



AGENDA

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

WATER ISSUES COMMITTEE MEETING
WITH BOARD OF DIRECTORS *
ORANGE COUNTY WATER DISTRICT
Wednesday, January 14, 2026 12:00 p.m., Boardroom

*The OCWD Water Issues Committee meeting is noticed as a joint meeting with the Board of Directors for the purpose of strict compliance with the Brown Act and it provides an opportunity for all Directors to hear presentations and participate in discussions. Directors receive no additional compensation or stipend as a result of simultaneously convening this meeting. Items recommended for approval at this meeting will be placed on the **January 21** 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
1037 Sherwood Lane, Santa Ana
1454 Madison Street, Tustin
301 N. Ross Street, Santa Ana
12-1 Nihonbashikabutocho, Chuo City, Tokyo 103-0026, Japan
303 W. Commonwealth Ave., Fullerton
6151 Baja Drive, Anaheim
1502 North Broadway, Santa Ana

* 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 – 10)

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 DECEMBER 10, 2025

RECOMMENDATION: Approve minutes as presented

2. ACWA PFAS COST OF COMPLIANCE STUDY CONTRIBUTION

RECOMMENDATION: Agendize for January 21 Board meeting: Authorize a \$5,000 contribution to ACWA for a PFAS Cost of Compliance Study

3. AGREEMENT WITH JACOBS FOR A SOUTH BASIN GROUNDWATER PROTECTION PROJECT PRE-DESIGN INVESTIGATION WORK PLAN

RECOMMENDATION: Agendize for January 21 Board meeting: Authorize issuance of an Agreement to Jacobs Engineering Group for preparation of a South Basin Groundwater Protection Project Pre-Design Investigation Work Plan

4. PURCHASE OF REVERSE OSMOSIS REPLACEMENT MEMBRANE ELEMENTS FOR GWRS REVERSE OSMOSIS SYSTEM

RECOMMENDATION: Agendize for January 21 Board meeting:

1. Authorize issuance of a Purchase Order to Dupont water Solutions for an amount not to exceed \$541,798 for 1,060 BW30XFRLE reverse osmosis membranes for one unit in the GWRS reverse osmosis system;
2. Authorize issuance of a Purchase Order to Toray Membrane, USA for an amount not to exceed \$502,440 for 1,060 TLF-400DG reverse osmosis membranes for one unit in the GWRS reverse osmosis system;
3. Authorize issuance of a Purchase Order to Water Surplus for an amount not to exceed \$806,049 for 1,060 NanoStack coated BW30XFRLE reverse osmosis membranes for one unit in the GWRS reverse osmosis system; and
4. Authorize additional funds in the amount of \$100,287 for R&R account R25006

5. K-2025-1: KRAEMER BASIN CHECK VALVE REPLACEMENTS: NOTICE OF COMPLETION AND RATIFY CHANGE ORDER

RECOMMENDATION: Agendize for January 21 Board meeting:

1. Ratify issuance of Change Order No. 1 to Innovative Construction Solutions for a total amount of \$10,420; and
2. Accept completion of work and authorize filing a Notice of Completion for Contract No. K-2025: Kraemer Basin Check Valve Replacements

6. AGREEMENT WITH DDB ENGINEERING FOR THE PREPARATION OF 2025 GWRS ANNUAL REPORT
- RECOMMENDATION: Agendize for January 21 Board meeting: Authorize issuance of Agreement to DDB Engineering Inc. for an amount not to exceed \$60,000 to provide consulting services for the preparation of the calendar year 2025 GWRS Annual Report
7. ALAMITOS SEAWATER BARRIER 2026-27 OPERATIONS AND MAINTENANCE BUDGET
- RECOMMENDATION: Agendize for January 21 Board meeting: Approve the Alamitos Barrier 2026-27 total O&M budget in the amount of \$3,320,000, and authorize the amount of the District's share not to exceed \$1,331,000 payable to the Los Angeles County Department of Public Works after receipt and review of invoices
8. WF-2025-1: ASPHALT PAVEMENT REHABILITATION 2026 – PUBLICATION OF NOTICE INVITING BIDS
- RECOMMENDATION: Agendize for January 21 Board meeting:
1. Authorize publication of Notice Inviting Bids for Contract No. WF-2025-1: Asphalt Rehabilitation 2026 project; and
 2. Authorize filing of a Categorical Exemption for the Asphalt Rehabilitation 2026 project in compliance with the California Environmental Quality Act (CEQA) guidelines
9. AUTHORIZE WORK ORDER TO PSOMAS FOR ARCHEOLOGICAL MONITORING AT SA-2023-1
- RECOMMENDATION: Agendize for January 21 Board meeting:
1. Ratify Work Order No. 1 to PSOMAS in the amount of \$6,260 for Cultural Resources Monitoring Support Services; and
 2. Authorize Issuance of a Work Order to PSOMAS, in an amount not-to-exceed \$60,000, to continue archeological monitoring during new ground disturbance activities for the construction of City of Santa Ana PFAS Water Treatment Plant Well Nos. 27 & 28
10. AUTHORIZE CHANGE ORDER TO MURRAY COMPANY FOR REVERSE OSMOSIS CLEAN-IN-PLACE PIPE REPLACEMENT
- RECOMMENDATION: Agendize for January 21 Board meeting:
1. Authorize Change Order No. 1 to Murray Company for Reverse Osmosis Clean-in-Place Pipe Replacements in the amount of \$288,827; and
 2. Increase the Reverse Osmosis CIP Valve Relocation Project budget to \$788,827

END OF CONSENT CALENDAR

MATTERS FOR CONSIDERATION

11. AWARD CONTRACT NO. SA-2025-1 CITY OF SANTA ANA PFAS TREATMENT AT JOHN GARTHE RESERVOIR TO KINGMAN CONSTRUCTION, INC. AND BUDGET INCREASE

RECOMMENDATION: Agendize for January 21 Board meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SA-2025-1 City of Santa Ana PFAS Treatment at John Garthe Reservoir Project;
2. Ratify issuance of Addenda 1 through 8;
3. Accept bid and authorize award of Contract SA-2025-1 to the lowest responsive bid and responsible bidder, Kingman Construction, Inc., in the amount of \$23,587,500; and
4. Increase project budget by \$1,474,850 for a total project budget in the amount of \$31,474,850

12. BOND BASIN SLOPE REPAIR AUTHORIZE AMENDMENT NO. 3 TO ENGEO, INC

RECOMMENDATION: Agendize for January 21 Board meeting: Authorize Amendment No. 3 to Agreement 1555 with Engeo for a not-to-exceed amount of \$59,827

CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR CONSIDERATION AT THE JANUARY 21 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
December 10, 2025 @ 12:00 p.m.

Director Green 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

Cathy Green
Erik Weigand
Roger Yoh
Van Tran
Dina Nguyen

Alternates

Valerie Amezcua
Fred Jung
Natalie Meeks
Steve Sheldon
Denis Bilodeau (absent)

OCWD

Chris Olsen – Executive Director of Engineering/Water Resources
Mehul Patel – Executive Director of Operations
Jason Dadakis – Executive Director of Water Quality & Technical Resources
Lisa Haney – Executive Director of Planning & Natural Resources
Randy Fick – Treasurer/CFO
Adam Hutchinson – Recharge Planning Manager
Megan Plumlee – Research Director
Crystal Nettles – Principal Communications Specialist
Dave Mark – Senior Hydrogeologist
Alicia Harasty – Legislative Affairs Liaison
Julio Polanco – Scientist
Pat Versluis – Director of Water Quality
Ben Smith – Director of Recharge and Wetland Operations
Shawn Neville – Principal Planner
Larry Esguerra – Senior Engineer
Frank Hernandez – Director of Information Services
Roy Herndon – Chief of Hydrogeology
Bill Leever – Principal Hydrogeologist
Ryan Bouley – Director of Engineering
Kevin O’Toole – Senior Planner
Jeremy Jungreis – General Counsel
Leticia Villarreal – Assistant District Secretary

CONSENT CALENDAR

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

Ayes: Green, Weigand, Yoh, Tran, Nguyen

1. Minutes of Water Issues Committee Meeting

The Minutes of the Water Issues Committee meeting held November 12, 2025, were approved as presented.

2. Tech Connect Support Agreement with Rockwell Automation for Three-year Support Renewal on Medium Voltage and Low Voltage Drives Equipment and Software Support

Recommended for approval at December 17 Board meeting: Authorize issuance of a 3-year purchase order agreement to Rockwell Automation for an amount not to exceed \$26,366 per year or \$79,097 over 3 years to provide.

3. Multipurpose Center Feasibility Study Request for Proposals

Recommended for approval at December 17 Board meeting: Authorize issuance of Request for Proposals for a Multipurpose Center Feasibility Study.

4. Westbay Monitoring Well System Winch, Cable, and Counter Display Replacement

Recommended for approval at December 17 Board meeting: Authorize the issuance of a purchase order in the amount of \$32,509 which includes tax to Mount Sopris Instrument Company, inc. for the purchase of one (1) Mount Sopris MXC-1-0-7-3 1000-meter Winch spooled with 1000 meters of single conductor cable and one (1) 5MDA-1000 Depth-Speed Display (MX Series).

5. Contract No. SB-2026-1 Santiago Modifications Notice of Inviting Bids

Recommended for approval at December 17 Board meeting: Authorize publication of Notice Inviting Bids for Contract No. SB-2026-1, Santiago Pump Station Modifications Project.

6. Request for Proposals: OCWD GAP Reservoir Assessment

Recommended for approval at December 17 Board meeting: Authorize issuance of a Request for Proposals for the OCWD GAP Reservoir Assessment.

7. Contract GBM-2024-3 Construction of Shallow Aquifer Piezometers and Talbert Gap Replacement Monitoring Well Cluster Notice of Completion

Recommended for approval at December 17 Board meeting: Accept completion of the work and authorize filing a Notice of Completion for Contract GBM-2024-3, Construction of Shallow Aquifer Monitoring Wells and Talbert Gap Monitoring Well Cluster.

8. Authorize Agreement with Jacobs for Engineering and Hydrogeologic Services – Santa Ana River Riverbed Filtration System Feasibility Study

Recommended for approval at December 17 Board meeting: Authorize an Agreement with Jacobs for an amount not to exceed \$188,750 to provide engineering and hydrogeologic services for the Santa Ana River Riverbed Filtration System Feasibility Study.

9. City of Orange Well 29 PFAS Treatment Systems Project: Engineer's Report and Categorical Exemption

Recommended for approval at December 17 Board meeting:

- 1) Approve the Engineer's Report for the City of Orange Well 29 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 City of Orange Well 29 PFAS Treatment Systems Project in compliance with the California Environmental Quality Act (CEQA) guidelines

10. Authorize Notice Inviting Bids for Buena Park Linden Well Packer Installation and Authorize Amendment to Agreement with BESST, Inc.

Recommended for approval at December 17 Board meeting:

- 1) Authorize publication of a Notice Inviting Bids for BP-2026-1 Inflatable Packer Installation at Buena Park's Linden Well; and

- 2) **Authorize issuance of an amendment to the service agreement with BESST, Inc. for an amount not to exceed \$173,815 to procure the inflatable packers, oversee packer manufacturing, and provide field oversight of the testing**

MATTER FOR CONSIDERATION

11. Preparation of Engineer's Report for Lower Santiago Creek Recharge Project

Recharge Planning Manager Adam Hutchinson reported that since 1999 the upper portion of Santiago Creek between Santiago Basins and Hart Park have been used for recharge. He stated using the lower portion of Santiago Creek between Hart Park and the Santa Ana River can expand OCWD's recharge capacity and reduce losses of stormwater to the ocean. He advised that staff would like to review prior studies and prepare an Engineer's Report to further evaluate conveyance options to supply water to the lower reach below Hart Park and review all aspects of the potential project.

Upon motion by Director Weigand, seconded by Director Tran and carried [5-0], the Committee recommended for approval at the December 17 Board Meeting: Authorize staff to prepare an Engineer's Report for the Lower Santiago Creek Project, including updating project costs and reviewing all aspects of the potential project.

Ayes: Green, Weigand, Yoh, Tran, Nguyen

INFORMATIONAL ITEMS

12. UCI Master of Engineering Capstone Project: Researching Santa Ana River Sediment Transport by Rail

UC Irvine Chancellor's Professor Brett F. Sanders introduced how OCWD is partnering with UC Irvine's Master of Engineering project on a 2026 Capstone project to evaluate the feasibility of transporting inland sediment to coastal beaches by rail. He detailed the project would last five-months providing a Capstone experience for three Master of Engineering students. He advised the project would include weekly meetings with Lisa Haney, Executive Director of Planning and Natural Resources, and two faculty advisors from UCI. He commented the project would include collaboration from OCPW, OC Parks, Supervisor Katrina Foley, OCTA, USACE, USFWS, rail experts and permitting experts. Professor Sanders advised that the project will result in preliminary plans for the loading locations, offloading locations, transfer locations, and necessary rail spurs and an estimate of capital construction costs, operating costs and delivery costs.

13. Emergency Water Supplies to South Orange County Update

Executive Director of Engineering and Water Resources Chris Olsen shared that Groundwater Producers and South Orange County agencies were given an update by staff from OCWD, City of Santa Ana (City), and Moulton Niguel Water District (MNWD) on developments that have occurred since the July 30, 2025, Stakeholders meeting.

CHAIR DIRECTION AS TO ITEMS IF ANY TO BE AGENDIZED AS MATTERS FOR CONSIDERATION AT THE DECEMBER 17 BOARD MEETING

ADJOURNMENT

There being no further business, the meeting was adjourned at 12:34 p.m.

Cathy Green, Chair

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: C. Olsen

Budgeted: No

Budgeted Amount: \$0

Cost Estimate: \$5,000

Funding Source: Gen. Fund

Program/ Line Item No. 1010.51102

General Counsel Approval: NA

Engineers/Feasibility Report: NA

CEQA Compliance: NA

Subject: ACWA PFAS COST OF COMPLIANCE STUDY CONTRIBUTION

SUMMARY

The Association of California Water Agencies (ACWA) is requesting contributions from its members to support a PFAS Cost of Compliance Study. Staff recommends authorizing a \$5,000 contribution for this Study.

Attachment: ACWA letter to General Manager John Kennedy dated November 26, 2025

RECOMMENDATION

Agendize for January 21 Board meeting: Authorize a \$5,000 contribution to ACWA for a PFAS Cost of Compliance Study.

BACKGROUND/ANALYSIS

On November 26, 2025, staff received a letter from ACWA regarding the preparation of a PFAS Cost of Compliance Study. ACWA states in their letter that having accurate treatment cost data will be critical as the State of California and federal officials move toward the development of maximum contaminant levels for PFAS in drinking water that are affordable. ACWA believes it is important to have this information in order to ensure issues raised by its members and the drinking water community are carefully considered.

ACWA's PFAS Workgroup plans to generate a study of treatment costs throughout California, including media disposal, and compile a detailed report prepared by a consultant. Their goal is to secure at least \$60,000 and staff is requesting authorization of a \$5,000 contribution to ACWA for a PFAS Cost of Compliance Study.

PRIOR RELEVANT BOARD ACTION(S)

N/A



Bringing
Water
Together

November 26, 2025

General Manager John Kennedy
Orange County Water District
18700 Ward Street
Fountain Valley, CA 92708

Dear General Manager Kennedy:

Association of California Water Agencies PFAS Cost of Compliance Study

The development of drinking water standards for PFAS contamination will mark one the most consequential regulations since the 1996 amendments to the federal Safe Drinking Water Act. The drinking water industry has played important roles in several previous regulatory efforts including MtBE, Arsenic, Perchlorate and Hexavalent Chromium. Having accurate treatment cost data will be critical as State of California and federal officials move toward the development of maximum contaminant levels for PFAS in drinking water that is affordable. ACWA believes it is important to have this information in order to ensure issues raised by its members and the drinking water community are carefully considered.

