recovery to produce permeate directly from concentrate. This was piloted as a potential alternative to retrofitting the main RO units.

Based on the pilot scale test, FRRO operating in a 3-stage array was able to meet the District’s operational objectives while operating at a higher recovery. The District also developed preliminary cost estimates to retrofit a full-scale RO unit to FRRO. The preliminary cost estimates showed the retrofit was economically viable. The next phase of operational tests that the District is considering would require retrofitting one existing full-scale RO unit to FRRO and operating the unit for an extended period (e.g., one year). By operating at full-scale, the operational parameters identified in the pilot test can be further evaluated and optimized, operators will have the opportunity to receive hands-on experience, and real operating costs can be assessed. Further RO unit retrofits could be considered after successfully completing this full-scale operational test phase. A final build-out scenario could include all 27 existing RO units retrofitted to FRRO operating at a recovery of 90% or more. However, a constructability study assessing constraints and cost-benefits associated with retrofitting one unit as well as all 27 existing RO units is necessary before OCWD chooses to progress full-scale construction of an FRRO retrofit at GWRS.

OCWD is seeking proposals from qualified firms to provide professional engineering services to prepare a constructability study. This study will evaluate the constructability of one RO unit retrofit as well as retrofitting all 27 of the existing RO units. The study will also validate the preliminary cost estimates prepared during the pilot study. This study will also provide recommendations to the District on if and how to proceed with full-scale construction.

4. SCOPE OF SERVICES

See **Exhibit A,** attached at the end of this RFP, for the Scope of Work. Refer to **Exhibit A-1** and **Exhibit A-2** for relevant existing record drawings of the GWRS RO trains and OCWD FRRO pilot study report, respectively.

The selected firm will be responsible for developing a FRRO retrofit constructability study including completing data request(s); analyzing constructability constraints to retrofit one existing RO unit at GWRS to high-recovery FRRO and all 27 existing RO units to FRRO; computing capital, operation and maintenance, and life-cycle cost estimates; completing a cost-benefit analysis; providing recommendations for full-scale retrofit, and preparing engineering design drawings for retrofitting one RO unit to FRRO up to a 30-percent design level.

5. GENERAL INFORMATION

The District expects the selected firm to provide quality service in accordance with industry standards. The firm must demonstrate experience with the type of anticipated work and must have the ability to perform all services in a timely manner upon the request(s) from the District or the District's authorized representative. All work shall comply with the requirements of federal, state, and local laws, and District requirements.

Acceptable performance standards include, but are not limited to, dependability, safety, demonstrated experience with anticipated work with the ability to perform all anticipated services in a timely manner upon receipt of request, expertise on the design of reverse osmosis treatment systems with a preference towards experience with high-recovery RO technologies.

The selected firm is required to have at a minimum the following qualifications:

a. Selected firm, firm's project manager, or firm's staff shall possess at least five (5) years of experience providing multi-disciplinary professional engineering design on for water, wastewater, or recycled water projects involving reverse osmosis treatment systems in California.

6. ELEMENTS OF PROPOSAL

The hard copy proposal shall be submitted in one large, sealed envelope, which shall include a two (2) part sealed proposal where each part shall be submitted in a separate sealed envelope. The electronic file shall include two separate PDF files, plainly marked with Part One and Part Two as listed below:

1. Part One: the first envelope, and PDF file, shall be plainly marked as Part One – Statement of Qualifications. The name and address of the Proposer shall be marked on the physical envelope.

2. Part Two: the second envelope, and separate PDF file, shall be plainly marked as Part Two – Price Proposal. The name and address of the Proposer shall be marked on the physical envelope.

To provide a degree of consistency in the review of the written proposals, firms are required to include the following content in their proposals. The information required below will be used to evaluate each proposal based on the evaluation criteria outlined in this RFP. Proposals may be deemed non-responsive if they do not respond to all areas specified below.

Proposals shall be prepared simply and economically, providing a straightforward and concise description of how the proposal has satisfied all the requirements of this RFP. Emphasis shall be on completeness and clarity of content with sufficient detail to allow for accurate evaluation and comparative analysis. Excessive or irrelevant materials will not be favorably received.

Please include the following in your proposal:

6.1 Part 1 - Statement of Qualifications

The following subsections describe the contents required in Part One of the proposal. Part One of the proposal shall be of such scope and depth to sufficiently describe and demonstrate the Proposer's understanding of and approach to the project(s).

6.1.1 Title Page

The proposer should identify the RFP title, name and title of the firm's contact person, address, telephone number, fax number, email address, and date of proposal submission.

6.1.2 Cover letter

A principal of the firm authorized to commit the firm to the requirements of the RFP must sign the cover letter. The letter should identify a contact person (name, e-mail address, and phone number) for future communication during the selection process. And shall also discuss the Proposer's commitment to providing high quality services, describe the firm's understanding and approach to the services, and its ability to perform the requirements of this RFP. Include a brief background of the firm including history, types of services provided, number of employees, number of offices and locations with staff size and disciplines, and any other relevant information that may be useful in determining the firm's qualifications to provide the services described in this RFP.

6.1.3 Table of Contents

The table of contents should include a clear and complete identification by section and page number of the submitted materials.

6.1.4 Experience and record of past performance.

Provide a minimum of three (3) references from other municipal, city, or county governmental agencies for which the company has recently or is currently providing professional engineering services for constructability assessments and design services for high-recovery RO systems in potable reuse, brackish groundwater, and/or seawater desalination applications that is equivalent or greater in scope as being required in this RFP. Indicate the scope of work, date, contract amount, and the name, email address, and telephone number of the client contact. Also provide a complete list of other public agencies in California utilizing your services over the past five (5) years. Ongoing projects currently being performed by the proposer also may be submitted for consideration. The District at its discretion may contact the references for additional information. Failure to provide accurate contact information may be cause for rejection of the proposal as being nonresponsive.

6.1.5 Project Team and Qualifications

Provide an organizational chart that describes the structure of the project team, including subconsultants. The project team description shall identify the following:

(i) The Project Manager,
(ii) The names of readily-available key personnel that will be deployed for each task and their contact information, and the primary office locations of each project team member,
(iii) The role each team member will play in providing services under the Agreement, and
(iv) A written assurance that the key individuals listed and identified will be performing the work and will not be substituted with other personnel or reassigned to another project without the District's prior approval. The proposal shall clearly identify who will lead the execution of assigned tasks and the respective personnel that will be assigned to them.

Provide a description of the experience, qualifications including required licenses and certifications, area of expertise or specialization, and availability (including current workload) of the project team members, including subconsultants/subcontractors, if any. Describe other project commitments by project team members and the anticipated level of involvement of each team member based on the abilities and expertise required for the type of work desired.

Provide the resumes of all members of the project team, including subconsultants/ subcontractors, as an appendix. Each resume shall not exceed three (3) pages and shall include name and title, education, years with the company, licenses and certifications (issue and expiration dates), home office location, relevant experience within at least the last five (5) years, and other required qualifications discussed in this RFP.

The identified Project Manager will be OWCD's main point of contact for all assigned projects for the duration of the Agreement. The proposal shall include the Project Manager's contact information, including phone and e-mail address.

Once an Agreement has been executed, the Consultant must request approval from the District in advance of any new personnel being assigned to the project. The District reserves the right to reject or remove personnel performing services at any time for the duration of the Agreement.

6.1.6 Project Overview and Approach

Present a narrative overview of the Proposer's understanding of the RFP requirements and the overall approach and technical plan for accomplishing the work assignments. Also discuss at a minimum the following:

- Ability to successfully complete work assignments within the District's required time frame and, as necessary, on short notice,
- Approach to assignment of work within the firm and how team members will conduct tasks and prepare anticipated deliverables,
- Describe the Proposer's project management approach and communications protocol,
- Describe the Proposer's approach to quality assurance and control, as well as any performance guarantees,
- Technical approach to assigned tasks, such as deployment strategies (how the project will be implemented from mobilization to demobilization), and
- Identify current and reasonably foreseeable actual and possible constraints, problems, and/or issues that could hinder the execution of services under the contract, and suggest approaches to resolving or managing these constraints, problems, and/or issues.

6.1.7 Additional Services

Include any comments, suggestions, or additions the Proposer may have regarding the scope of work or any other aspects of the work that the Proposer feels would be helpful to OCWD in selecting a firm for the services described in the RFP. Identify the potential impact(s) or benefit(s) that these recommendations would have if accepted by OCWD. Tasks above the minimum to complete the work described herein shall be clearly identified as "optional" in the proposal.

6.1.8 Statement of Insurance Compliance

Proposer shall provide a statement that it will meet the insurance requirements that are listed in **Exhibit C**, attached to this RFP. OCWD will request the insurance forms and associated documentation when the Notice of Agreement award is made.

6.1.9 OCWD Standard Agreement

Proposers shall provide a statement that proposer accept the requirements specified in the following:

The proposed Agreement awardee shall request any changes to the OCWD template Agreement provided in **Exhibit D**, which OCWD will not ordinarily modify absent strong cause, within ten (10) calendar days of receipt of OCWD's Notice of Intent to award letter.

If there is no request for modification of template Agreement language within 10 days of award notification, the awardee must accept and digitally sign the Service Agreement as is with no exceptions and provide applicable Insurance Certificate(s) with required the endorsements within 10 calendar days of the Notice of Agreement award. Failure to abide by this limitation is a basis for OCWD to rescind the proposed award and award to a different vendor and could result in a vendor being excluded from future procurement opportunities.

6.1.10 Billing

Proposers shall provide a statement that it will meet the minimum requirements specified here. At a minimum, the invoice for services shall include the Purchase Order Number, Agreement Number, and the itemized summary of each authorized project task along with the names of persons, their job titles, the hours worked, and hourly billing rates. OCWD will provide reporting requirements to the selected firm, and the selected firm shall prepare invoices that comply with the requirements. Failure to satisfy the reporting requirements may result in rejection, payment delay, or short pay of the invoices submitted to OCWD for payment.

6.1.11 Conflict of Interest

Provide a statement that the proposer, individuals employed by the proposer, or firms employed by or associated with the proposer, do not have a conflict of interest with the Project. The proposer shall exercise reasonable efforts to prevent any actions or conditions that could result in a conflict of interest and shall include, but is not limited to, establishing precautions to prevent its employees or agents from making, receiving, providing in, or offering gifts, entertainment, payments, loans, or other considerations which could be deemed to appear to influence individuals to act contrary to the best interest of the District. If a potential conflict of interest is identified in any form, the Proposer shall inform the District immediately. Proposers are subject to disqualification on the basis of a conflict of interest as determined by OCWD. By submitting a proposal you are stating you do not have a conflict of interest with the Project.

6.2 Part 2 - Price Proposal (Separate Sealed Envelope)

Part two of the proposal shall include a table showing the following information:

- Labor hour breakdowns by the project tasks and subtasks identified in Section 4.0 (including other subtasks as the Proposer sees fit) and associated personnel, including any subconsultants, as well as total hours. Names and titles/categories of individuals proposed to work on the project tasks/subtasks, including names of subconsultants/ subcontractors shall be indicated.

- Fully loaded hourly billing rates – All direct, capital, and reimbursable expenses, including but not limited to travel and transportation costs, meals, lodging, office equipment and supplies, administrative and communications fees, etc., must be

built into the hourly rates. Therefore, the District shall not pay Consultant nor its subconsultants/ subcontractors for any direct or reimbursable expenses incurred for implementation of the scope of services described herein.

- The labor hours and fees for proposed optional tasks, if any, shall be presented in a separate table to differentiate from the baseline Scope of Work.

It is expected that the indicated hourly rates will remain in effect for the duration of the Agreement unless otherwise specified and approved by OCWD. The rate sheet shall include any other rates or fees, such as markups for subconsultants/subcontractors not identified as part of the project team, equipment markups, or other direct costs that may be incurred.

The proposal shall also include a description of the anticipated method of billing for services performed, with provisions for monthly billing that will include itemized accounting of hours of personnel, hourly rates, and percent completion for each task identified. A project schedule shall be included with the invoice to track project costs on a resource loaded schedule.

7. PROPOSAL SUBMISSION REQUIREMENTS

7.1. Proposal Format

The proposal shall be limited to no more than 10 single-pages in 8.5” width x 11” length size recycled or recyclable white bond paper, paginated, and bound. This does not include the title page, table of contents, cover letter, appendices, dividers, or résumés. Any oversized documents, such as charts or tables, must be folded to size and secured in the envelope.

All files shall be bookmarked and in a text searchable PDF format (i.e., not scanned images) compatible with Adobe Acrobat Version 8.0 (at a minimum). The main directory of the flash drive shall contain the entire proposal as two separate PDF files for Part One and Part Two. All sections of the PDF file shall be bookmarked.

7.2. Proposal Preparation Costs

This solicitation does not commit the District to award any work nor to pay any costs incurred from the preparation of proposals. Firms responding to this RFP will be solely responsible for all costs and expenses incurred during the selection process.

8. SELECTION PROCESS

Selection of the Consultant will be based on the proposal contents, prior experience of the firm, performance on similar or related projects, and overall costs that best serve the District. Other factors that may be considered during the evaluations include the firm’s

reputation in the industry and any other aspects which could affect the proposer's performance under the awarded Agreement.

All responsive proposals will be evaluated by a selection committee formed by the District. The proposal shall be of such scope and depth to sufficiently describe and demonstrate the proposer's understanding, approach, and qualifications to successfully complete the scope of services described herein. Submittal of incomplete or vague responses to any section or subsection of this RFP may result in rejection of the proposal. Proposals will be evaluated, scored, and ranked based on the criteria specified in the table below. The evaluation criteria listed in the OCWD Proposal Evaluation Form (**Exhibit B**) will be used to evaluate each proposer.

Item No.	Criteria for Proposal Evaluations	Maximum Points
1	Project Approach and Schedule	**25**
2	Experience and Qualifications of the Project Manager, Project Team, and Proposing Firm	**30**
3	Time Commitment of Key Staff	**15**
4	Record of Success on Recent Similar Projects	**15**
5	Man Hour Estimate	**15**
	TOTAL POINTS:	**100**

The District reserves the right to award the contract to the firm who presents the proposal, which in the judgment of the District, best accomplishes the desired results based upon this information, OCWD staff will recommend a firm to OCWD's Board of Directors for award of the contract. The selected firm must be able to begin work immediately upon award of contract and must be able to maintain the required level of effort to meet the proposed schedule.

9. SPECIAL CONDITIONS

9.1. RESERVATIONS

This RFP does not commit the District to award a contract, to defray any costs incurred in the preparation of a Proposal pursuant to this RFP or to procure or contract for work.

9.2. PUBLIC RECORDS

All Proposals submitted in response to this RFP become the property of the District and are public records and as such may be subject to public review.

9.3. RIGHT TO CANCEL

The District reserves the right to cancel, for any or no reason, in part or in its entirety, this RFP including but not limited to: selection schedule, submittal date, and submittal

requirements. If the District cancels or revises the RFP, the District will notify all the proposers in writing via email.

9.4. ADDITIONAL INFORMATION

The District reserves the right to request additional information and/or clarifications from any or all Proposers.

9.5. PUBLIC INFORMATION

Release of Public Information selection announcements, contract awards, and all data provided by the District shall be protected from public disclosure. Proposers desiring to release information to the public must receive prior written approval from the District.