To address this concern, ACWA's Water Quality Committee, in conjunction with its PFAS Workgroup, has identified the need for a comprehensive study to compile data from utilities that currently operate PFAS treatment facilities here in California. ACWA's PFAS workgroup plans to lead an effort to generate a study of treatment costs, including media disposal costs, and compile a detailed report to be undertaken by a leading engineering consulting firm.

We are requesting contributions to support development of this study. Our goal is to secure commitments totaling at least \$60,000 from ACWA members and others. If you choose to contribute to this study, please contact Steven Carr at StevenC@acwa.com with dollar amount, agency name, and contact information to invoice your agency. ACWA will then process your contribution. If you have any other questions about this process, please contact either Nick Blair at NickB@acwa.com or Amber Rossow at AmberR@acwa.com. Thank you for your continued support of drinking water quality and public health projection.

Sincerely,

A handwritten signature in black ink that reads "Cathy Green". The signature is written in a cursive, flowing style.

Cathy Green
President

cc: Marwan Khalifa, ACWA Interim Executive Director

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Herndon/B. Leever

Budgeted: Yes

Budgeted Amount: \$300,000

Cost Estimate: \$343,850

Funding Source: Capital

Program/Line No.: C08007.03000

General Counsel Approval: Yes

Engineers/Feasibility Report: Yes

CEQA Compliance: Yes

Subject: AGREEMENT WITH JACOBS FOR A SOUTH BASIN GROUNDWATER PROTECTION PROJECT PRE-DESIGN INVESTIGATION WORK PLAN

SUMMARY

In June 2025, the Board authorized issuance of a Request for Proposals (RFP) for preparation of a South Basin Groundwater Protection Project (SBGPP) Pre-Design Investigation (PDI) Work Plan. Staff issued the PDI Work Plan RFP on September 26, 2025, and received five proposals on November 17, 2025. After careful review, staff recommends issuing a professional services agreement to Jacobs Engineering for an amount not to exceed \$343,850.

Attachment: Jacobs Engineering proposal for RFP-25-007, dated November 17, 2025

RECOMMENDATION

Agendize for January 21 Board meeting: Authorize issuance of an Agreement to Jacobs Engineering Group for preparation of a South Basin Groundwater Protection Project Pre-Design Investigation Work Plan.

BACKGROUND/ANALYSIS

Since 2004, the District has been investigating and developing plans to address a two-square mile commingled plume of groundwater contamination, downgradient of source sites, in the southeastern portion of the Orange County Groundwater Basin (Basin), referred to as the South Basin area. The District's investigation and remediation planning and implementation are known as the South Basin Groundwater Protection Project (SBGPP). The District evaluated contaminant source sites, installed soil borings and monitoring wells, regularly collected groundwater samples, prepared a Preliminary Remedial Investigation (PRI) Report (October 2015) to identify the extent of the groundwater contamination, prepared a Supplemental Remedial Investigation (SRI) Report (July 2020) to fill in data gaps and respond to regulatory concerns, and completed a Feasibility Study (FS) (January 2023) to evaluate remedial alternatives for the SBGPP. This work was conducted in coordination with the California Department of Toxic Substances Control and the Santa Ana Regional Water Quality Control Board. Concurrently, the District has been seeking to recover past and future costs from

responsible parties through legal efforts (*OCWD v. Sabic et al.* and *OCWD v. Sanmina et al.*).

At the District's June 4, 2025, meeting, the Board approved the Interim Remedial Action Plan (Proposed Plan), certified the Program Environmental Impact Report, and authorized the General Manager to sign the Record of Decision for a project to extract and treat contaminated groundwater and discharge the treated water to the sewer system. Additionally, the Board established an initial capital budget of \$19,400,000 to implement the project design and construction, and authorized staff to prepare an RFP and solicit proposals to prepare a PDI work plan. The purpose of the PDI work plan is to guide the implementation of a detailed hydrogeologic investigation, including property access evaluation, soil borings, groundwater sampling, and extraction well flow testing where extraction well alignments are planned. The data from the PDI will support the interim remedy design. The District budgeted \$300,000 for FY25-26 project activities, including hiring a consultant to prepare a PDI work plan.

PROPOSALS

On November 17, 2025, staff received five proposals for the SBGPP Pre-Design Investigation Work Plan. The proposals were reviewed and ranked by OCWD staff based on project understanding and approach, project manager and key team members' qualifications, level of effort, and similar project experience. The proposals from Brown and Caldwell and Jacobs Engineering ranked significantly higher than the others, and the fee proposals from these two firms were opened. The rankings of all proposals received, and the fee estimates of the top two proposals, are shown in Table 1 below.

Table 1: SBGPP PDI Work Plan Proposal Rankings

Firm	Score	Fee
Jacobs	88	\$313,850
Brown and Caldwell	84	\$381,579
Woodard & Curran	77	NA
CDM Smith	76	NA
EKI Environmental & Water	72	NA

The Brown and Caldwell and Jacobs proposals demonstrated an excellent understanding of the project and provided a detailed approach to each task. The proposed project manager for each firm had the requisite qualifications and experience on similar projects. Each firm provided examples of previous experience on similar projects where NCP compliance was required. The proposed level of effort and fee of both firms were within the range expected for the scope of work. The most significant

differentiators between the Brown and Caldwell and Jacobs were the team and approach proposed for Task 3 – Real Estate and Land Access Analysis. Staff considers Task 3 to be a critical component in the successful implementation of the project, and a thorough understanding of evaluating and negotiating land access agreements with public and private entities was an important evaluation criterion. Staff ranked Jacobs the highest, as its team and approach demonstrated superior previous experience, included the use of a subcontractor that specializes in real estate and land access analyses, and they have worked together in the past conducting such analyses.

Following its determination of the recommended firm (Jacobs), staff recommends adding a task to the scope of work: Task 6 – Grant Support Services. Task 6 is recommended to identify and, as appropriate, apply for grant funding to support the SBGPP, which could include planning and implementation grants through both state and federal agencies. A budget of \$30,000 is proposed for Task 6 which would bring the Jacobs contract not-to-exceed total to \$343,850. Based on its review of the proposals, staff recommends issuing an agreement for an amount not to exceed \$343,850 to Jacobs for the SBGPP Pre-Design Investigation Work Plan.

PRIOR RELEVANT BOARD ACTIONS

6/4/25 R25-6-89 Certifying the Final Program Environmental Impact Report (State Clearinghouse #2023100188), Approving the Interim Remedial Action Plan, Authorizing the General Manager to Sign the Record Of Decision, Establishing an Initial Capital Budget, and Authorizing Issuance of a Request for Proposals to Prepare a Preliminary Design Investigation Work Plan for the South Basin Groundwater Protection Project.

2/15/23 R23-2-23 Select Alternative 3 (groundwater extraction and treatment with discharge to sewer and GWRS) described in the South Basin Groundwater Protection Project Feasibility Study Report as the tentatively identified preferred remedial alternative to be developed into the proposed interim remedial action plan, subject to completion of environmental documentation, and authorizing issuance of a request for proposals to the District's on-call environmental consultants to prepare programmatic CEQA compliance documentation of Alternative 3 described in the South Basin Groundwater Protection Project Feasibility Study Report.

3/17/21 R21-3-48 Authorize issuance of Amendment to Agreement No. 1428 to Engineering Analytics, Inc., increasing the contract amount by \$140,682 for South Basin RI/FS consulting services.

6/17/20 R20-6-76 Authorize issuance of Professional Services Agreement to Engineering Analytics, Inc. for an amount not to exceed \$507,969 to provide NCP consulting services for the South Basin Groundwater Protection Project.

4/15/20 M20-39 Authorize issuance of an RFP to Engineering Analytics, Inc. to provide National Contingency Plan consulting services to address groundwater contamination in the South Basin area.

5/22/19 R19-5-69 Authorize issuance of Amendment No. 4 to Agreement No. 1051 to Hargis + Associates, increasing the contract amount by \$194,816 and extending the termination date to September 30, 2020, for South Basin RI/FS consulting services.

10/18/17 R17-10-132 Authorize Amendment No. 3 to Agreement No. 1051 to Hargis + Associates in the amount of \$89,000 to develop a groundwater flow model as part of the South Basin RI/FS.

5/24/17 R17-5-74 Adopt resolutions authorizing General Manager to enter into Proposition 1 grant funding agreements for the North Basin RI/FS, North Basin Well EW-1, and South Basin RI/FS projects.

10/19/16 R16-10-139 Adopt South Basin Additional Groundwater Monitoring Program Recirculated Mitigated Negative Declaration to account for revised well locations; and approve revised project.

10/19/16 R16-10-140 Authorize agreement for \$374,040 with Avocet Environmental for well construction inspection and testing services in support of the South Basin remedial investigation.

6/15/16 R16-6-89 Authorize General Manager to finalize and execute agreement with the Department of Toxic Substances Control for reimbursement of DTSC's costs in an amount not to exceed \$75,000 to review documents submitted by the District as part of the South Basin remedial investigation/feasibility study program; and authorize execution of agreement with the Regional Water Quality Control Board for reimbursement of RWQCB's costs in an amount not to exceed \$120,000 to review documents submitted by the District as part of the South Basin remedial investigation/feasibility study program.

5/18/16 R16-5-62 Adopt South Basin Additional Groundwater Monitoring Program Mitigated Negative Declaration; authorize construction of 24 monitoring wells; establish project budget of \$1,309,560; and authorize issuance of RFP for well construction inspection and testing services.

10/21/15 R15-10-149 Authorize Amendment No. 1 to Agreement No. 1051 with Hargis + Associates in the amount of \$41,048 to prepare a pilot study work plan for the South Basin Groundwater Protection Project.

1/21/15 R15-1-10 Authorize issuance of a Professional Services Agreement to Hargis + Associates for an amount not to exceed \$657,852 to provide NCP consulting services in the South Basin area. Authorize Amendment No. 1 of Professional Services Agreement No. 0827 with Aquilogic, Inc. in the amount of \$78,375 for services to update and maintain the database, provide access to the database and records to Hargis + Associates, and coordinate with Hargis + Associates through April 2016.

8/6/14 R14-8-109 Approve developing remedial strategies for the South Basin groundwater contamination in a manner that is consistent with the NCP; and authorize issuance of RFP to retain NCP consulting services to assist staff in completing the remedial investigation and conducting an evaluation of remedial alternatives in the South Basin area consistent with NCP protocol.

8/6/14 R14-8-108 Adopt the updated Groundwater Quality Protection Policy, which supersedes the following prior District policies: Policies regarding Pre-Litigation Mediation Procedure and Segregation and Use of Groundwater Contamination Litigation Proceeds for Future Cleanup Projects, adopted May 22, 2013 (Resolution No. 13-5-58); Groundwater Quality Protection Policy, adopted May 6, 1987 (Resolution No.

87-5-59); and Sanitary Landfill Management, adopted June 20, 1984 (Resolution No. 84-6-57).

10/19/11 R11-10-00 Authorize issuance of separate requests for proposals for professional services to conduct an Interim Remedial Action Feasibility Study and to conduct a Phase 2 cone penetration test investigation of groundwater contamination at up to 200 locations in the South Basin area.

6/18/08 CS-08-6-3 Find that it is necessary to expend available funds to investigate, clean up, abate and perform remedial work to address VOC and perchlorate contamination in the South Basin area of the District and that such expenditures are required by the magnitude of the endeavor and the urgency of prompt action needed to prevent, abate, or contain the threatened and existing VOC and perchlorate contamination in the South Basin area; initiate litigation against potentially responsible parties for cost recovery measures for the South Basin Groundwater Protection Project; and authorize general manager, with concurrence from General Counsel, to execute Amendment No. 1 to legal services agreement between OCWD and Miller, Axline & Sawyer.

5/21/08 R08-5-78 Authorize filing of a Notice of Exemption for drilling three CPT borings and constructing six monitoring wells; receive and file Geologist's Report – South Basin Groundwater Protection Project Hydrogeologic Investigation; authorize the installation of three CPT borings and six monitoring wells to investigate the extent of groundwater contamination in the vicinity of well IRWD-3; and establish a project budget of \$625,000, and find that construction of such borings and wells is feasible, necessary to answer critical basin management questions, and of general benefit to the lands of the District.

5/17/06 R06-5-60 Authorize professional services agreement with Todd Engineers to review regulatory agency files and identify potential sources of contaminants detected in well IRWD-3 and that threaten this and other wells.

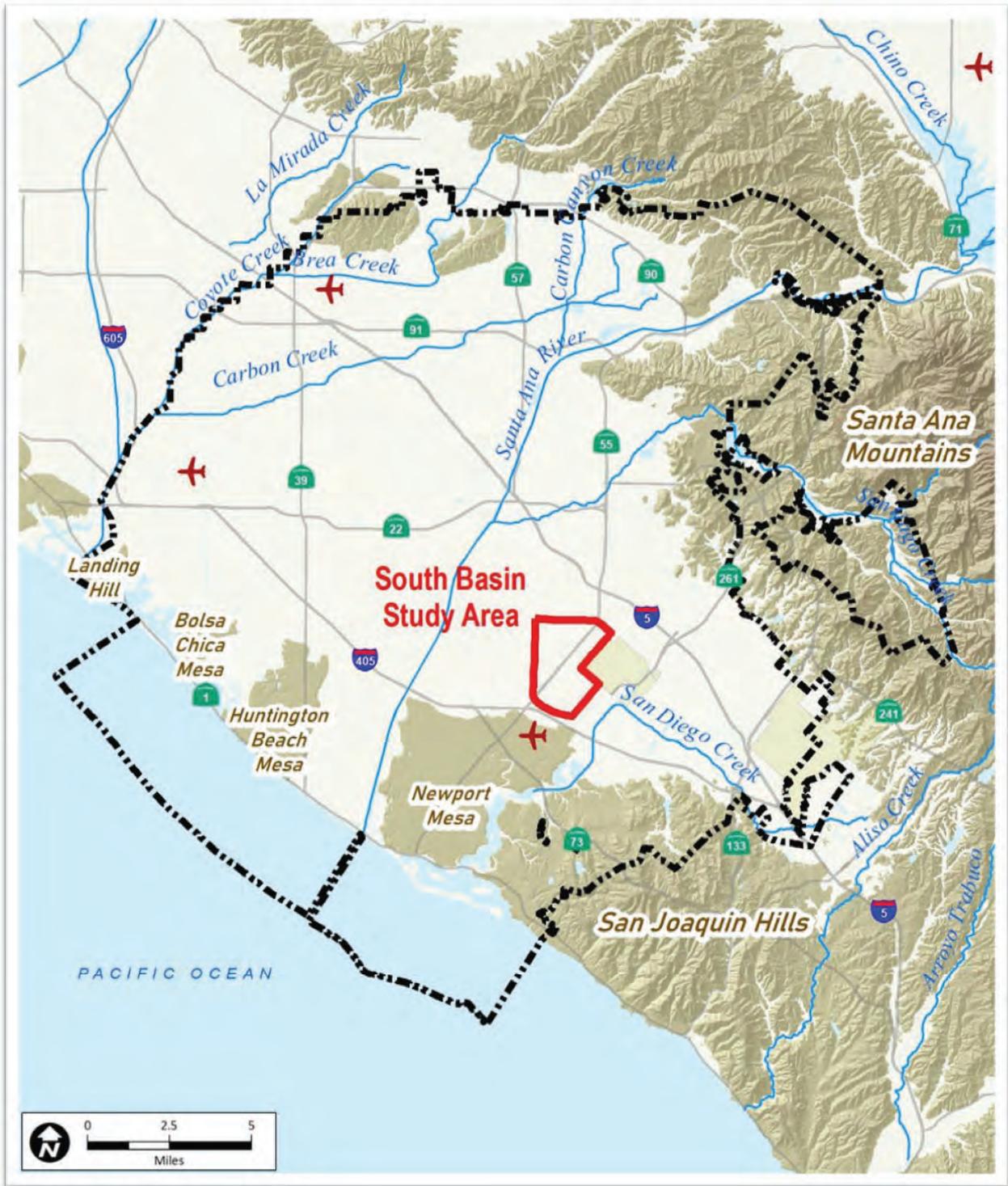


Figure 1. South Basin Project Area Location Map

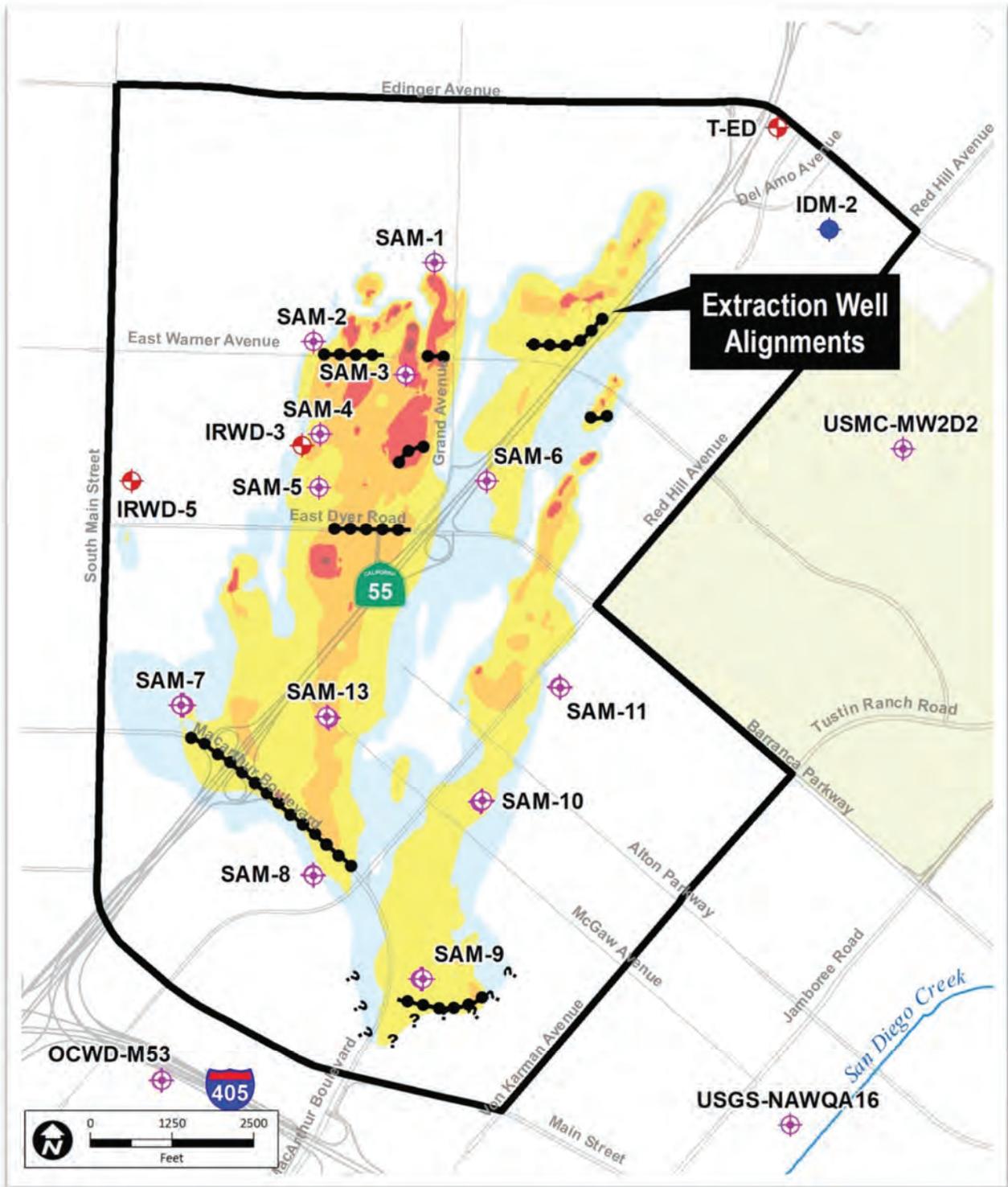


Figure 2. Contaminant Plume and Proposed South Basin Extraction Alignments

Proposal for

Pre-Design Investigation Work Plan South Basin Groundwater Protection Project

RFP-25-007

Part One – Statement of Qualifications

Orange County Water District | Submitted on November 17, 2025



Contact Name:
Brent Yamasaki, PE

Address:
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Printed on recyclable paper.

Jacobs



**Challenging today.
Reinventing tomorrow.**

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Irvine, CA 92612
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www.jacobs.com

COVER LETTER

November 17, 2025

Attn: Bill Leever, Project Manager
Orange County Water District
18700 Ward Street
Fountain Valley, CA 92708

Subject: RFP-25-007 Proposal for Pre-Design Investigation Work Plan South Basin Groundwater Protection Project, Part 1 Statement of Qualifications

Dear Mr. Leever and Members of the Selection Committee:

Since the Orange County Water District’s formation over 90 years ago, you have worked diligently to protect the groundwater basin and provide safe and reliable water supplies to your service area. This is evidenced by your recent efforts to successfully secure millions of dollars in a PFAS class action settlement to offset the cost of implementing one of the nation’s most comprehensive PFAS mitigation programs. Jacobs understands the importance of maintaining your sterling reputation for reliable service to your customers and their communities. We also understand the importance that the successful implementation of the South Basin Groundwater Protection Project (SBGPP) has in supporting the District’s mission and continuing these efforts.

Success for this project will involve working closely with the District to identify data gaps for design of the Interim Remedy, scoping the data collection efforts to address these data gaps, evaluating land acquisition and access constraints, and incorporating this information into a work plan that is compliant with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and that is approved by the stakeholder agencies.

Jacobs has an extensive understanding of the Orange County groundwater basin and how best to protect it. We will harness the skills and experience of our local Irvine office staff to ensure exceptional and timely delivery of this effort. Our local staff will be supplemented by a strong team of experts nationwide to support this project. Jacobs is experienced in designing, building, and operating facilities—a diverse skillset that is unique among consulting firms. This work will be challenging, and you’ll need a team that can effectively anticipate and overcome obstacles. Jacobs is that team.

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(Separate Envelope)

RFP TITLE COVER LETTER | REQUIRED INFORMATION

RFP TITLE | Pre-Design Investigation Work Plan South Basin Groundwater Protection Project (RFP-25-007)

LEGAL NAME AND ADDRESS OF OFFICE SUBMITTING | Jacobs Engineering Group Inc.

CONTACT PERSON | Brent Yamasaki, PE | 2600 Michelson Drive, Suite 500, Irvine, CA 92612 | 714.742.1222 | fax: 949.224.7501 |

SIGNATURE AUTHORITY | Brent Yamasaki has authority to sign this proposal and this contracting agreement for this work.

DATE OF PROPOSAL SUBMISSION | November 17, 2025

NUMBER OF EMPLOYEES | Corporate office headquarters 507 | 2,191 in California | 45,000 worldwide

NUMBER OF OFFICES | 11 in California | Jacobs is a global firm in 40 countries

OFFICE LOCATIONS RELEVANT TO THIS CONTRACT | Irvine Office at 2600 Michelson Drive, Suite 500, Irvine, CA 92647 | **STAFF SIZE** | 422 Irvine office

DISCIPLINES | Water, Transportation, Advanced Manufacturing, Cities & Places, Energy, Environmental, and Life Sciences

ADDENDUM ACKNOWLEDGEMENT | As shown in Section 5, we acknowledge receipt of Addendum 1 dated 11/05/25.

Our proposal has satisfied all the requirements of this RFP, as summarized in the Attachment No. 1, RFP Submittal Checklist, complying with and responding to all requirements of the RFP.

We are excited to offer expertise to support the Pre-Design Investigation Work Plan for the SBGPP. We believe that we are uniquely qualified to support the District with this important project. Our distinguishing qualifications include:

EXPERIENCE COMPLETING SIMILAR PROJECTS. Jacobs has direct experience completing projects similar to the SBGPP. We have supported the US Environmental Protection Agency (EPA) for over 30 years on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) program; the implementing regulations for the Superfund Program are outlined in the NCP. We have a deep understanding of planning and implementing NCP-compliant investigations, remedial designs, and remedial actions, having worked closely with EPA to develop many of the Superfund guidance documents and supporting EPA on the most complex Superfund sites in Southern California.

BREADTH AND EXPERTISE OF OUR PROJECT TEAM. Our proposed project manager, Richard Sturn, PG, CHg has more than 28 years of experience as a project manager and hydrogeologist planning and implementing field investigations to support the design of groundwater remedies. Rich has extensive experience with CERCLA and other NCP-compliant programs and previously served as the project manager/senior hydrogeologist for the District's North Basin Groundwater Protection Project. Rich will lead a team with expertise in the evaluation of site characterization data, the preparation of NCP-compliant work plans and related documents, and the preparation of defensible cost estimates for these types of projects.

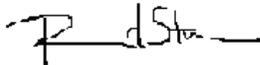
In addition, Jacobs has teamed with Monument, located locally in Irvine, California, to support real estate and land access evaluations for this project. Monument is a right-of-way consultant that serves local, state, and federal agencies, and engineering partners with public infrastructure projects in Orange County and throughout California. Jacobs has worked previously with staff at Monument to support land acquisition and access evaluations for well sites and treatment facilities with access challenges similar to that of the SBGPP.

TRACK RECORD OF SUCCESSFUL PROJECT DELIVERY FOR THE DISTRICT. Jacobs has a proven track record of delivering successful projects for the District including the PFAS Treatment Testing Study; City of Tustin PFAS Treatment, Conveyance and Nitrate Treatment Design; GSWC PFAS Treatment System Design; and the District's Recharge Facilities Model.

Please see our attached three copies of the proposal, one electronic PDF flash drive, and a separately sealed fee proposal. Our team is fully committed to working with the District to achieve your goals for this project. Should you have any questions regarding our submission, please don't hesitate to contact us.

Sincerely,

Jacobs Engineering Group Inc.



Richard Sturn, PG, CHg
Project Manager
714.227.9127
Richard.Sturn@jacobs.com



Brent Yamasaki, PE
Principal in Charge
714.742.1222
Brent.Yamasaki@Jacobs.com

1. Experience and Record of Past Performance

JACOBS' INDUSTRY-LEADING RECOGNITION

- Placed in the Dow Jones Sustainability World Index 2024 for the third consecutive year
- Disability Index® Best Places to Work for Disability Inclusion
- Earned record score in Pride at Work, Canada's 2024 Workplace Audit
- No. 1 on Engineering News-Record (ENR)'s 2025 list of Top 100 Pure Designers and
- No. 2 on ENR's Top 50 Program Management Firms
- World Environment Center Gold Medal 2023 for International
- Corporate Achievement in Sustainable Development

For over 70 years, Jacobs has established itself as a prominent global leader in offering comprehensive water resources planning and design services to water agencies. Our extensive track record encompasses a wide range of expertise, including feasibility studies, hydrologic and hydrogeologic evaluations, well systems, treatment, conveyance routing, cost estimating, and design.

In addition, we have supported the US Environmental Protection Agency (EPA) for over 30 years on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) program; the implementing regulations for the Superfund Program are outlined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). We have a deep understanding of planning and implementing NCP-compliant investigations, remedial designs, and remedial actions, having worked closely with EPA to develop many of the Superfund guidance documents and supporting EPA on the most complex Superfund sites in Southern California.

Our proven track record in delivering similar projects and

services to those requested for the Pre-Design Investigation (PDI) Work Plan for the South Basin Groundwater Protection Project (SBGPP) is showcased in **Exhibit 1.1**. In addition, the shaded rows in **Exhibit 1.1** correspond to client reference projects, which are summarized below. **Appendix A** provides project descriptions for the other representative projects summarized in **Exhibit 1.1**.

CALIFORNIA PUBLIC SECTOR CLIENTS WITHIN THE PAST FIVE YEARS

<p>Cities: Anderson, Campbell, Claremont, Corona, Crescent City, Escondido, Folsom, Fontana, Fortuna, La Mesa, Livermore, Los Angeles, Palo Alto, Paradise, Pico Rivera, Redding, Rocklin, Roseville, Sacramento, San Diego, San Jose, San Luis Obispo, San Mateo, Santa Barbara, Santa Monica, Santa Rosa, Shasta Lake, Sunnyvale, Tracy, Whittier, and Yuba City.</p> <p>Counties: El Dorado, Merced, Orange, Siskiyou, Solano, Sonoma.</p> <p>Water and Wastewater Agencies and Districts: Alameda County Water District, Bay Area Air Quality Management District, Byron Bethany Irrigation District, California Department of Water Resources, Central California Irrigation District, Central Contra Costa Sanitary District, Coachella Valley Water District, Colusa County Water District, Eastern Municipal Water District, Enterprise-Anderson GW Sustainability Agency, Glenn-Colusa Irrigation District, Henry Miller Reclamation District, Inland Empire Utilities Agency, Jurupa Community Services District, Lake County Sanitation District, Las Virgenes Metropolitan Water District, Los Angeles County Public Works, Los Angeles County Sanitation Districts, Los Angeles Department of Water and Power, Lower San Joaquin Levee District, Marin Municipal Water District, Merced Irrigation District, Metropolitan Water District of Southern California,</p>	<p>Orange County Water District, Rancho California Water District, Sacramento Area Sewer District, Sacramento Regional County Sanitation District, Santa Clara Valley Water Agency, Santa Clarita Valley Water Agency, Santa Cruz Water Department, Santa Margarita Water District, Sewerage Commission Oroville Region, Sonoma County Water Agency, South San Joaquin Irrigation District, Sutter Butte Flood Control District, Tahoe-Truckee Sanitation District, Thermalito Water and Sewer District, Union Sanitary District, United Water Conservation District, Water Replenishment District of Southern California, West County Wastewater, and Western Municipal Water District, and Zone 7 Water Agency.</p> <p>Agencies and Authorities: California Department of General Services, California Water Commission, Encina Wastewater Authority Los Angeles County Department of Beaches & Harbors, and Los Angeles County Sewer Maintenance Department, Port of Los Angeles, Sacramento Area Council of Governments, San Diego Association of Governments, San Diego County Water Authority, San Francisco Public Works, San Francisco Public Utilities Commission, San Joaquin River Flood Control Project Agency, Stanislaus Regional Water Authority, Three Rivers Levee Improvement Authority, Truckee Meadows Water Authority, and Western Riverside County Regional Wastewater Authority.</p>
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Exhibit 1.1. Featured Project Experience

PROJECT	LOCATION	PLANNING DOCUMENTS FOR GROUNDWATER INVESTIGATION	PLANS AND SPECIFICATIONS FOR PUBLIC BID PACKAGE	GROUNDWATER EXTRACTION AND TREATMENT	CERCLA/NCP	STAKEHOLDER ENGAGEMENT	DATA GAP ANALYSIS	LAND ACCESS ANALYSIS/WELL SITING	COST ESTIMATING	PUBLIC AGENCY CLIENT
EMWD Perris North Groundwater Contamination Prevention and Remediation Program	Moreno Valley, CA	■	■	■		■		■	■	■
US EPA San Gabriel Valley Superfund Site	Los Angeles County, CA	■	■	■	■	■	■	■	■	■
United Water Conservation District Extraction Barrier and Brackish Water Treatment (EBB Water) Phase 1 Monitoring Wells	Oxnard, CA	■	■	■		■	■		■	■
US EPA Montrose/Del Amo Superfund Sites	Los Angeles, CA	■		■	■	■				■
WRD Manhattan Beach Desalter Feasibility Study Final Report	Manhattan Beach, CA	■		■		■	■	■	■	■
IEUA Chino Basin Program	Chino, CA	■	■			■		■	■	■
WRD Regional Brackish Program	Torrance, CA		■	■		■	■	■	■	■
(Confidential Power Utility) Conceptual Site Model Data Gaps Investigation	Mojave Desert, NV	■				■	■			
US EPA San Fernando Valley Superfund Site	Los Angeles County, CA	■		■	■	■	■	■		■
WRD Joint Los Angeles Basins Replenishment and Extraction Master Plan	Los Angeles County, CA			■		■		■	■	■
Kinder Morgan Environmental Compliance and Groundwater Remediation Program	Various Locations, CA	■		■		■	■	■	■	
US EPA Rockets, Fireworks, and Flares Superfund Site	San Bernardino County, CA	■		■	■	■	■	■		■
Castaic Lake Water Agency Saugus Formation VOC Investigation	Santa Clarita, CA			■		■	■			■

Note: The shaded rows correspond to reference projects, which are described in more detail below

Perris North Basin Groundwater Contamination Prevention and Remediation Program

Client

Eastern Municipal Water District (EMWD)

Location

Perris, CA

Project Schedule

2019 - Present

Project Value

\$1.5 million

Client Reference

Tom Henderson
Principal Engineering
Geologist
951.928.3777, ext. 4584
HendersonT@emwd.org

PROJECT DESCRIPTION

Jacobs has supported planning, design and construction efforts and continues to provide support during implementation of EMWD's Proposition 1 grant-funded Perris North Basin Groundwater Contamination Prevention and Remediation Program (Perris North Program). The intent of the Perris North Program is to clean up nonpoint sources of volatile organic compounds, perchlorate, and nitrate from a series of comingled areas of contaminated groundwater in the Perris North Groundwater Management Zone of the San Jacinto Groundwater Basin to prevent contamination of downgradient potable supply wells.