9.6. EQUAL EMPLOYMENT OPPORTUNITY AND AFFIRMATIVE ACTION REQUIREMENTS

The proposers shall provide a Statement of Equal Employment Opportunity/Affirmative Action. The selected consultant/contractor and each subconsultant/subcontractor shall not discriminate in the employment of persons on the work because of race, religious creed, color, national origin, ancestry, physical handicap, medical condition, marital status, sexual preference or sex of such persons except as permitted by Section 12940 of the California Government Code. The selected contractor is expected to maintain policies similar to those of the District regarding equal employment opportunities and affirmative action as set forth in the District's Administrative Policies.

EXHIBITS

EXHIBIT A

SCOPE OF SERVICES

1. GENERAL

The OCWD is an internationally recognized leader in the water industry that was formed in 1933 by the California State Legislature which entrusted OCWD to guard and protect the region's groundwater basin and limited water supply. OCWD's mission is to provide a reliable supply of high-quality water that is sourced in an environmentally responsible manner to the more than 2.5 million residents and businesses within the 270 square mile service area of Orange County, California that OCWD serves. OCWD manages three of Southern California's greatest water supplies, this includes protecting rights to the Santa Ana River, managing and replenishing the Orange County Groundwater Basin, and operating and maintaining the Groundwater Replenishment System (GWRS), the world's largest advanced water purification system for potable water reuse. More information regarding the OCWD can be found at www.ocwd.com.

2. STATEMENT OF WORK

The OCWD ("District") is seeking to develop a Flow Reversal Reverse Osmosis (FRRO) Retrofit Constructability Study. This Study builds on feasibility level analyses and pilot study previously completed by the District to validate those analyses for potential full-scale construction. The purpose of this Study is to compile available data from existing sources, analyze constructability constraints to retrofit one existing RO unit to high recovery FRRO and all 27 existing RO units to FRRO; compute capital, operation and maintenance, and life-cycle cost estimates; complete a cost-benefit analysis; provide recommendations for full-scale retrofit for one unit and all 27 existing RO units to FRRO; and prepare engineering design drawings for retrofitting one RO unit to FRRO up to 30% design level.

The selected Proposer shall provide the services detailed in the tasks below. The District reserves the right to select no, one, or multiple Proposers for any tasks included in this Scope of Work. Proposers must address Tasks 1 through 4 in their responses. Responses to the Task 5 Optional Tasks are not required, but Proposers are encouraged to respond to these tasks if they can provide a relevant value proposition. Throughout the Study period, the selected Proposer shall coordinate with the technology provider, ROTEC, Ltd., for the purposes of completing the analyses required in this Scope of Work.

Task 1. Project Management

This task shall include providing project management throughout the course of the Project to ensure fulfillment of the project scope of work within budget and schedule. This task addresses the management responsibilities associated with proper scheduling review, budget control, invoice preparation, and coordination with District staff and the Proposer's project team.

As part of the project management task, Proposer shall:

A. Assign a project manager that will be the point of contact and coordinate all communication with the District.

B. Facilitate a kick-off meeting that will be attended by selected Proposer, sub-consultants, and District staff. Prior to the kick-off meeting, the Proposer shall prepare a work plan to set forth the significant milestones and deliverables for the team to ensure compliance with the established project execution strategy and project goals. A presentation of the work plan will be done at the kick-off meeting.
C. Maintain a project schedule outlining all tasks, durations, milestone dates, and District review periods.
D. Provide quality assurance and quality control (QA/QC) reviews through the course of the project. Provide adequate reviews of all work products and adherence to industry practices and standards.
E. Facilitate monthly progress meetings with OCWD staff for the duration of the project. The Proposer shall prepare and distribute the meeting agenda at least three (3) days ahead of the meeting, lead the meetings, and prepare and distribute meeting minutes within five (5) working days of the meeting.
F. Prepare presentations for use by OCWD staff for committee and Board of Directors meetings. Proposer should assume that two (2) presentations will be made and include efforts for preparation of PowerPoint presentations and other graphics/handout materials, as appropriate.
G. Submit monthly progress reports and project schedule status updates along with invoices. Monthly progress reports shall include work performed, project concerns and schedule/budget impacts, and work anticipated for the upcoming month.

Task 2. Data Collection and Review

This task shall include collecting and reviewing all background information including, but not limited to, record drawings, journal articles, master planning documents, feasibility studies, operating costs, and other pertinent data needed in the preparation of the Project. Key background information has been provided in the Exhibit A-1 and A-2. The Proposer shall be responsible to identify additional information and data needed to conduct the Project. The Proposer shall prepare and submit a data collection request to the District to assist in developing the Project. The District shall provide any relevant information it its possession and may support the Proposer in data acquisition, as appropriate. Proposer shall assume one site visit to gather any necessary information and conduct interviews with District staff.

All information used to develop the Project shall be based on data, reports, studies, or files that can be validated from the agency of issuance, and shall include, but not be limited to, author(s), dates of retrieval, and date of issuance. All information used to develop the planning study shall be compiled in the Study appendix or cited in the list of references.

Task 3. Preparation of Constructability Study

This task shall include preparing a Draft Constructability Study summarizing the Project and all work tasks. The draft Study shall include an executive summary, sections summarizing the tasks listed within this scope of work, drawings, maps, tables, and/or graphics reflecting the information gathered and prepared by the Proposer. The draft Study shall be provided to the District for initial review in Microsoft Word format and appendices in PDF format. OCWD staff review of the draft Study shall be three (3) weeks. Proposer shall conduct a review workshop of the draft Study with District staff following submission of the draft Study. A Final Constructability Study shall be prepared incorporating the District's comments on the Draft Constructability Study. Color copies shall be used for any graphics in the Final Constructability Study. Proposer shall provide the District two (2) print hard copies as well as electronic copies (in Microsoft Word and PDF formats) of the Final Constructability Study. Preparation of the Study shall include the following subtasks:

Task 3.1. Constructability Assessment to Retrofit One Existing RO Unit

Proposer shall complete a constructability assessment based on retrofitting one existing 5-mgd permeate capacity RO unit at GWRS to high-capacity FRRO. The Proposer shall assume the retrofitted unit achieves 90% recovery based on results from pilot study (see Exhibit A-2). The assessment shall investigate the constraints relating to retrofitting one unit from the original facility (Trains A-E), initial expansion (Trains F-G), or final expansion (Trains H-I). The assessment must include a description of all mechanical, electrical, structural, instrumentation and controls, and civil work required to complete the retrofit.

The following are key issues for RO retrofit already identified by District staff:

- Structural systems for Trains A-E differ significantly from those of the newer units, therefore retrofitting any unit in Trains A-E may be more challenging.

- Space for pneumatic equipment (i.e., for pneumatic control valves if recommended by the manufacturer) is extremely limited regardless of which unit is retrofitted.

- Valves or equipment requiring frequent maintenance (i.e., pneumatic valves and pumps) must be as accessible as possible to operators.

- Controls for the retrofitted skid must be integrated into the main Distributed Control System (DCS) for the plant.

- Space for any additional electrical units or control system cabinets is extremely limited regardless of which unit is retrofitted. If electrical and/or control cabinets are located in areas other than previously constructed electrical areas, the

Proposer must evaluate any constraints associated with those alternative locations.

- Log removal credits for treatment system validation are currently monitored through online total organic carbon (TOC) analyzers of the combined feed and combined RO permeate for the entire RO facility. As seen during the pilot operations, permeate water quality slightly varies when the FRRO system operates in plug-flow mode versus the flow-reversal transition sequence. How these variations impact online TOC monitoring as well as regulatory approval are unclear. Staff preference is to maintain the current monitoring process.

Task 3.2. Constructability Assessment to Retrofit All Existing RO Units

The Proposer shall complete a constructability assessment to retrofit all of the existing 27 RO units to FRRO. The Proposer shall assume the retrofitted unit achieves 90% recovery (at an average permeate flux of ~12 gfd) based on results from pilot study (see Exhibit A-2). The assessment must include a description of all mechanical, electrical, structural, instrumentation and controls, and civil work required to complete the retrofit. This includes any modifications or impacts to existing facilities in addition to the RO unit retrofit itself including, but not limited to, existing chemical pretreatment storage and dosing systems (i.e., sulfuric acid and antiscalant), additional electrical equipment storage location(s), downstream process capacities, and waste disposal to OC San due to reduced RO concentrate flow. The preliminary key issues identified in Task 3.1 are relevant for this task as well.

In addition to assessing the constructability of retrofitting all units, the Proposer shall also provide an analysis of phased construction (i.e., retrofitting one or more units at a time). The Proposer shall propose, based on feedback solicited from the District, what would trigger each phase of construction such as, but not limited to, funding availability, declining flows from OC San Plant 1 and/or 2, and/or RO concentrate discharge volume limitations.

Task 3.3. Integration Capability of FRRO with Energy Recovery Systems Analysis

In an effort to reduce rising costs related to electrical energy consumption, the District is currently investigating various energy recovery devices (ERD). The Proposer shall investigate the integration capabilities of the FRRO technology with energy recovery devices from manufacturers such as ERI and Fedco and highlight any potential conflicts or synergies. If combining these technologies is feasible, the Proposer shall summarize any necessary modifications required to either or both the FRRO or ERD systems to make this combination possible.

Task 3.4. Contracting Method Analysis

The Proposer shall evaluate available contracting methods that would facilitate the highest quality product and lowest probable cost to the District. It is the District's understanding the FRRO system is a proprietary technology only offered by ROTEC, Ltd. The Proposer shall evaluate if contracting directly with ROTEC as an original equipment manufacturer (OEM) is the best option, or if a general contractor or specialty contractor agreement is a better alternative, based on the scope of retrofit to the skid plus any other necessary improvements required to functionalize the retrofitted system.

Task 3.5. Capital, Operation and Maintenance, and Life-Cycle Cost Estimate for One RO Unit Retrofit and Retrofitting All Units

The Proposer shall review the feasibility level cost analysis prepared in Exhibit A-2 and update as necessary all capital, operation and maintenance, and life-cycle cost estimates based on the thorough analysis conducted in Tasks 3.1 – 3.4. The cost estimates shall be based on retrofitting one RO unit (unit to be selected by the District based on Proposer recommendation) and retrofitting all RO units. The Proposer shall define the planning period and cost basis including the cost indices, discount rate, escalation rate, asset useful lives, and all other relevant assumptions. Construction costs shall be based on the assumed time of construction based on feedback provided by the District. Life-cycle cost estimates shall be determined as a dollar per year and dollar per acre-feet per year of water produced, both as the additional permeate production based on a 90% recovery rate compared to existing 85% recovery and total permeate production.

Task 3.6. Cost-Benefit Analysis to Retrofit One RO Unit and All Units

Following the completion of the life-cycle analysis in Task 3.5, the Proposer shall prepare a cost-benefit analysis comparing the cost of producing additional purified water to the alternative of purchasing imported treated and untreated water supplied by the Metropolitan Water District of Southern California. The cost-benefit analysis shall include both the cost to produce the additional permeate based on a 90% recovery rate compared to existing 85% recovery and total system permeate.

Task 3.7. Recommended Full-Scale Retrofit Program

The Proposer shall develop a recommended full-scale retrofit program incorporating the preferred projects evaluated by the Proposer and the District.

- For one RO unit retrofit, define the recommended project and prepare a description of all proposed modifications and basis of selection.
- For any retrofits beyond one unit (i.e., phased construction approach or all 27 units at once), define recommended project and prepare a description of all proposed modifications and basis of selection.
- Define preliminary design criteria.
- Define planning period and cost basis assumptions.
- Determine the life-cycle cost benefit analysis.

- Determine the reliability of facilities as compared to user requirements.
- Develop an implementation plan including any permits and draft schedule.

Task 4. Preliminary Design

Based on the results of the recommended implementation plan from Task 3 and approval by the OCWD, the Proposer shall advance the design of retrofitting one (1) full-scale RO unit to FRRO to the preliminary design phase. This phase includes the preparation of 30-percent level design with a sufficient number of two-dimensional (2D) or three-dimensional (3D) drawings to adequately depict the preliminary design of the facilities. Drawings shall be prepared in compliance with the District's standards and include at a minimum the following:

1. A title sheet with OCWD's approval signature block, a location map, the Project name and number, issue block with dates and revision number, a summary of applicable codes and standards, drawing index, sheet number block, space for professional stamp, name, street address, phone, fax and email address of Proposer and Subconsultants
2. General Drawings:
   2.1. List of drawings
   2.2. Drawing symbols, numbering & tagging conventions, and abbreviations
3. Structural Drawings:
   3.1. General Notes
   3.2. Plan(s)
4. Mechanical Drawings
   4.1. General Notes
   4.2. Plan(s)
5. Electrical Drawings
   5.1. General notes, symbols, and abbreviations
   5.2. Single line diagram(s)
   5.3. Electrical distribution site plan(s)
   5.4. Control and signal plan(s)
   5.5. Ground plan(s)
6. Instrumentation Drawings
   6.1. General notes, symbols, and abbreviations
   6.2. Control system block diagrams/network architecture
   6.3. Process and instrumentation diagrams

The Proposer shall provide a preliminary list of specification sections relevant to the retrofit construction. A 30-percent design-level cost estimate (e.g., Class 4 Construction Estimate) and estimated project schedule shall also be prepared by the Proposer.

After submission of the draft preliminary design, the Proposer shall schedule and facilitate a 30-percent design review workshop with the District to present and summarize the proposed drawings, cost estimate, and Project schedule. The draft 30-

percent design shall be submitted electronically in PDF format. The District shall have twenty (20) working days to review and provide comments. The Proposer shall revise the draft 30 percent design in response to the District's comments, as appropriate, and furnish one (1) electronic copy in PDF format to the District within twenty (20) working days of receipt of the District's comments. The Proposer shall also provide all native CAD design files in AutoCAD and/or Revit formats.

Task 5. Optional Services

The following tasks are considered optional services. Responses to the Optional Tasks are not required; however, Proposers are encouraged to respond to these tasks if they can provide a relevant value proposition.

Task 5.1. Funding Support

Assist the District in identifying and pursuing outside funding opportunities, such as grants, from State and Federal agencies to support the implementation of retrofitting one (1) existing RO unit to FRRO. Proposer shall assume providing support to complete at least one outside funding opportunity application, such as United States Bureau of Reclamation WaterSMART Program funding.

Task 5.2 Proposer-Defined Tasks Beneficial to the Development of the Study

Any additional scope of work items included in Proposers' proposals that may provide additional value to the Study are encouraged and will be labeled as "Task 5.2" in the agreement resulting from this RFP. Proposal shall include a brief description of the proposed task, its benefits to the Study, and associated level of effort.

EXHIBIT A-1

OCWD GWRS SELECT RECORD DRAWINGS

EXHIBIT A-2

OCWD FLOW REVERSAL RO PILOT STUDY JOURNAL ARTICLE

EXHIBIT B

EVALUATION CRITERIA

EXHIBIT C

INSURANCE REQUIREMENTS

EXHIBIT D

SERVICES AGREEMENT

ATTACHMENT NO.1

RFP SUBMITTAL CHECKLIST

AGENDA ITEM SUBMITTAL

Meeting Date: June 11, 2025

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen

Budgeted: N/A
Budgeted Amount: N/A
Cost Estimate: N/A
Funding Source: N/A
Program/Line Item: N/A
General Counsel Approval: N/A
Engineers Report Approval: N/A
CEQA Compliance: N/A

Subject: OC SAN BIOSOLIDS DEEP WELL INJECTION PROJECT

SUMMARY

Orange County Sanitation District's (OC San) General Manager Rob Thompson will present on the Biosolids Deep Well Injection (DWI) project.