To meet the goals of the program, EMWD has installed six groundwater extraction wells to extract contaminated groundwater that will be treated at a new centralized treatment facility and installed groundwater monitoring wells (36 well casings) at 16 locations to monitor performance of the extraction and treatment facilities.



Our efforts supporting the program include:

- Planning and design** – We've assisted with extraction and monitoring well siting and permitting, prepared planning documents including specifications for extraction wells, work plans and specifications for the groundwater monitoring wells, and provided senior review of the Monitoring and Reporting Plan (MRP), which included developing a Project Assessment and Evaluation Plan and Quality Assurance Project Plan for the program. We developed the program's initial schedule and evaluated drilling methods, costs, and schedules for conventional, nested, and clustered monitoring wells. We prepared the preliminary designs for four of the six extraction wells, which included technical specifications and bid support for a public solicitation for drilling services. For the monitoring wells, Jacobs prepared work plans, preliminary designs, and technical specifications and bid support for a public solicitation for drilling services. The monitoring well planning support included coordination and obtaining approvals from the Santa Ana Regional Water Quality Control Board (RWQCB) for work plans and to install nested wells in lieu of monitoring well clusters.
- Construction services** – Jacobs provided 24/7 contractor oversight, and construction management services during the drilling, construction, and testing of three new 18-inch-diameter extraction wells. Additionally, we managed the group of consultants overseeing the drilling, construction, and development of the monitoring wells, and prepared presentation materials and led discussions with the Santa Ana RWQCB to obtain approvals of the final well designs.
- Implementation** – We are currently providing oversight of quarterly groundwater monitoring activities and will be implementing first two years of the MRP. Implementation of the MRP will include assessment of the pre-operational groundwater (baseline) conditions and preparing operational reports for submittal to the Santa Ana RWQCB to assess performance of the facilities.

San Gabriel Valley Superfund Site

Client

U.S. Environmental Protection Agency (EPA)

Location

Los Angeles County, CA

Project Schedule

2023 - Present

Project Value

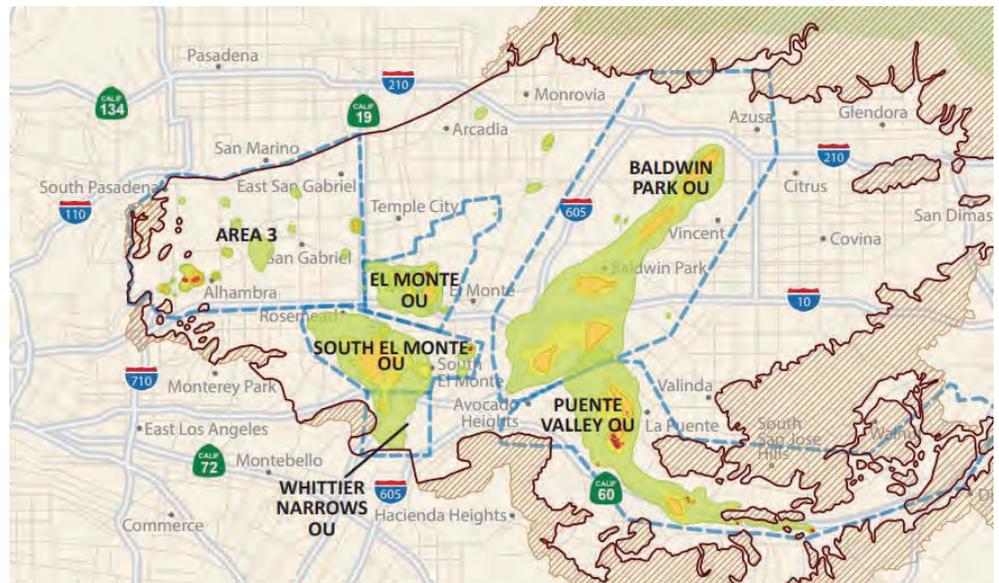
\$7.2 million

Client Reference

Ray Chavira
Superfund Project Manager
for El Monte and Puente
Valley OUs
415.947.4218,
Chavira.Raymond@epa.gov

PROJECT DESCRIPTION

Jacobs has supported the EPA at the San Gabriel Valley Superfund Site since the 1980s, completing numerous remedial investigations (RI), feasibility studies (FS), data gap investigations, support of Remedial Design (RD)/Remedial Action (RA), Records of Decision (ROD) and Proposed Plan support, and oversight of potentially responsible parties (PRPs) across all operable units (OUs). We are currently supporting projects in the Puente Valley OU, El Monte OU, and Area 3. Our client reference is for current work in the El Monte and Puente Valley OUs. Some highlights of relevant experience across the San Gabriel Valley Superfund Site are summarized below.



- Puente Valley OU (Area 4)** – Jacobs is currently working on a task order for technical oversight of two PRP groups implementing the shallow zone (SZ) and intermediate zone (IZ) groundwater containment remedies in a highly complex hydrogeologic setting with multiple aquifer zones impacted by volatile organic compounds (VOCs), hexavalent chromium, 1,4-dioxane, and perchlorate forming a several-mile long area of groundwater contamination underlying portions of the Cities of Industry and La Puente. This work involves oversight of start-up and operation of two constructed groundwater treatment plants that discharge treated IZ groundwater via distribution to potable water supply and treated SZ-South groundwater water to surface water, and remedial design and construction of a second SZ-North groundwater treatment plant with discharge via reinjection. The project also includes preparing National Contingency Plan (NCP)-compliant planning documents and work plans, coordinating and securing access on private property and in public rights-of-way, EPA fund-lead offsite characterization of the nature and extent of contamination at selected contaminant source facilities, updating the conceptual site model, review of groundwater modeling and other PRP technical reports, and community involvement support.
- Area 3 (Alhambra)** – For over 20 years, Jacobs has implemented the various stages of EPA's fund lead RI efforts in Area 3, including coordination with State agencies and other stakeholders and identification and investigation of potential sources. Area 3 is a 19-square-mile area in the western portion of the San Gabriel Valley that includes small pockets of groundwater contamination underlying portions of the cities of Alhambra, Rosemead, San Marino, Temple City, and South Pasadena. Jacobs conducted the extensive

areawide RI for Area 3 and prepared a comprehensive 2009 RI Report that documented the nature and extent of groundwater contamination within Area 3 and assessed the potential risks to human health and the environment. The project also included preparing NCP-compliant planning documents and coordinating and securing access on private property and in public rights-of-way. After supporting EPA's presentation to the National Remedy Review Board (NRRB) in 2012, Jacobs initiated a data gaps investigation to help confirm whether a true "regional groundwater plume" existed in Area 3 or if the groundwater contamination was limited to individual sub-regional areas. Between 2014 and 2021, we conducted additional source property evaluations and investigations, installed additional regional monitoring wells, conducted groundwater monitoring, and evaluated vapor intrusion. The data gaps investigation also facilitated evaluation of potential in-situ remedial actions to address residual source area contamination. Jacobs has supported EPA's interactions with other cleanups led by the California Department of Toxic Substances Control (DTSC) and Los Angeles RWQCB, including detailed tracking of site-specific investigations and remedial efforts. Jacobs is currently preparing planning documents to support field activities intended to close remaining data gaps in the lateral and vertical extent of VOCs in groundwater.

- **El Monte OU (Area 1)** – Jacobs is providing oversight of the RD/RA activities of two separate PRP groups implementing remedies to contain shallow and deep zone groundwater contaminated primarily by TCE and PCE, as well as removal of 1,4-dioxane, hexavalent chromium, nitrate, and perchlorate in a 10-square-mile area underlying the Cities of El Monte, Temple City, and Rosemead. Jacobs' work has included preparing NCP-compliant planning documents, detailed technical review of RD/RA work plans; conceptual site models; nature and extent of contamination; compliance monitoring, compliance action, and performance evaluation plans and reports; groundwater model construction, calibration, and containment simulations for RD and performance evaluation; remedy enhancement and optimization plans; and 30% and 60% design submittals/construction bid packages for three groundwater extraction and treatment systems. The PRPs entered into agreements, with EPA's and Jacobs' support, with the two water purveyors to operate two groundwater extraction and treatment systems: the City of El Monte and the Golden State Water Company. Work has also included RA construction oversight of monitoring, extraction, and reinjection well installation and monitoring; conveyance pipelines; and three groundwater treatment plants that discharge treated water via reinjection, distribution to potable water supply, and surface water. Although there continues to be evaluation of groundwater conditions and potential enhancement of the various remedies, the groundwater pump and treat systems have been in operation for many years with Jacobs providing close oversight of remedy operations and enhancements. We have also been responsible for conducting critical reviews of two PRP groundwater models used to simulate plume hydraulic capture to identify their predictive differences and provide guidance on mutually agreeable modeling approaches so the results can be reliably compared.
- **South El Monte OU (Area 1)** – Jacobs provided oversight of a PRP-led RI/FS in the 1990s and supported EPA's preparation of the Interim ROD in September 2000. For the following 20 years, we have provided oversight support to EPA for ongoing remedy operations. The OU covers an approximately 2-square-mile area underlying the cities of South El Monte, El Monte, and Rosemead within the south-central portion of the Main San Gabriel Basin. Contaminants of concern include VOCs, primarily TCE and PCE, and perchlorate. Three existing water purveyor treatment facilities operating in the South El Monte OU were identified as options for implementing EPA's interim remedy. The San Gabriel Basin Water Quality Authority entered into agreements, with EPA's and Jacobs' support, with the three water purveyors to operate the remedy wells: the City of Monterey Park, Golden State Water Company, and San Gabriel Valley Water Company. Jacobs supported EPA with technical review and oversight of the water purveyors performing long term O&M of the active regional, groundwater cleanup in the South El Monte OU. We worked closely with the EPA and the water purveyors throughout remedy implementation and with DTSC to help DTSC understand the potential financial requirements of long-term remedy O&M.

Extraction Barrier and Brackish Water Treatment (EBB Water) Phase 1 - Monitoring Wells

Client

United Water Conservation District (United)

Location

Oxnard, CA

Project Schedule

2023 - 2025

Project Value

\$600K

Client Reference

Chris Coppinger
Principal Hydrogeologist
805.678.0292

ChristoferC@unitedwater.org

PROJECT DESCRIPTION

Jacobs was contracted by United to provide planning, design, construction oversight, and related support services for the installation and testing of new monitoring wells at Naval Base Ventura County Point Mugu for their Extraction Barrier and Brackish (EBB) Water project. The monitoring well installations were part of Phase 1 of United's EBB Water project, which is currently in the design and permitting phase, and were installed in agreement between United and Fox Canyon Groundwater Management Agency as part of the State of California Department of Water Resources Sustainable Groundwater Management Act Implementation Grant. EBB Water will include pumping of brackish groundwater from extraction wells, with treatment of the extracted water to provide a new source of potable water supply and create an extraction barrier to intercept seawater that is intruding inland into local aquifers from the Pacific Ocean and remove brackish to saline water that has already migrated inland.

Jacobs supported United with technical, permitting, and logistical requirements to drill, install, and test new monitoring wells, including:

- **Planning and design-** We prepared planning documents and technical specifications and plans for a public bid package. Planning documents included a Project Plan, which outlined the technical, permitting, and logistical requirements for conducting work on the Navy base, a site-specific Health and Safety Plan, and waste management plan. The technical specifications outlined requirements for drilling and constructing well clusters at five locations, consisting of a combination of 3-inch diameter single-screened wells, 3-inch diameter nested wells, and 5-inch diameter single-screened wells. The 5-inch diameter wells were used to conduct pumping tests at two well cluster locations to evaluate aquifer properties and potential vertical hydraulic communication between the shallow aquifer, which is impacted by anthropogenic contamination, and deeper aquifer that contain brackish groundwater that will be extracted during future phases of the project. The drilling approach included a combination of methods to install shallow wells (rotosonic) and deeper wells (direct mud rotary) in the Oxnard, Mugu, and Fox Canyon Aquifers, which are bound by silt and clay aquitards. Permanent conductor casings were installed for borings below the shallow Semi-perched Aquifer to prevent potential cross contamination between the shallow aquifer and the deeper Oxnard, Mugu, and Fox Canyon Aquifers during drilling.
- **Construction and final design-** Jacobs provided oversight of drilling, well construction, development, and aquifer testing. Final well designs were developed for the new monitoring wells based on interpretation of soil cores, cuttings, downhole geophysical logs, and nearby cone penetration test (CPT) data. Constant rate pumping tests were conducted in the 5-inch wells and included installation of a stilling well to monitor ocean tides and pressure transducers in the new monitoring network to evaluate pumping response.
- **Data Gaps -** Under a separate agreement, Jacobs oversaw drilling of two exploratory boreholes to collect lithologic and water quality data using a SimulProbe sampler near planned extraction wells to assist in extraction well and treatment design efforts for future phases of the project



2. Project Team and Qualifications

Jacobs stands as the ideal partner for the District's crucial first phase (Phase 1a Pre-Design Investigation Work Plan) of the SBGPP. Our team's long history delivering studies and designs to California water agencies, expertise in both the water and environmental fields, along with an unparalleled track record of success delivering services on the most complex Superfund Sites in Southern California, sets us apart. With this unique blend of qualifications, we are poised to deliver outstanding results and contribute to the success of the SBGPP. In addition, the majority of our team is local to Orange County, allowing us the opportunity to assess field conditions, logistics, and access constraints easily, which will improve planning for the PDI Work Plan.