Attachment: Presentation

RECOMMENDATION

Informational

BACKGROUND

OC San is currently conducting a feasibility study on DWI for biosolids management. This innovative approach aims to create significant long-term carbon sequestration and reduce the need for long-haul truck transportation, thereby cutting down carbon emissions and associated costs. The study is scheduled for completion in summer 2025. The proposed DWI project involves injecting biosolids approximately 5,000 feet below OC San's Plant No. 1 in Fountain Valley into a sand layer situated between impermeable rock formations. The injected biosolids would naturally digest into carbon dioxide and methane while trapped in this formation. The process aims to keep the biosolids and resulting gases completely separate from the groundwater basin, providing a secure method for managing residuals containing substances like PFAS, microplastics, and pharmaceuticals.

OC San's Future

Rob Thompson

OC San's General Manager

Orange County Water District

Water Issues Committee

June 11, 2025

OC SAN
ORANGE COUNTY SANITATION DISTRICT

Our Service Area

479
square miles

~190
million gallons per day

2.6
million population

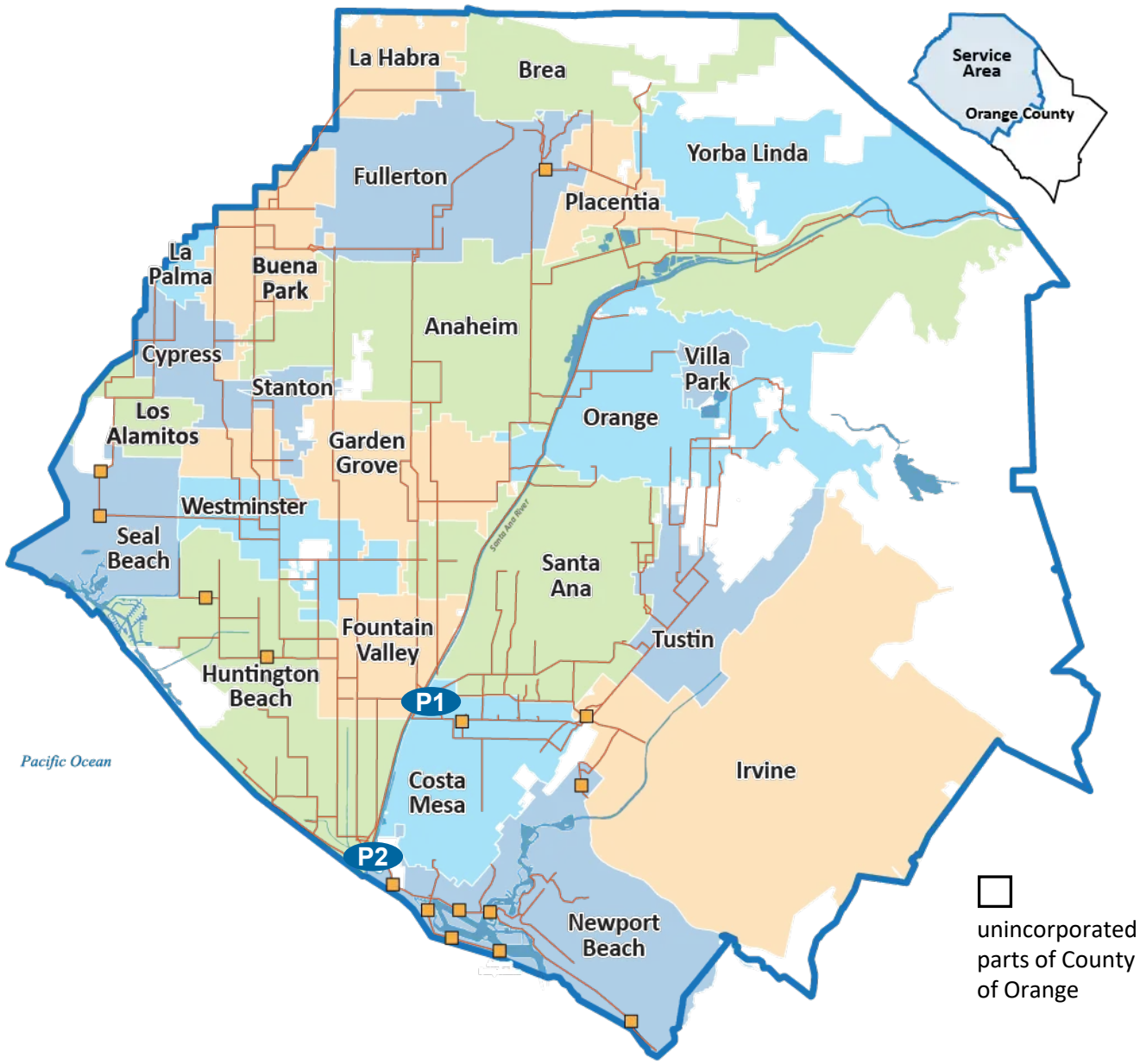
20
cities

4
special districts

388
miles of sewers

2
reclamation plants

15
pump stations



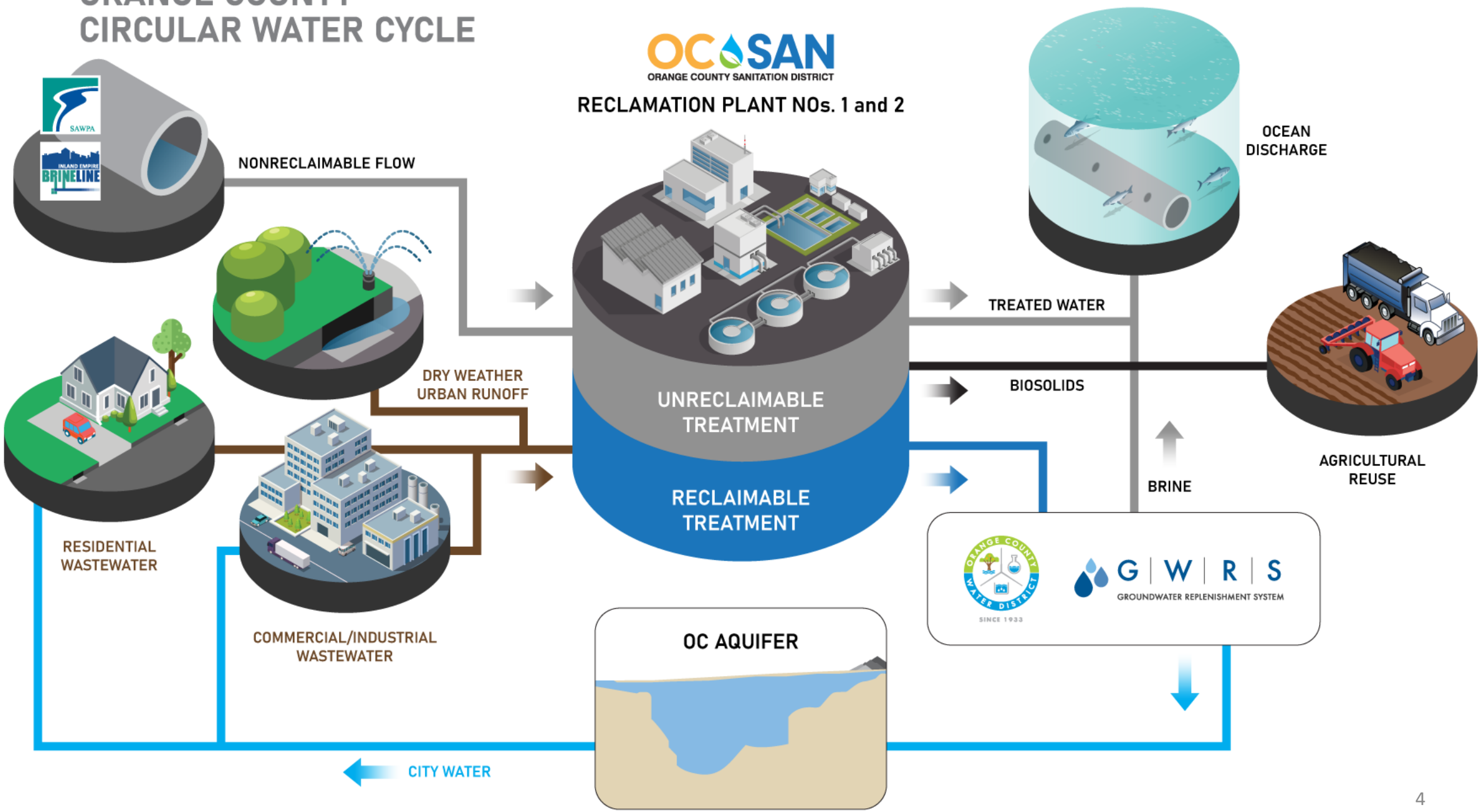
Our Facilities

OC San Headquarters
Fountain Valley

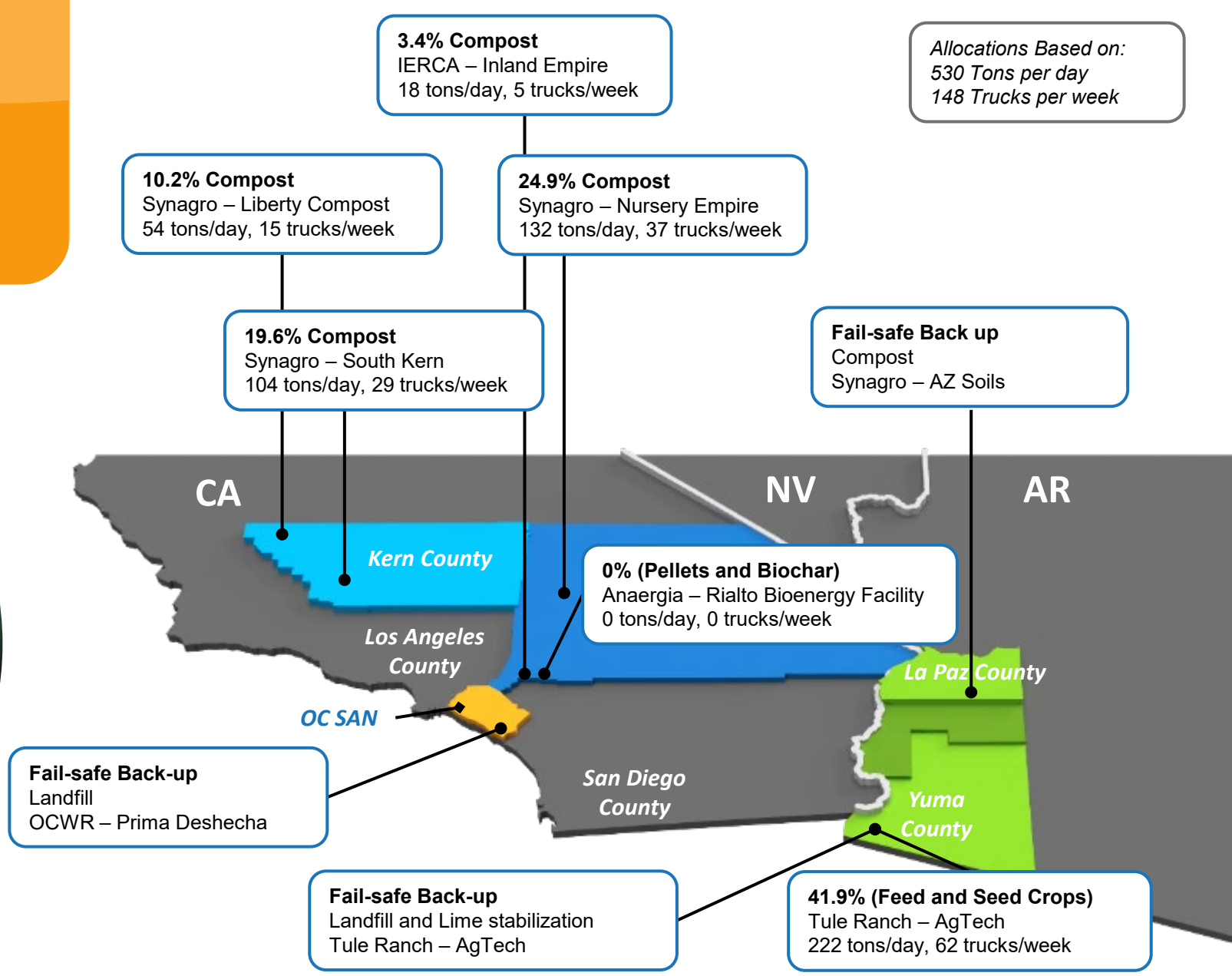
Reclamation Plant No. 1
Fountain Valley

Reclamation Plant No. 2
Huntington Beach

ORANGE COUNTY CIRCULAR WATER CYCLE



Biosolids Management



Solids Challenges

- PFAS
- Microplastics
- Methane
- Brine
- Electric Haul Trucks

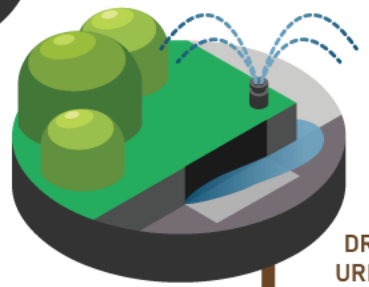
*Image Source: City of Riverside

ORANGE COUNTY FUTURE CIRCULAR WATER CYCLE

OCSAN
ORANGE COUNTY SANITATION DISTRICT

RECLAMATION PLANT NOs. 1 and 2

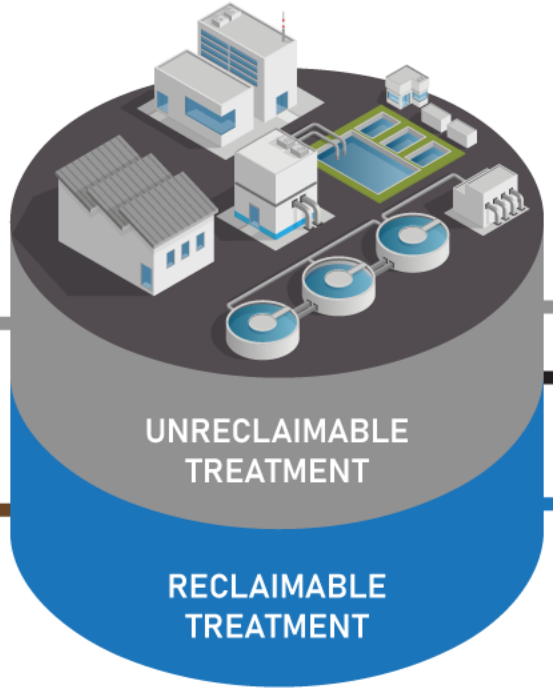
NONRECLAIMABLE FLOW



DRY WEATHER URBAN RUNOFF

RESIDENTIAL WASTEWATER

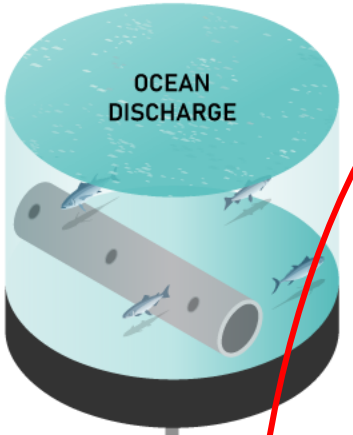