2.1 Organizational Chart

Richard Sturn, PG, CHg, is our proposed project manager and point of contact for the District. Rich has more than 28 years of experience as a project manager and hydrogeologist supporting both remediation and water resource supply planning for municipal clients. Rich has a strong background in CERCLA and NCP processes. Rich will be supported by a team of experienced hydrogeologists, geologists, scientists, engineers and right-of-way professionals who understand the needs for this project. Our team members have direct experience:

- Evaluating information to identify data gaps for the design of groundwater extraction remedies
- Planning and implementing site characterization programs that incorporate CPT, well installation, and aquifer testing in developed, urban settings
- Preparing NCP-compliant planning documents for site characterization projects on behalf of public agencies
- Assessing real estate and access challenges for the siting of drilling locations, wells, and treatment facilities
- Developing accurate and defensible cost estimates for complex site characterization and remediation projects

Exhibit 2.1 shows our proposed organizational chart. In **Section 2.2**, you will find a summary of our key project staff's experience, roles, and responsibilities, highlighting their expertise and projects that they are currently supporting. For a detailed overview of their qualifications, please refer to **Appendix B**, which includes their resumes. Most of our team members have worked together for years. This cohesive unit has demonstrated successful teamwork, particularly on projects similar to yours. This synergy and collective experience ensures effective coordination and a shared commitment to delivering exceptional results.

Richard Sturn, PG, CHg is ideally suited as the project manager for the SBGPP PID Work Plan project because

- *He has a proven track record of leading teams to plan and implement site characterization projects, feasibility studies, and remedial designs for VOC-contaminated groundwater;*
- *He understands the access and logistic challenges of implementing these types of projects in highly-developed urban settings; and*
- *He has a clear understanding NCP-equivalent regulatory frameworks*

Rich previously served as the project manager for the District's RI/FS for the North Basin Groundwater Protection Project and worked closely with the District to produce RI/FS planning documents for review by US EPA, DTSC and the RWQCB.

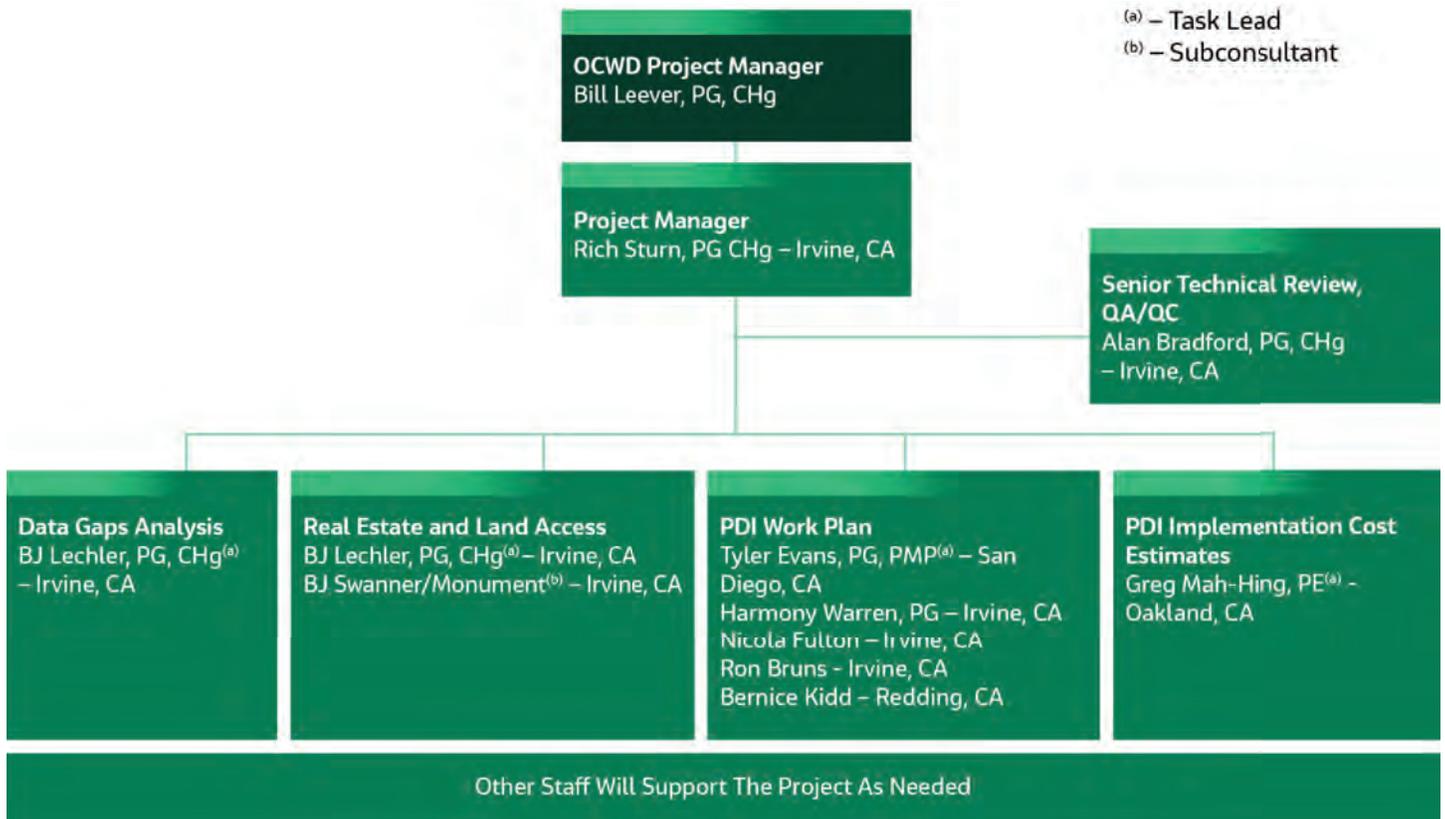


Exhibit 2.1. Project Organizational Chart

2.2 Team Experience

Team Member/Role	Years of Experience	Availability	Licenses & Certifications	Education
Richard Sturn Project Manager	28	20-30%	PG, CHg	MS, Geology BS, Geology
<p>Richard is a seasoned project manager and hydrogeologist with 28 years of experience serving municipal clients on a wide range of groundwater-related projects. His expertise includes site characterization; feasibility studies; and the design of groundwater extraction systems. He has also served clients on a variety of groundwater resource projects including the planning, siting, and design of groundwater supply and managed aquifer recharge projects. Richard has extensive experience with CERCLA projects and previously supported OCWD as a project manager and senior hydrogeologist for the North Basin Groundwater Protection Project and was a lead author for the RI/FS work plan and related documents for this project. Rich is currently supporting the Inland Empire Utilities Agency to manage the siting and conceptual design for an injection wellfield and related infrastructure within a highly-developed urban setting, a project with access challenges similar to the SBGPP.</p>				

Alan Bradford Technical Reviewer and QA/QC	37	10-20%	PG, CHg	MS, Hydrology BA, Geology
<p>Alan has more than 36 years of project management and technical support experience at 29 CERCLA sites in California, including remedial investigations (RIs), feasibility studies (FSs), RDs, RAs, ROD development, physical characterization of hydrogeology, definition of the nature and extent of contamination, conceptual site model development, analysis of fate and transport, long-term monitoring for compliance with highly complex groundwater containment sites, large groundwater extraction and treatment systems using reinjection, distribution to water supply and discharge to surface water, preparation of NCP-compliant planning documents, community involvement, and enforcement support. Alan has provided project management and technical support for regional groundwater cleanups and investigations involving VOCs, 1,4 dioxane, perchlorate, and hexavalent chromium at San Gabriel Valley Superfund Site OUs and numerous other industrial and military facilities with multidisciplinary teams of specialists in hydrogeology,</p>				

Team Member/Role	Years of Experience	Availability	Licenses & Certifications	Education
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engineering, groundwater modeling, risk assessment, California applicable or relevant and appropriate requirements (ARARs) analysis, removal alternative analysis, and engineering evaluation/cost analysis (EE/CA) study reports. He has also managed design and construction of extraction and monitoring wells and provided on-call hydrogeologic services for municipal water agencies. Alan currently supports USEPA and Navy clients on CERCLA projects as a senior technical reviewer.

BJ Lechler

Data Gaps Analysis Lead	23	30-40%	PG, CHg	MS, Hydrology
Real Estate and Land Access Analysis Lead				BS, Geology

BJ is a hydrogeologist and project manager with 23 years of experience in groundwater consulting for municipal, federal, and industrial clients. Throughout his career, he has focused almost exclusively on groundwater projects in Southern California. BJ has extensive experience planning and evaluating site characterization data to identify data gaps and has led data gaps investigations for to support remedial investigations and design efforts, and the planning and implementation of field programs utilizing field methods ranging in scale from direct push to flooded reverse rotary drilling. BJ has direct experience using the expected investigation approaches for the SBGGP (CPT, auger, and sonic drilling; design and execution of pumping tests), is familiar with the access requirements and challenges for these methods, and has worked previously with our real estate specialist (BJ Swanner of Monument) to assess siting options for drilling sites and treatment facilities in urban areas. BJ has a strong background in CERCLA groundwater investigations, having supported USEPA on numerous RI/FS and remedial projects for the largest Superfund Sites in Southern California. BJ is currently supporting WRD with design of the Torrance Groundwater Desalter Expansion project, which includes the siting and design of extraction wells and conveyance pipelines within congested roadways, and EMWD with implementation of the Perris North Program which is a regional cleanup of comingled areas of VOC, nitrate, and perchlorate contamination being executed under oversight from the Santa Ana RWQCB.

Tyler Evans

PDI Work Plan Lead	15	20-30%	PG, PMP	MS, Geology BS, Geology
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Tyler is adaptive, creative problem solver primarily focusing on delivery of contract task orders on Jacobs NAVY CLEAN contract. He has served as a Project Manager on multiple CERCLA task orders under federal environmental contracts with responsibilities including managing budgets, developing planning documents, coordinating field investigations, preparing technical reports, and ensuring compliance with the CERCLA regulatory frameworks. Tyler’s project experience spans complex environmental clean-up operations involving groundwater and soil remediation, vapor sampling, and in-situ treatment technologies. He’s led drilling efforts and multi-year monitoring and remediation programs, often requiring coordination across multiple stakeholders and subcontractors. Prior to joining Jacobs Tyler assisted in developing the hydrogeologic cross-sections presented in the Supplemental RI Report for the SBGGP. Tyler is currently supporting multiple NAVFAC projects that involve the planning, work plan development, and implementation of site characterization projects.

Harmony Warren

PDI Work Plan – Support	18	20-30%	PG	MS, Hydrogeology BS, Hydrogeology
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Harmony has almost two decades of technical and working knowledge in the fields of hydrogeology, hydrology and geology while working with federal, municipal, mining, and geothermal operations. She has extensive experience managing, planning and implementing field projects, including the development of work plans and associated NCP-compliant planning and other documents for large well monitoring well networks, aquifer testing, general site characterization to develop conceptual hydrogeologic models and remedial designs. Her current work supports clients including the US Environmental Protection Agency (EPA), Navy, water utilities and various geothermal companies. Harmony has spent a great deal of time coordinating with regulators and stakeholders including EPA, California Department of Toxic Substances and Control, and public water utilities. Harmony currently supports EPA and Navy on several RI projects.

Nichola Fulton

PDI Work Plan – Health and Safety	18	10%	-	BS, Civil Engineering with Environmental Studies
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Nichola is a proactive Health and Safety Manager with over 18 years of experience in Occupational Health and Safety and a solid foundation in Civil and Environmental Engineering. She is currently a Senior H&S Manager for Jacobs and the Geography Manager for

Team Member/Role	Years of Experience	Availability	Licenses & Certifications	Education
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water and transportation projects in California. Nichola can lead teams and work well in challenging situations. Nichola has driven Health and Safety leadership and operational excellence on large-scale infrastructure projects in both the US and the UK, including water, environmental, and transportation. She has worked with the project team implementing environmental health and safety programs for large drilling projects for other Southern California municipal agencies. Nichola currently provides health and safety support to multiple Jacobs projects in Southern California.

Ron Bruns

Data Gaps Analysis, PDI Work Plan - Data Management Support	31	10%	-	BA, Liberal Arts
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Ron is an expert environmental data manager. He manages data in environmental chemistry sampling and analysis programs; site investigation, site assessment, and risk assessment programs; long-term monitoring/long-term operation programs and remediation programs; and historical data migration and warehousing. is well versed in all data management platforms for managing environmental data, develops his own tools for data management and visualization, and is an expert in application development using Microsoft Office, especially Microsoft Access and Microsoft Excel using Visual Basic for Applications. Ron currently serves as the data manager for multiple remediation programs.

Bernice Kidd

PDI Work Plan – QAPP, Data Validation	31	10%	-	BS, Chemistry
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Berney is a chemist with over 31 years of experience supporting numerous federal, state, and municipal clients in the areas of analytical and environmental chemistry, including over 20 years combined chemical data validation/data quality management. She has worked with a large variety of monitoring and analysis programs such as sampling for drinking water/wastewater, sediment, soil, air/soil vapor, surface water, groundwater, and tissue. She provides chemistry QC which involves regulatory reporting, quality control plan development, sampling design, analysis of toxic/hazardous chemicals, and data validation requirements for EPA, AFCEC, USACE, and state agency clients. She approves project-specific Method Quality Objectives (MQO's) and Data Quality Indicators (DQI's) to meet project-specific performance standards. Bernice currently supports multiple EPA and AFCEE projects as the project chemist and data validation lead.

Greg Mah-Hing

PDI Implementation Cost Estimates - Cost Estimating Lead	48	20-30%	PE	BS, Civil Engineering
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Gregory Mah-Hing's 48 years of experience combine exceptional estimating credentials on environmental, water, civil and transportation projects with hands-on construction management and field supervision. He brings to projects a practical, realistic perspective, multifaceted knowledge of the estimating role in the entire project process, and current expertise in state-of-the-art estimating software programs. He has been an integral part multiple environmental remediation and restoration programs currently. He brings to projects a practical, realistic perspective, and multifaceted knowledge of the estimating role in the entire project process. Greg currently serves as senior cost estimator and constructability subject matter expert for Jacob's USEPA program.

BJ Swanner – Monument

Real Estate and Land Access Analysis - Access and Acquisition Support	18	20-30%	Real Estate Sales	BA, Geography, GIS and Remote Sensing
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With over 18 years of experience managing right-of-way programs for public infrastructure projects, BJ has successfully contributed to project planning, cost estimation, and the implementation of innovative right of way solutions. His expertise spans projects of all sizes, delivering comprehensive project management from setup to closeout. BJ has led complex projects for agencies such as WRD, OCTA and various local cities throughout Orange County. As a recognized leader in the Southern California right-of-way profession, BJ is well-versed in local markets and infrastructure and has established strong relationships with key regional stakeholders. His career focus has been on supporting engineers and planners during the pre-acquisition phases of project development. BJ previously worked with Jacobs to evaluate real estate options for wells sites, pipelines, and treatment facilities for the Los Angeles Basin Replenishment and Extraction and Master Plan and Regional Brackish Water Reclamation projects. BJ currently supports multiple public agencies land acquisition and right of way support projects in Southern California.

3. Project Overview and Approach

With over six decades of experience, OCWD has successfully managed the Orange County groundwater basin. Through a series of strategic actions, the District has ensured water supply reliability for its constituents. The SBGPP is one of these actions and is intended to protect groundwater supplies by containing and remediating groundwater that is impacted with VOCs and other constituents of concern.

Groundwater contamination from industrial and manufacturing and other sources occurs in the project area, primarily in the Shallow Aquifer System. Some responsible parties have implemented remedies to address the sources of groundwater contamination with enforcement and oversight provided by the DTSC and Santa Ana RWQCB. However, other responsible parties have not implemented groundwater remedies, which has resulted in the continued migration of contaminated groundwater. To address this risk to groundwater supplies, the District has conducted site characterization, a feasibility study, and developed a proposed plan for an Interim Remedy to address regional groundwater contamination in the SBGPP area.

The focus of the Interim Remedy is to contain and remediate the comingled, offsite groundwater contamination within the SBGPP area (Operable Unit 2). Groundwater extraction and treatment was selected as the remedial technology for the Interim Remedy, which will consist of groundwater extraction and treatment systems along eight extraction alignments (**Exhibit 3.1**). Each of the extraction alignments will include groundwater extraction facilities (wells, trenches, or drains), a local groundwater treatment facility for sediment and VOC removal, and discharge piping to the sanitary sewer system. Based on modeling conducted for the feasibility study, the estimated extraction rates required for containment along these alignments range from approximately 1 to 100 gallons per minute (gpm).