COMMERCIAL/INDUSTRIAL WASTEWATER



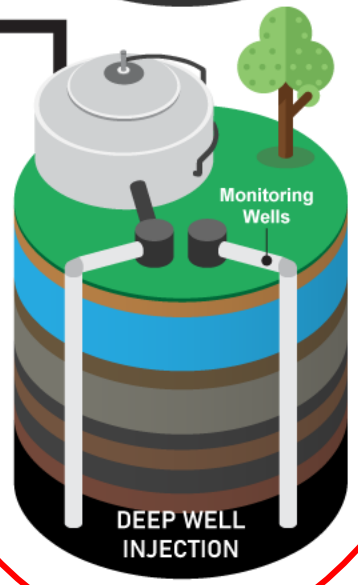
TREATED WATER

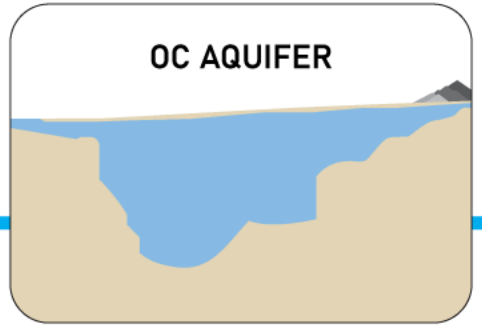
BIOSOLIDS

BRINE



SUPERCRITICAL WATER OXIDATION



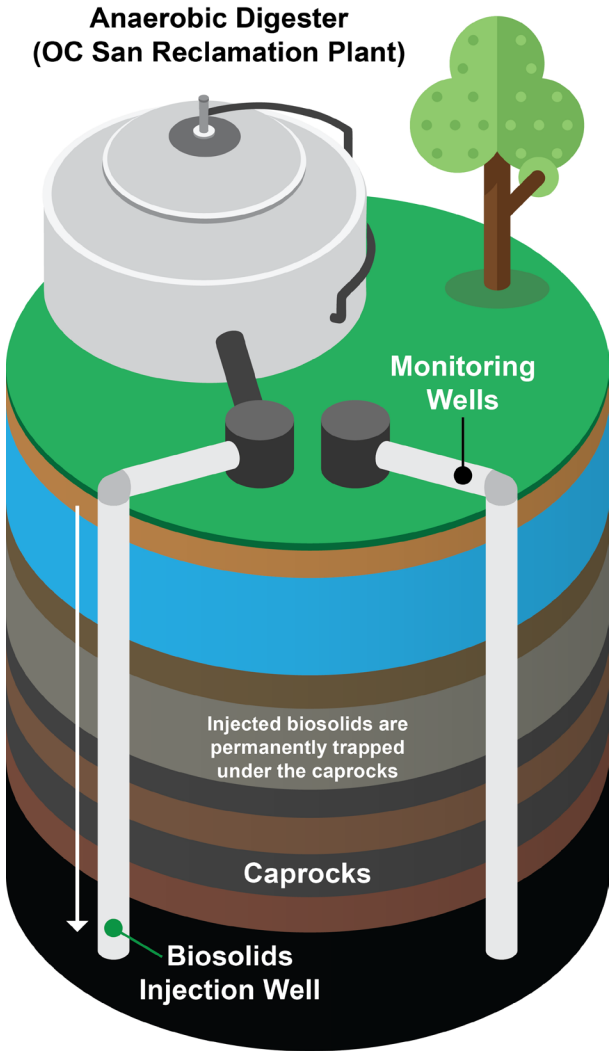


ORANGE COUNTY WATER DISTRICT
SINCE 1933

GWRS
GROUNDWATER REPLENISHMENT SYSTEM

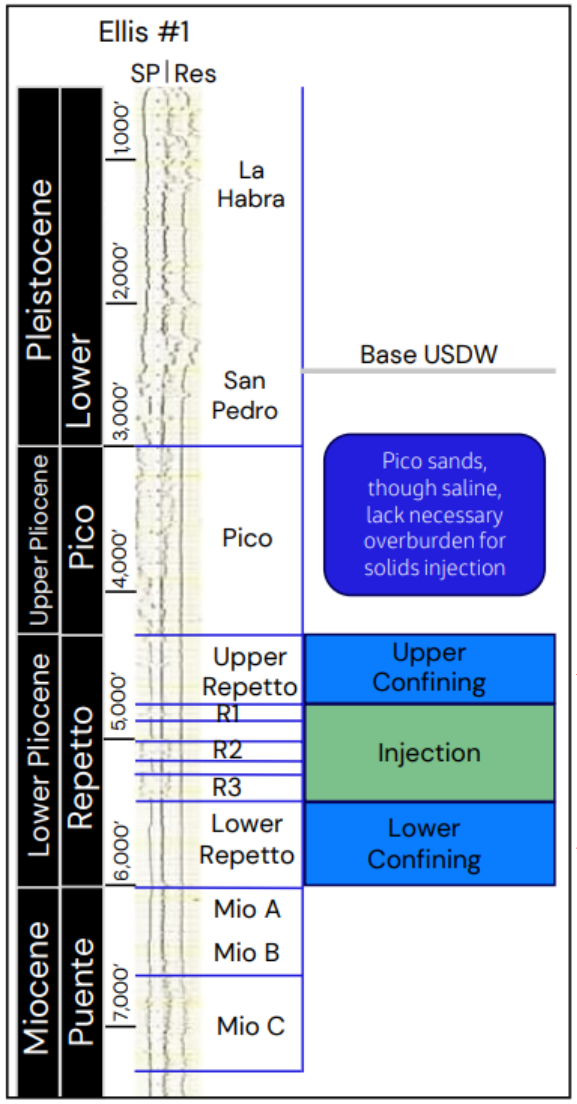
CITY WATER

Deep Well Injection



- Reduce/eliminate transport costs/carbon
- Reduce treatment costs
- Reduce greenhouse gas emissions
- Long-term carbon sequestration
- PFAS/microplastic/pharmaceuticals forever home

Injection Profile



Bottom of the Aquifer

Confining Shales

Injection in R2, R3 Sandstones

Confining Shales

Key Findings

- Average Solids Production
  - Plant No. 1 – 12 bpm
  - Plant No. 1+ Plant No. 2 – 21 bpm
- Injection Flow Rates
  - Up to 25 bpm

Well Capacity Sensitivity Analysis (single well)

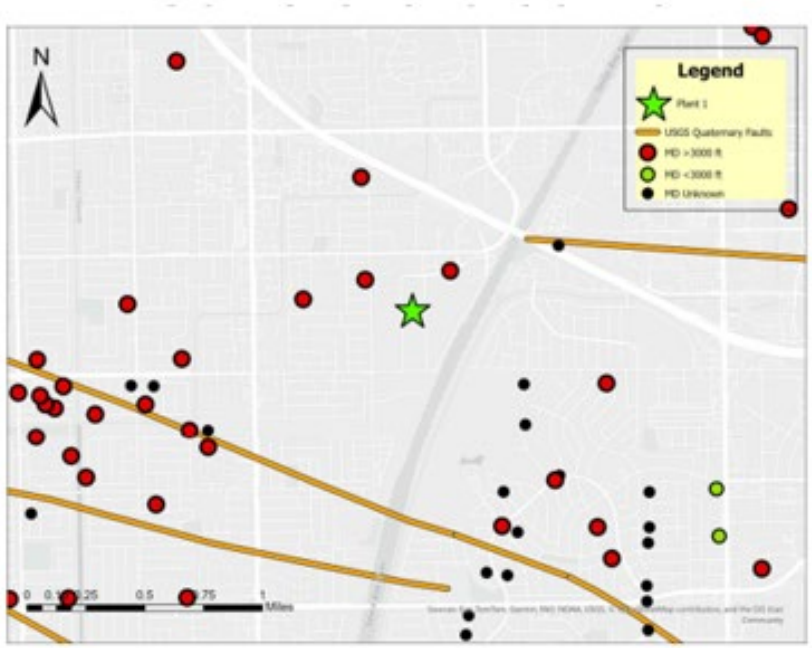
	Mid	High
Capacity (dry tons)	500,000	800,000
Life at P1 Flows (years)	14	22