Although information was available to evaluate remedial alternatives and identify the Interim Remedy, additional more detailed data are needed to support remedial design. In general, the following types of data would be needed for each of the extraction alignments to design the planned groundwater extraction and treatment systems:

- Lithologic conditions to assess overall aquifer conditions and lateral and vertical heterogeneity
- Lateral and vertical extent of VOC concentrations
- Representative VOC concentrations in extracted water for treatment design
- Representative concentrations for parameters other than the VOCs that may influence treatment design
- Aquifer property data and field estimates of extraction well/trench yield

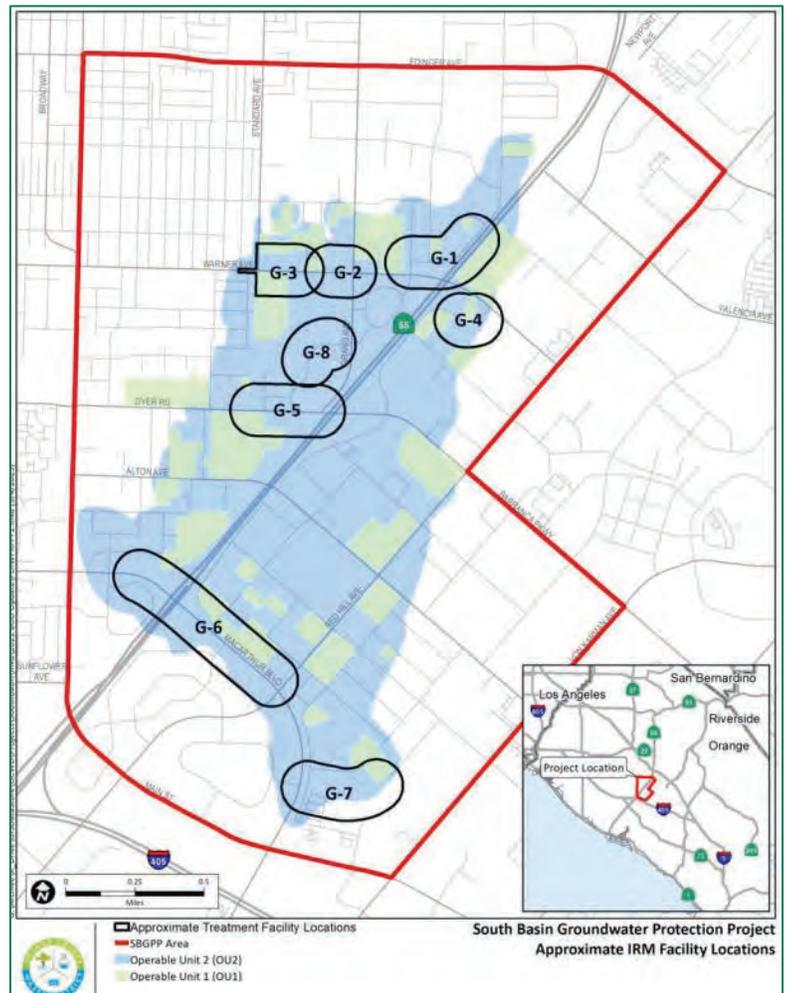


Exhibit 3.1. SBGPP Project Area

- Updated information for groundwater levels and local flow directions and gradients
- Property ownership for potential well/trench, pipeline, and treatment locations
- Locations of sanitary sewer conveyance for potential treated water discharge locations
- The locations of above and below grade utilities that may conflict with the future remedy infrastructure

Jacobs understands that the purpose of this project is to prepare an NCP-compliant, PDI Work Plan to address these data needs.

3.1 Project Overview

The PDI is expected to include drilling up to 600 soil borings/CPTs and the installation of up to 36 test extraction wells, one test trench/drain system, and up to 50 monitoring wells. In addition, the test extraction wells and trench/drain system will become part of the interim remedy. Therefore, the siting of these PDI elements in particular will need to consider the logistical and access needs for the interim remedy. Site access in each of the project areas is critical for the project. In addition, close coordination with stakeholders also will be needed.

3.1.1 Project Locations

The PDI investigation is focused on filling data gaps in eight areas that correspond to alignments for future groundwater extraction and treatment facilities (**Exhibit 3.1**). Since all areas are within 3 miles of Jacobs' Irvine office, our proposed project manager and data gaps lead had the opportunity of walking each alignment to evaluate potential challenges and opportunities for siting PDI and future treatment system locations. All locations are in highly developed industrial or commercial areas along relatively high traffic streets. It will be critical to strategically acquire property/access to safely complete the PDI while considering the future remedial design. Some observations and general considerations when siting PDI locations are summarized below along with specific challenges and opportunities for each area in **Exhibit 3.3**.

- Ideally locations of extraction wells will be on same side of the street as future facilities. Some alignments are along infrastructure that may be challenging for future conveyance crossings such as the Lane or Armstrong Channel or the 55 Freeway overpass
- Some properties or rights-of-way along the alignments had existing monitoring wells, which could be a sign that owner's are willing to grant access. An example is at the Comfort Inn and Suites on Hotel Terrace (Extraction Alignment G-8) shown in **Exhibit 3.2**.
- Many locations have overhead utility conflicts (**Exhibit 3.2**). CPT or limited access drilling may be feasible for the PDI in areas with overhead conflicts, but installation of deeper monitoring or extraction wells could be limited in these locations.



Exhibit 3.2. PDI Site Access

Exhibit 3.3. Summary of PDI Locations and Reconnaissance Observations

PROJECT LOCATION	DESCRIPTION	APPROX LENGTH (FEET)	POTENTIAL CHALLENGES	POTENTIAL OPPORTUNITIES
G-1	Ritchey St; Santa Ana	1,400	<ul style="list-style-type: none"> Overhead lines on north/west side of street 55 Freeway expansion in progress 	<ul style="list-style-type: none"> Source facilities on north side of street Parking areas along both sides of street
G-2	Warner Ave west of Grand Ave; Santa Ana	400	<ul style="list-style-type: none"> Overhead lines on north side of street Underground utilities observed in sidewalk and street 	<ul style="list-style-type: none"> Source facilities on north side of street Planting strip along southern sidewalk Parking areas on north side of street
G-3	Warner Ave at Standard Ave; Santa Ana	1,100	<ul style="list-style-type: none"> Overhead lines on both sides of street Underground utilities observed in sidewalk and street 	<ul style="list-style-type: none"> Source facilities on north and south side of street Planting strip along southern sidewalk Parking areas and vacant ROW on north side of street
G-4	Pullman St; Santa Ana	400	<ul style="list-style-type: none"> Overhead line crossing street in middle of alignment Manholes/valves on south side of street 	<ul style="list-style-type: none"> Source facility on north and south side of street Parking areas on north and south side of street
G-5	Dyer Rd; Santa Ana	1,300	<ul style="list-style-type: none"> Manholes and valves in two north center lanes; utilities in north sidewalk Manholes and valves in two south curb lanes; utilities in south sidewalk 55 Freeway expansion in progress 	<ul style="list-style-type: none"> Source facilities and Caltrans ROW on south side of street Parking areas on north and south side of street
G-6	MacArther Blvd; Santa Ana/Irvine	3,400	<ul style="list-style-type: none"> 55 Freeway overpass Overhead lines on north side of street in eastern half of alignment 55 Freeway expansion in progress 	<ul style="list-style-type: none"> ROW space on north side of MacArther along western half of alignment Lane Channel and source facilities along eastern half of alignment Bridge crossing of channel could accommodate future piper route (hang pipe), if needed Parking lots on south side of street on western half of alignment
G-7	Armstrong Storm Channel west of Gillette Ave; Irvine	1,500	<ul style="list-style-type: none"> Overhead lines on eastern 2/3 of channel access road 	<ul style="list-style-type: none"> Access road on south side of alignment/channel Parking lots and source facility on north side of alignment
G-8	Hotel Terrace; Santa Ana	600	<ul style="list-style-type: none"> SoCal Gas transmission line near east end of alignment No source facilities along street 	<ul style="list-style-type: none"> Unutilized portion of property along eastern 1/3 of alignment Existing monitoring well in hotel parking lot on north side of street
TOTAL LENGTH (FEET)		10,100		

3.1.2 Collaboration with Key Stakeholders

Jacobs recognizes that in addition to OCWD, successful completion of the PDI Work Plan will require input from several other stakeholders. Their input is critical to successfully addressing data gaps either through technical review and feedback or acquiring access to locations to conduct the work. A summary of some key stakeholders is provided below.

- **State Regulatory Agencies:** Santa Ana RWQCB and DTSC provide oversight and enforcement of regulatory activities at source facilities, have a wealth of knowledge on groundwater contamination and remediation throughout the SBGPP area, and will review and comment on the PDI Work Plan.
- **Orange County Sanitation District (OC San), Santa Ana, and Irvine Ranch Water District (IRWD):** Treated groundwater from the interim remedy will be discharged to local sewer systems maintained by Irvine Ranch Water District (IRWD), the City of Santa Ana and ultimately to OC San's sewer system for additional treatment prior to final treatment at OCWD's Groundwater Replenishment System (GWRS) and recharge in the groundwater basin. Groundwater produced from pumping tests during PDI Work Plan implementation could potentially be discharged to local sewers. The PDI Work Plan will document all requirements to discharge groundwater to the local sewer systems, as needed.
- **Orange County Flood Control District (OCFCD):** The District may need access/encroachment agreements with OCFCD to complete investigations along two alignments (G-6 and G-7).
- **Caltrans:** Three of the alignments are adjacent to or intersect Caltrans rights-of-way (G-1, G-6, and G-7) and investigation locations may need to be sited in Caltrans rights-of-way.
- **Local Cities:** PDI investigation locations will all likely be in the cities of Santa Ana and Irvine, and potentially Tustin. The PDI Work Plan will document the permits and other requirements from each city to safely conduct work in the right-of-way, as needed.



OCWD likely has longstanding relationships and may lead communications with all stakeholders. Jacobs also has a long history working with many of these stakeholders and will leverage these existing relationships to support OCWD.

3.2 Project Approach

This section presents Jacobs' project approach, which is organized to align with the tasks as presented in the RFP:

- Task 1 – Project Management and Quality Assurance/Quality Control
- Task 2 – Data Gaps Analysis
- Task 3 – Real Estate and Land Access Analysis
- Task 4 – Pre-Design Investigation Work Plan
- Task 5 – PDI Cost Estimate

Jacobs understands that the District's goal is to complete these tasks over a duration of approximately 18 months. **Exhibit 3.4** shows our preliminary project schedule for this work. During project initiation, Jacobs will coordinate with the District to explore opportunities for schedule compression by performing more of the work in parallel.

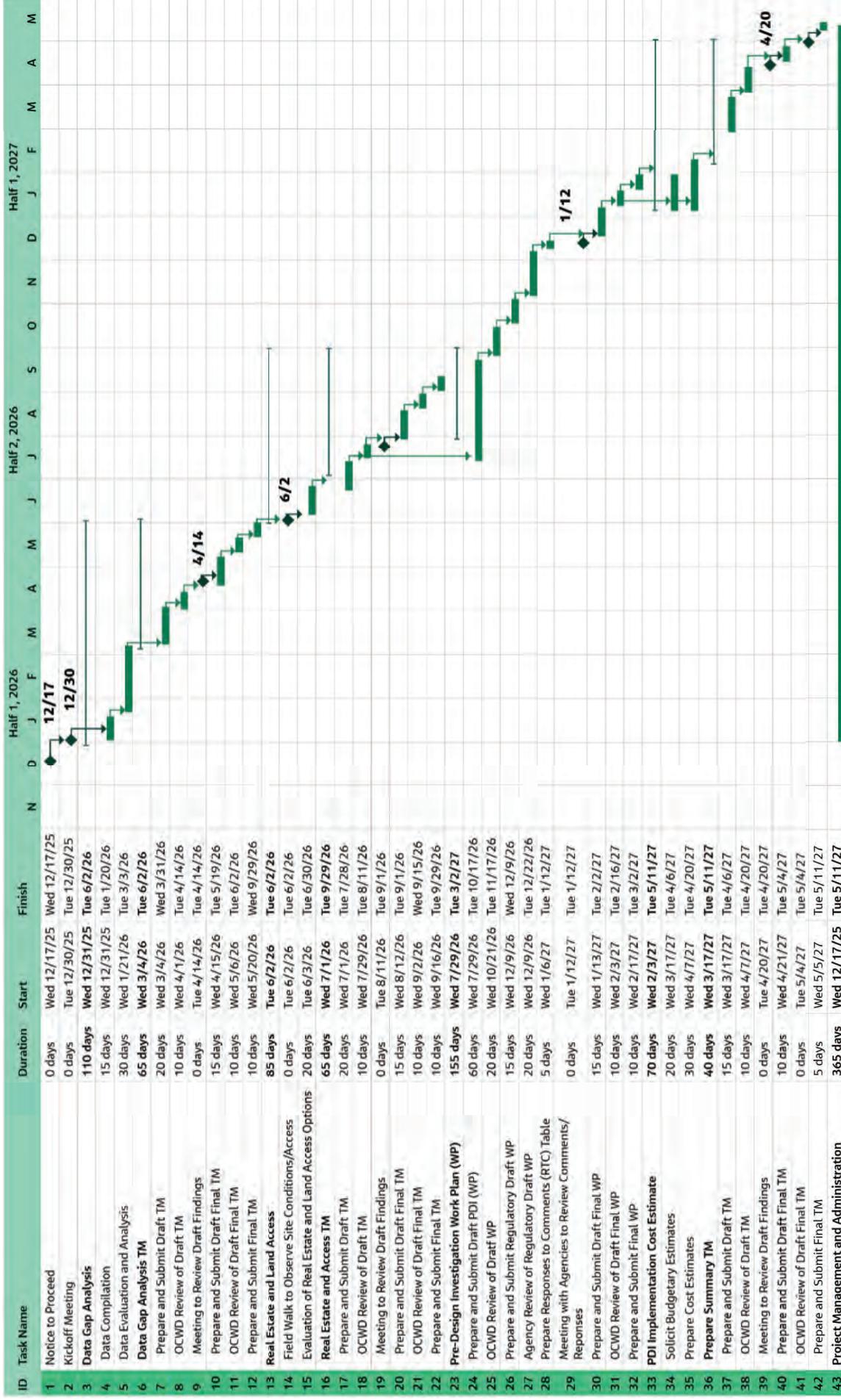


Exhibit 3.4. Preliminary Project Schedule

3.2.1 Task 1- Project Management and Quality Assurance/Quality Control (QA/QC)

Jacobs' Project Manager, Rich Sturn, will be the primary point of contact for the District. He will track the project schedule and budget and will communicate regularly with the District during project execution. As an initial task, Rich will lead a project kickoff meeting with the District and Jacobs staff to review key team roles and responsibilities, stakeholders, key deliverables, and the project schedule.

Rich will also conduct monthly meetings with the District to review progress and participate in conference calls and District-led stakeholder meetings during the project, including:

- A field walk (visit) with OCWD to observe site conditions
- A meeting to review the findings of the data gaps assessment task
- A meeting with regulatory agencies to review their comments on the Draft version of the PDI Work Plan

The meetings will be held in person or virtually as requested by OCWD. Jacobs will prepare agendas and meeting minutes for each of these meetings. Rich will prepare monthly invoices and progress reports that meet the District's requirements.

Rich will oversee the crucial aspect of quality assurance and quality control reviews for this project. One of his primary responsibilities is to develop a comprehensive quality management plan (QMP) that outlines the roles, responsibilities, and processes involved in QA/QC. This document will serve as a guide for maintaining the highest standards throughout the project. Additionally, **Alan Bradford, PG, CHg**, our QA/QC reviewer, will actively participate in the QA/QC process, lending his expertise and insights to ensure quality at every stage. **Exhibit 3.5.** illustrates the quality review cycle for our project deliverables.

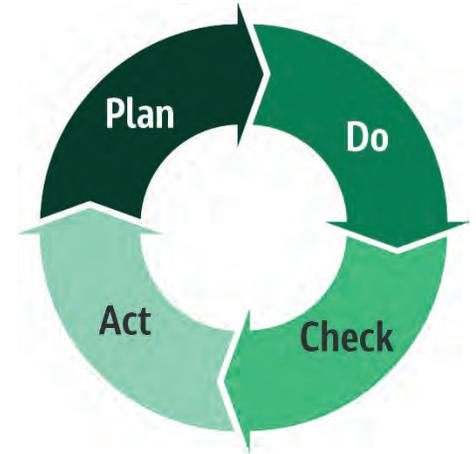


Exhibit 3.5. Quality Review Process

3.2.2 Task 2 – Data Gap Analysis

For this task, Jacobs' will conduct a thorough review of the project objectives, relevant data, and related information to identify key data needs for the remedy design and to address the data gaps identified by the Santa Ana RWQCB.

3.2.2.1 Data Compilation

As a first step, Jacobs will compile the relevant data and information needed to complete the data gap analysis. Based on our understanding of the project needs the following data will be acquired and compiled:

- Location, depth, and construction details for wells, borings, and CPT soundings within the PDI target areas
- Lithologic, aquifer property, water quality, and groundwater level data within the PDI target areas
- GIS versions of recent VOC plume and groundwater elevation contour maps produced for the SBGPP
- Recent data for the OU1 facilities
- Property ownership and utility information available from public, on-line sources

Jacobs will coordinate with other entities as needed to acquire this information if it is not available from the District. The compiled data will be stored in project-specific database and GIS systems to facilitate data evaluation and mapping.

3.2.2.2 Data Evaluation and Analysis

The data obtained will be evaluated to assess if the data needed for remedy design are available and adequate for each the extraction alignments, as well as the data gaps previously identified by the Santa Ana RWQCB. To help visualize and evaluate the existing data, Jacobs will prepare the following maps and figures for each of the PDI target areas:

- Vicinity maps that show current features (aerial maps), parcel maps, and select utilities along each extraction alignment
- Updated plume maps, focusing on the areas around each of the extraction alignments
- Updated cross sections that integrate water quality, lithologic, and groundwater level information in the vicinity of each of the extraction alignments

These graphical tools will help identify data gaps regarding the lateral and vertical extent of VOCs, lithologic conditions, and heterogeneity; and will help inform target locations and depths for PDI sampling, monitoring well installation, and extraction wells/aquifer testing. To confirm that the proposed sampling locations are feasible, Jacobs will perform site visits to assess access constraints and other potential challenges for implementation of the PDI.

3.2.2.3 Data Gap Analysis Technical Memorandum

The findings from the data evaluation will be combined into a Data Gaps Analysis Technical Memorandum (TM). The TM will include maps and tables that summarize the target locations (and options) for data collection, the method of data collection (e.g., CPT, monitoring well, or extraction well), and depth and construction details for these features, as well as the rationale for these recommendations.

A draft version of the TM will be submitted to the District for review and comment. After submitting the Draft TM, Jacobs will lead a meeting to review the findings and any comments on the draft version TM. Based on the input received, we will prepare a draft final version of the TM that incorporates the District's comments. A final version will be prepared and submitted that addresses the District's comments on the draft final TM.

The preliminary locations for DPI sampling and well installation identified in the TM may be modified after further considering real estate and land access constraints.

One approach to consider for optimizing the siting of permanent PDI infrastructure would be to implement higher-resolution characterization along the extraction alignments with arrays of CPT borings and discrete depth sampling and use the results to inform the final locations of permanent monitoring wells, extraction wells and trenches.

3.2.3 Task 3 - Real Estate and Land Access Analysis

Jacobs has teamed with Monument to complete the Real Estate and Land Access Analysis for the PDI Work Plan. Monument is a right of way consultant with experience evaluating land access for public agencies. Jacobs lead for this task, **BJ Lechler**, **PG**, **CHg**, and Monument's lead, **BJ Swanner**, previously worked together to assess real estate and access opportunities for well sites and treatment facilities with access challenges similar to the SBGPP.

3.2.3.1 Real Estate and Land Access Analysis

To focus the access analysis, Jacobs will first consider the preliminary locations for the PDI sampling and testing as well as the potential locations of the permanent remedy infrastructure that were considered during the data gaps analysis. As a first step, the Jacobs team will conduct a field walk with the District (Refer to Task 1) to evaluate the access challenges and opportunities associated with the preliminary facility locations.

The observations from the field walk will be the starting point the Real Estate and Land Access Analysis. An overview of our approach for this task is as follows:

- Consult with drillers/contractors to establish space requirements and access needs for CPT borings, monitoring wells, extraction wells, trenches, treatment facilities, and pipelines.
- Develop other site criteria for evaluating access options including compatibility of existing zoning and land use, existing site improvements, proximity to utility infrastructure (e.g., sewer connections), constructability, and safety.
- Conduct GIS analysis to develop a list of candidate sites for each facility type within the eight alignment locations (G-1 through G-8)
- The analysis will prioritize vacant or underutilized properties and portions of improved properties.

The investigation locations identified in the Data Gaps Analysis TM will be refined based on the findings of the real estate and land access analysis. The refined sampling and testing locations will be incorporated into the PDI Work Plan.

3.2.3.2 Real Estate and Land Access Analysis Technical Memorandum

The findings from the siting activities will be summarized in a Real Estate and Land Access Analysis TM. The TM will include maps and tables that summarize the target locations for PDI data collection and preliminary options for the permanent interim remedy infrastructure.

A draft version of the TM will be submitted to the District for review and comment. After submitting the Draft TM, Jacobs will lead a meeting to review the findings and any comments on the draft version TM. Based on the input received, we will prepare a draft final version of the TM that incorporates the District's comments. A final version will be prepared and submitted that addresses the District's comments on the draft final TM.

3.2.4 Task 4 – Pre-Design Investigation Work Plan

Jacobs will prepare an NCP-compliant PDI Work Plan to guide PDI activities. As described in the RFP, the District has performed multiple field investigations for the SBGPP that comprised many of the same activities (soil borings, CPTs, well installations, groundwater sampling and analysis) that will be included in the PDI. The previous field activities were performed in accordance with NCP-compliant planning documents and plans and specifications that Jacobs will leverage for the PDI Work Plan. In addition, we'll pull from our decades of experience preparing similar planning documents for CERCLA projects using the same field techniques and likely analytical requirements of the PDI.

Monument's interdisciplinary right-of-way team is composed of experienced project managers, seasoned acquisition agents, who have supported some of the largest and most complex projects delivered in California.

Monument's lead for this project, BJ Swanner, supported Jacobs with siting evaluations for well sites, treatment facilities and related infrastructure as part of WRD's Regional Brackish Program and the WRD Joint Los Angeles Basins Replenishment and Extraction Master Plan.

Jacobs currently teams with Monument for right-of-way support on multiple transportation design projects.

The PDI Work Plan will consist of numerous documents that our Task Lead **Tyler Evans PG, PMP** and supporting staff will consult with our subject matter experts to prepare. Jacobs assumes that review of all PDI Work Plan components will occur with submittal of the Draft Work Plan. Our approach to preparing the components of the PDI Work Plan are described in greater detail in the following sections.

3.2.4.1 Sampling and Analysis Plan

The Sampling and Analysis Plan (SAP), which consists of the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) will describe the procedural and analytical details of data collection activities for the PDI. Having supported the EPA Superfund Program and the Navy on many multi-phase, CERCLA-compliant field investigations, we are well versed in all components of FSPs and SAPs and used to building off existing documents for future phases of work. As an initial step, Jacobs will review existing planning documents including:

- The work plan, FSP and QAPP prepared for the Preliminary RI data collection activities
- The work plan, FSP and QAPP addendum prepared for additional groundwater assessment and the Supplemental RI
- OCWD and Jacobs established Standard Operating Procedures applicable to the planned PDI

Following review, Jacobs will identify any gaps between investigation methods, data quality objectives, data collection procedures and analytical requirements outlined in existing planning documents and those proposed for the PDI. We will then prepare a SAP Addendum that references the existing documents and concisely documents the planned PDI and describes in detail the PDI data quality objectives, new investigation methods, procedures, analytical and QA/QC requirements.

3.2.4.2 Health and Safety Plan

We will develop a site-specific health and safety plan (HSP) that addresses the potential health, safety, and environmental risks encountered during the PDI that complies with OSHA 29 CFR 1910.120. The HSP will include:

- General project information such as field activities covered by the plan, work locations, work hours
- Health and safety roles and responsibilities
- Hazard identification and controls
- Required training and health and safety monitoring
- Communication incident reporting protocols
- Emergency preparedness and response procedures

Because many PDI locations will be adjacent to or in the right of way, we'll pay special attention to assessing the hazards and providing mitigations, such as traffic control, for conducting work in (or near) the roadway.

3.2.4.3 Data Management Plan

Our data manager **Ron Bruns** and project chemist **Bernice Kidd** will bring their 60+ years of combined experience managing and analyzing environmental data to our PDI Work Plan team to efficiently incorporate the PDI data validation, storage and reporting needs into a plan that will provide the platform for maintaining the data collected during the investigation. The types of data collected during the PDI will include:

- Investigation locations (e.g. survey data)
- Sample information such as sample type (primary, duplicate, blank), matrix, and depth
- Water level data

- Lithologic information
- Well construction information
- Sample analytical results

We manage large environmental databases for a wide range of clients across many data management platforms and routinely develop custom tools to facilitate migration of data from one platform to another. This experience will translate into a data management approach that will facilitate efficient migration of the PDI data into OCWD's data management system.

3.2.4.4 Permitting Matrix and Private Property Access Matrix

These two work products will go hand in hand and be the basis for obtaining access and permits for the PDI locations. With assistance from Monument, we will create a master matrix of every investigation location on each of the eight extraction alignments, building from a tabular summary in the Real Estate and Land Access Analysis TM. The master matrix will include:

- Location/Sample Type (e.g. CPT, boring, well, etc.)
- Location including estimated coordinates, address (if applicable) and city
- Planned sample depths and construction details
- Property ownership information (e.g. right-of-way or APN for parcels)
- Location-specific permit requirements, such as encroachment or excavation permits required by municipalities or other public agencies (e.g. Caltrans, Orange County Flood Control District, etc.)
- Comments describing potential access issues or constraints

We'll divide this master matrix into two matrices for the PDI Work Plan:

1. **Permitting Matrix** will identify the applicable governmental permits needed to perform the PDI and the total number of each permit. Some permits, such as well permits, will be required for a majority of the locations while others may only apply to locations in the right-of-way or provide coverage for the whole project (e.g., encroachment permits, Santa Ana RWQCB discharge permits)
2. **Private Property Access Matrix** will include the information from the master matrix along with and property owner contact information and comments describing potential access issues or constraints

3.2.4.5 CPT and Well Construction Plans and Specifications

Jacobs will leverage existing plans and specifications from earlier phases of the SBGPP (or other OCWD projects) to develop technical plans and specifications for the PDI field investigation that will be included in public bid package(s) to solicit bids from qualified contractors. We will prepare typical details for monitoring wells, extraction wells, trenches, and other components used in the investigation. A master table of each investigation location that includes location information, sample depths, and construction details that are linked to bid quantities, property ownership information, and permit requirements will accompany the typical details for bidding.

3.2.4.6 PDI Field Oversight, Data Analysis and Reporting

After the scope of work for the PDI is finalized, Jacobs will develop a scope of work for the District to use for procuring a consultant to oversee the work. The scope of work will include oversight of all construction, data collection, testing, data analysis, and reporting for PDI field activities, including CPTs, drilling, construction, development, testing, and sampling of monitoring wells and extraction wells. This scope of work will be the basis for the cost estimate for field oversight, data analysis, and reporting (see Section 3.2.5).

3.2.4.7 PDI Work Plan

The SAP, HSP, data management plan, and permitting and private property access matrices described above will be attached to the PDI Work Plan. The PDI Work Plan will include maps and tables that summarize the target locations (and options) for data collection, the method of data collection (e.g., CPT, monitoring well, or extraction well), and depth and construction details for these features, as well as the rationale for these recommendations.

A draft version of the PDI Work Plan will be submitted to the District for review and comment. After incorporating District comments on the Draft PDI Work Plan, Jacobs will submit a Second Draft PDI work Plan for review and comment by DTSC and Santa Ana RWQCB. Following submittal of the Second Draft PDI Work Plan, Jacobs will lead a meeting to review the findings and any DTSC or Santa Ana RWQCB comments on the second draft version. Based on the input received from DTSC and Santa Ana RWQCB, we will prepare a draft final version of the PDI Work Plan for final District review. A final version will be prepared and submitted that addresses the District’s comments on the draft final PDI Work Plan.

3.2.5 Task 5 – PDI Implementation Cost Estimate

After the PDI Work Plan is sufficiently complete to define the number and location CPTs, monitoring wells and extraction wells/trenches that will be installed, Jacobs’ estimating lead, **Greg Mah-Hing, PE** will develop a cost estimate to implement the PDI and related activities.

The estimate will include details for the following cost categories:

- Construction and testing
- Land access, acquisition, and permitting
- Field oversight, data analysis, and reporting

Jacobs understands that the accuracy of the estimate should be approximately +/- 20%, which will require budgetary estimates for the major cost items. **Exhibit 3.6** illustrates Jacobs’ approach to developing the cost estimate.

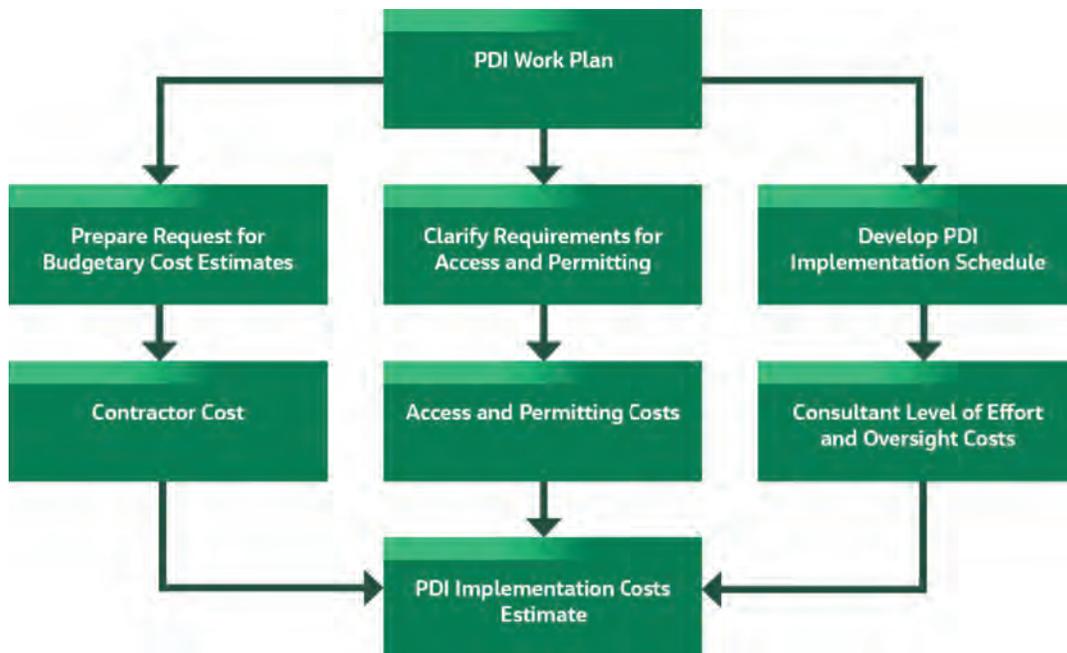


Exhibit 3.6. Cost Estimating Approach

As a first step, Greg will work with PDI Work Plan team to develop and release scopes of work to contractors for budgetary estimates of the major cost items: CPT exploration, monitoring well installation, extraction well installation and testing, trench installation and testing, investigation derived waste management, and laboratory services, and permitting.