- Two initial wells recommended for continuous operation w/ rest cycles to extend life

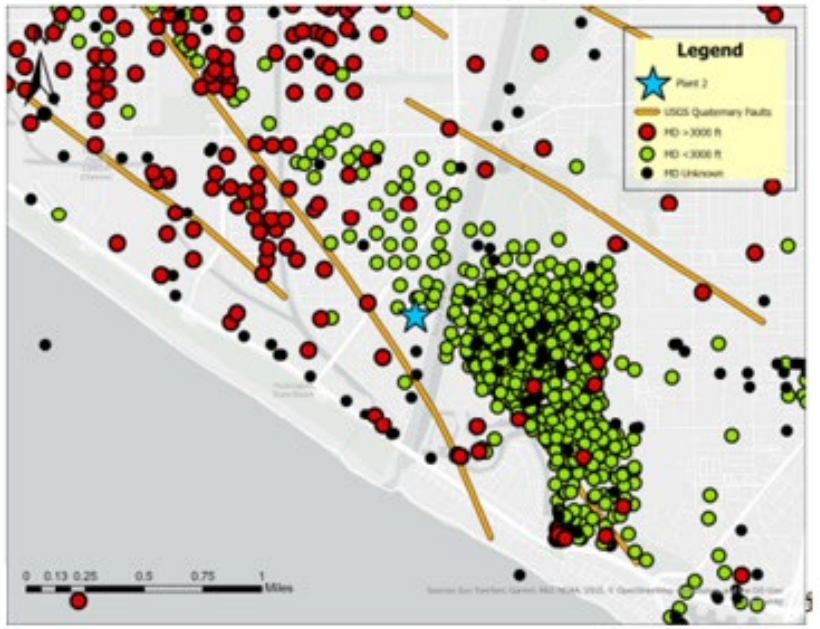
Plant No. 2 Feasibility

- Plant No. 2 formation modeling to confirm feasibility
- Feasibility impacted by artificial penetrations and faults

Artificial Penetrations at Plant No. 1

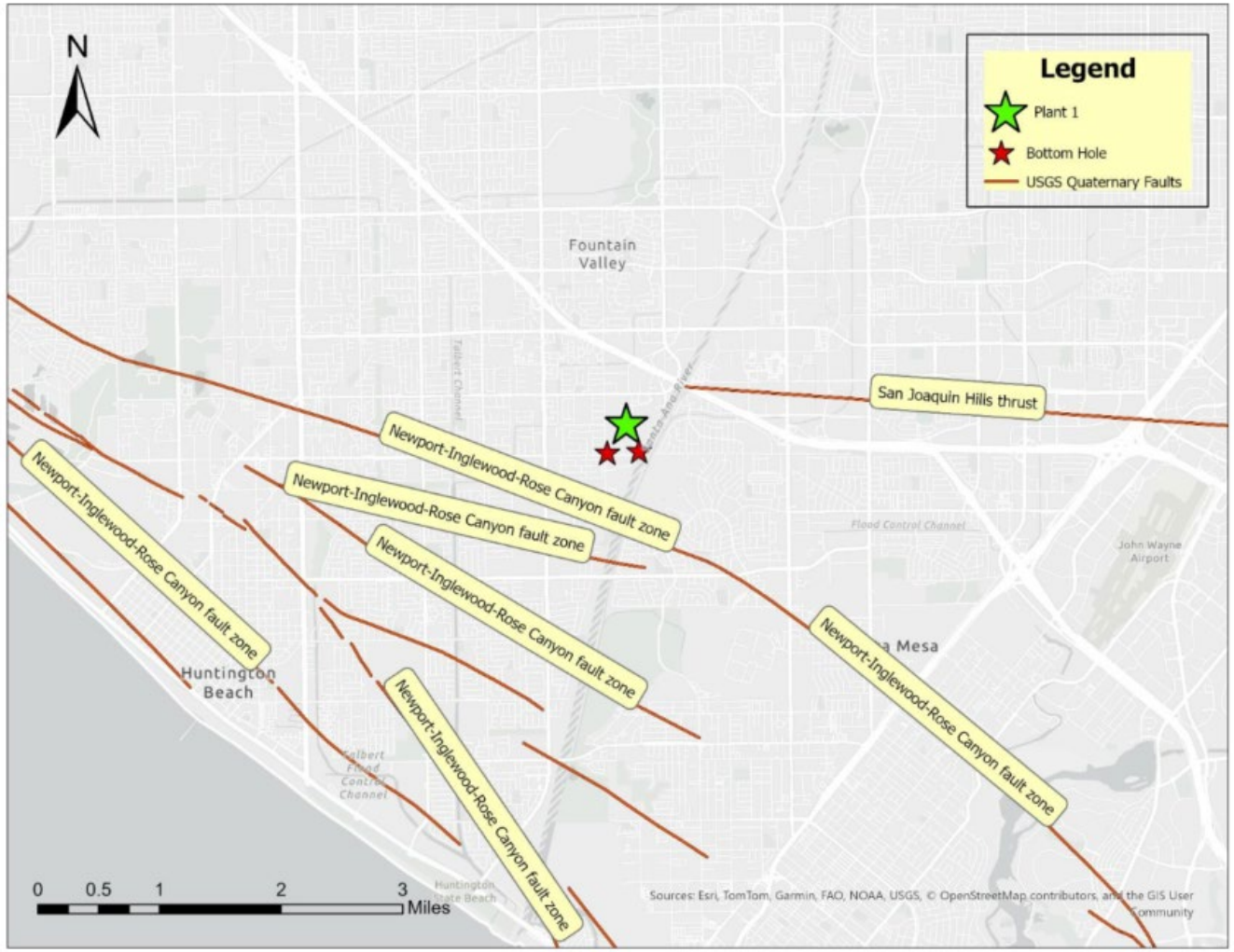


Artificial Penetrations at Plant No. 2



Seismicity

- San Joaquin Hills Fault plane > 7,400 ft bgs, well below injection depth and lower confining layer
- Newport-Inglewood secondary fault strands not within pressure front



Permits

- EPA Underground Injection Control (UIC) Program
- CA Geologic Energy Management Division and Regional WQCB
- City of Fountain Valley Well Permit
- CEQA
- Coastal Commission – Plant No. 2
- SCAQMD - odor scrubbers

Next Steps

- Evaluate DWI Feasibility at Plant No. 2 (late summer 2025)
- EPA Meeting to introduce study (June 2025)
- Key Decisions
  - DWI Size & location
  - Integration with existing biosolids management
  - OA & PDB/DBOM Structure
- J-143
  - Issue a Public Outreach Consultant Contract
  - Procure CEQA consultant (likely MND)
  - Procure Design Builder (early 2027)
    - EPA Permit
    - Well Testing

Questions?

For More Information

Visit us at: OCSan.gov
Follow us: @OCSanDistrict

Also on…

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rthompson@ocsan.gov