Similarly, Greg will coordinate with Monument to develop costs for access and land acquisition for the PDI field work. Monument's approach for estimating these costs will be comprehensive and will include:

- GIS analysis of the property and rights
- Confirm ownership, land use, zoning, lot size, and improvements for each affected property
- Confirm the probable acquisition type (fee, easement, temporary construction easement, permits, etc.)
- Calculate the fee and/or easement area (including temporary construction easements) that will be needed
- Estimate the total support cost for all parcels including appraisal fees, condemnation costs, title and escrow fees, hazardous material testing, and consultant fees, as necessary
- Estimate the total support cost for all parcels including appraisal fees, condemnation costs, title and escrow fees, hazardous material testing, and consultant fees as necessary

Greg will also work with the team to prepare a detailed schedule for the PDI and will use this schedule and the scope of work developed as part of the PDI Work Plan to estimate the level of effort and expenses required for consultant oversight of this work. In addition, he will coordinate with our other task leads to estimate the level of effort to prepare a site characterization report, update the conceptual site model for the SBGPP, revise and recalibrate the existing groundwater flow model, and conduct groundwater modeling to support the remedy design. Jacobs will use our proposed billing rates for this project to estimate these labor costs.

The PDI implementation cost estimate will be documented in the TM. A draft version of the TM will be prepared for review by the District, and a final version will be prepared that incorporates the District's comments on the draft version.

4. Additional Services

The scope of work described in the RFP is comprehensive and logical. At this time, Jacobs does have suggestions for additional services to support development of the District's PDI Work Plan.

5. Administrative Items

5.1 Statement of Insurance Compliance

Jacobs hereby affirms that it will comply with all insurance requirements specified in the Services Agreement (Exhibit C) of this Request for Proposals. Jacobs maintains insurance coverage that meets or exceeds the limits and types stipulated by the Orange County Water District (OCWD), including but not limited to Commercial General Liability, Automobile Liability, Workers' Compensation, and Professional Liability Insurance

Upon award of contract, Jacobs will provide OCWD with all required insurance certificates, endorsements, and related documentation evidencing compliance with these requirements prior to contract execution. Jacobs' insurance policies are issued by carriers rated "A-" or better by A.M. Best and are fully compliant with California law.

5.2 OCWD Standard Agreement

Jacobs has reviewed Orange County Water District Exhibit C Services Agreement in Request for Proposal (RFP) No. 25-007 Pre-Design Investigation Work Plan South Basin Groundwater Protection Project and find terms and conditions to be generally acceptable as the basis for a mutually agreeable contract. If selected, we would like to discuss items such as indemnity provision and insurance requirements as previously negotiated on contracts 1474 and 1578.

5.3 Billing

Jacobs affirms that it will comply with all billing and invoicing requirements specified in Section 6.1.10. Each invoice submitted to OCWD will include the Purchase Order Number, Agreement Number, and an itemized summary of each authorized project task. Invoices will identify personnel by name, job title, hours worked, and hourly billing rate. Jacobs will adhere to all reporting and formatting requirements provided by OCWD to ensure timely and accurate payment processing.

5.4 Conflict of Interest

Jacobs certifies that neither the firm, its employees, nor any affiliated subconsultants have a conflict of interest with the Project. Jacobs maintains policies and procedures to prevent any actions or conditions that could create or appear to create a conflict of interest. Should any potential conflict arise, Jacobs will promptly notify OCWD in writing.

5.5 Equal Employment Opportunity and Affirmative Action Requirements

Jacobs is an Equal Opportunity Employer and maintains policies and practices that prohibit discrimination in employment based on race, color, religion, national origin, ancestry, disability, medical condition, marital status, sex, sexual orientation, gender identity, or any other characteristic protected by law. Jacobs and its subconsultants will comply with all applicable federal, state, and local equal employment and affirmative action requirements and maintain policies consistent with those of OCWD.

5.6 Addenda Acknowledgement

We acknowledge receipt of Addendum 1, received on 11/5/25; the following page reflects that with our signature. Following that, we include our additional project descriptions and resumes in the appendices.

END OF ADDENDUM

MANDATORY FORM

ACKNOWLEDGE RECEIPT OF ADDENDUM NO.1

**REQUEST FOR PROPOSAL
Pre-Design Investigation Work Plan South Basin Groundwater
Protection Project
(RFP-25-007)**

11/5/2025

Proposer shall acknowledge receipt of this addendum by detaching, signing and attaching to his/her proposal, one (1) copy of this sheet.

I, Brent Yamasaki, Jacobs

Name of Proposer, Company Name

2600 Michelson Drive, #500, Irvine, CA 92547

Address, City, State, Zip

Hereby acknowledge receipt of Addendum No.1 to the **Request for Proposal Pre-Design Investigation Work Plan South Basin Groundwater Protection Project** and have considered these revisions in the preparation of my proposal. This addendum, consisting of this acknowledgement, shall become a part of any contract made pursuant thereto.



Proposer's Signature

Brent Yamasaki

Printed Proposer's Name

11/17/2025

Date



Appendices



Appendix A: Project Description Sheets

Montrose/Del Amo Superfund Sites, US EPA, Los Angeles, CA

These two Superfund Sites are located within a portion of the city of Los Angeles, California that lies between the cities of Carson and Torrance. The former Del Amo property consisted of three separate synthetic rubber plants dedicated to the manufacture of styrene, butadiene, and synthetic rubber. The Montrose Chemical Corporation manufactured dichloro-diphenyl trichloroethane (DDT) at its former plant from 1947 to 1982. The Montrose plant released contaminants into surface soils, surface drainage and storm water pathways, sanitary sewers, the Pacific Ocean, and groundwater.

The groundwater contamination from the adjacent Del Amo and Montrose sites has commingled and is designated the Dual Site OU. The primary components of the Dual Site OU remedy include extraction; treatment; and discharge via aquifer injection; biodegradation for shallower benzene, plus institutional controls and monitoring. Jacobs (formerly CH2M HILL) has successfully supported EPA in the full range of CERCLA activities at the Montrose and Del Amo sites. In the late-1990s we completed fund lead RI/FS activities and supported EPA removal actions. Subsequent work has included wide-ranging oversight of numerous PRP activities covering RD, RA and O&M at the two sites.

Much of our recent oversight support has been focused on the Montrose Del Amo Dual Site OU, including ongoing implementation of the Dual Site Remedy and the Torrance Groundwater Remediation System (TGRS). Oversight requires close coordination with the DTSC and the Los Angeles RWQCB. Jacobs reviewed multiple treatment process development steps including influent equalization, air stripping, liquid phase GAC for removal of residual organics after air stripping, vapor phase GAC for removal of organics from the air stripper off-gas before discharge to the atmosphere, arsenic treatment, and various pH adjustment steps within the process. During TGRS construction, the Jacobs construction oversight team comprised of numerous engineering disciplines including civil, electrical, mechanical, process, structural, instrumentation and control, and membrane treatment provided review and conducted site visits. The TGRS treatment plant required several design additions and major re-designs by the PRPs based on our identification of problematic technical issues. We also offered cost saving approaches to complement the technical recommendations provided.

When the treated water injection wells were experiencing limited capacity, Our team identified air intrusion issues and proposed down-hole flow control valves to alleviate the problem. The changes have significantly improved injection well performance. We also identified the need for more frequent injection well back-flushing and specific injection-related parameters to track to better understand injection well performance and trends.

Jacobs reviewed PRP capital and O&M cost estimates and, at EPA's request, developed independent estimates that helped identify discrepancies and deficiencies in the PRPs' estimates. Our groundwater modelers have reviewed PRP groundwater migration/ plume capture model results and conducted independent groundwater modeling to help identify inconsistencies in PRP estimates of plume capture and hydraulic control efficacy.



Montrose TGRS Treatment Plant

Manhattan Beach Desalter Feasibility Study, Water Replenishment District of Southern California (WRD), Manhattan Beach, CA

Jacobs conducted the Manhattan Beach Desalter Feasibility Study to develop technical information to help support decision-making by WRD and the City for a potential remote desalter identified in the Regional Brackish Water Reclamation Program Feasibility Study. The desalter would be intended to remediate an isolated plume of brackish groundwater inland of the West Coast Basin Barrier Project which was constructed to prevent seawater intrusion along the west coast of Los Angeles County. The feasibility study provided a conceptual design, other technical information, and cost estimates to support decision making and future work.



The feasibility study identified potential data gaps in the lateral and vertical delineation of the brackish groundwater that could expand the scope of future remediation efforts. Jacobs developed a work plan that included additional exploratory drilling, zone testing, and monitoring well construction to address data gaps in water quality delineation of the saline plume in the City.

Chino Basin Program, Inland Empire Utilities Agency (IEUA), Chino, CA

Jacobs was selected by the IEUA to provide program management, Owner's engineering, and strategic funding advisory services for a major regional water management program in the Chino Basin, one of Southern California's largest groundwater storage basins. This program aims to enhance local water sustainability and drought resilience through indirect potable reuse.

The program includes a series of integrated water infrastructure projects, such as intra-basin recycled water conveyance, groundwater injection and replenishment, and an advanced water purification facility (AWPF) capable of producing up to 15,000 acre-feet of purified water per year for indirect potable reuse, enough to supply nearly 100,000 residents. This comprehensive approach will optimize water reuse across IEUA's 242 square-mile service area, boosting local supply reliability and managing water quality in the Chino Basin.

In addition to program management, Jacobs is providing Owner's engineering, specialized technology, design, permitting, community outreach, and strategic advisory services for various projects aimed at enhancing water supply in the basin. These services encompass the pilot/demonstration unit and the final delivery of the advanced water purification facility, injection wells, and water conveyance systems.



Advanced Water Purification Facility



Regional Recycled Water Program Facilities

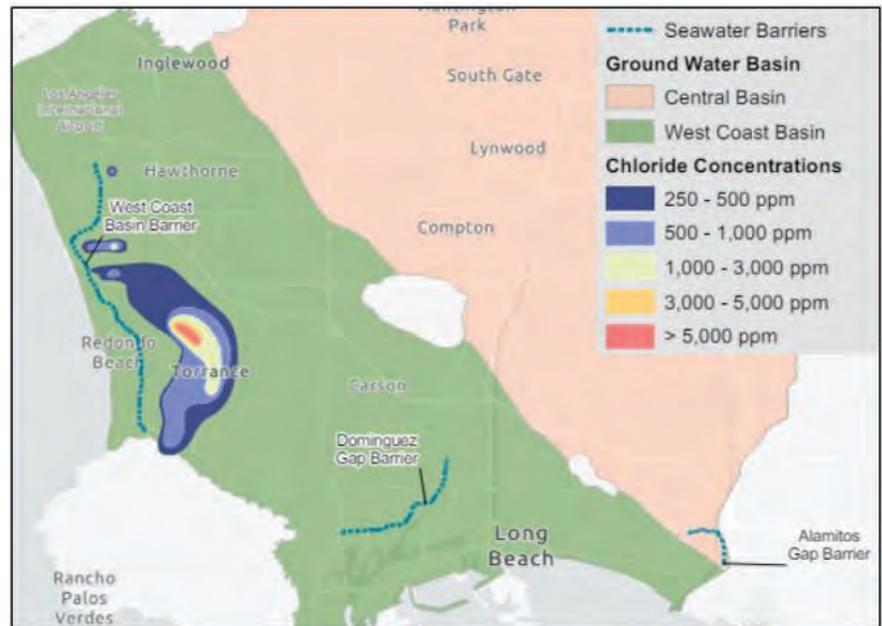


Production and Conveyance Facilities associated with Prop 1 - Water Storage Investment Program (WSIP)



Brackish Groundwater Reclamation Program Support and Related Projects, Water Replenishment District of Southern California (WRD), Torrance, CA

Jacobs has been working with the WRD on the development of the Brackish Groundwater Reclamation Program (BGRP) since its inception through a series of related projects. Jacobs initially prepared the foundational Groundwater Basins Master Plan (GBMP) in 2016 that established a framework to enhance groundwater replenishment in the West Coast and Central Basins, increase the reliability of groundwater supplies, improve, and protect groundwater quality, and accommodate growing potable water demands. One of the management strategies identified in the GBMP was to remediate the saline groundwater plume in the Silverado Aquifer by constructing additional extraction wells and proposed project desalters.



Jacobs was then selected by WRD to prepare the Regional Brackish Water Reclamation Program (RBWRP) Feasibility Study for treating and reusing brackish water in the Los Angeles region. The feasibility study provided an initial understanding of the approach needed to treat the historical saline plume for beneficial use by evaluating the following components: where to extract the plume water, where and how to treat the plume water, how to convey the treated potable water to the Project stakeholders, and how to manage the brine waste stream. The result of the feasibility study included various combinations of components that could be implemented to support the project, as well as a calculation of the cost of each combination.

Through the Goldsworthy Desalter Expansion Feasibility Study and Brackish Groundwater Supply Wells Design and Installation, our team evaluated the feasibility of expanding the existing desalter to 5 mgd. This included an assessment of the condition of the existing supply well and evaluation of sites for new desalter wells; preparation of hydrogeologic cross-sections to identify potential well sites; prepared specifications and plans for installation and testing of the wells; oversight of the well installation and testing program; preparation of the well design; and analysis of the well installation and testing data. We also investigated the costs of doubling the capacity, including a present worth analysis and payback period for adding turbochargers to the RO trains, and prepared a CEQA Initial Study and Mitigated Negative Declaration (MND) for the project.

This deep understanding of WRD's goals and facilities culminated in Jacobs' recent selection for the Progressive Design-Build of the BGRP Torrance Groundwater Desalter Expansion Project, currently underway.

Conceptual Site Model Data Gaps Investigation, Confidential Power Utility, Mojave Desert, NV

Jacobs developed a work plan and implemented and investigation to address data gaps in the conceptual site model for a TDS plume surrounding former evaporation ponds at former coal fired power plant. The former power plant was co-owned by the power utility and a state agency. The work plan outlined an approach which utilized multiple investigative techniques to evaluate the lateral and vertical extent of TDS in the alluvial aquifer and underlying bedrock. In the alluvium, a hydraulic profiling tool was specified to identify various hydrostratigraphic units within the alluvial aquifer and select depth intervals to collect grab groundwater samples using a direct push rig. In the bedrock, where push-ahead techniques were not feasible, the plan specified advancing sonic borings to identify bedrock and constructing temporary wells, which were developed and sampled to assess water quality impacts. Work plan preparation required coordination with the co-owner/state agency and their consultants, and the approval process included multiple meetings and engagement with the state environmental regulatory agency. In addition to developing the work plan, Jacobs managed field activities at the site which included multiple field teams working concurrently to complete the investigation.



San Fernando Valley Superfund Site, US EPA, Los Angeles County, CA

For more than 35 years, across multiple contracts, Jacobs (and formerly CH2M HILL) has delivered quality support for every work area at the basin wide San Fernando Valley (SFV) site, located in Los Angeles County. Jacobs has provided broad-ranging technical PRP oversight activities working with the multiple agency stakeholders, including EPA; the Cities of Los Angeles, Burbank, and Glendale; various public schools; California Division of Drinking Water and DTSC; the Los Angeles RWQCB; the Watermaster and other water purveyors. Our excellent understanding of stakeholder' roles, responsibilities, and technical and political concerns have improved efficiency and minimized overall agency oversight costs.



Burbank OU Groundwater Treatment Plant

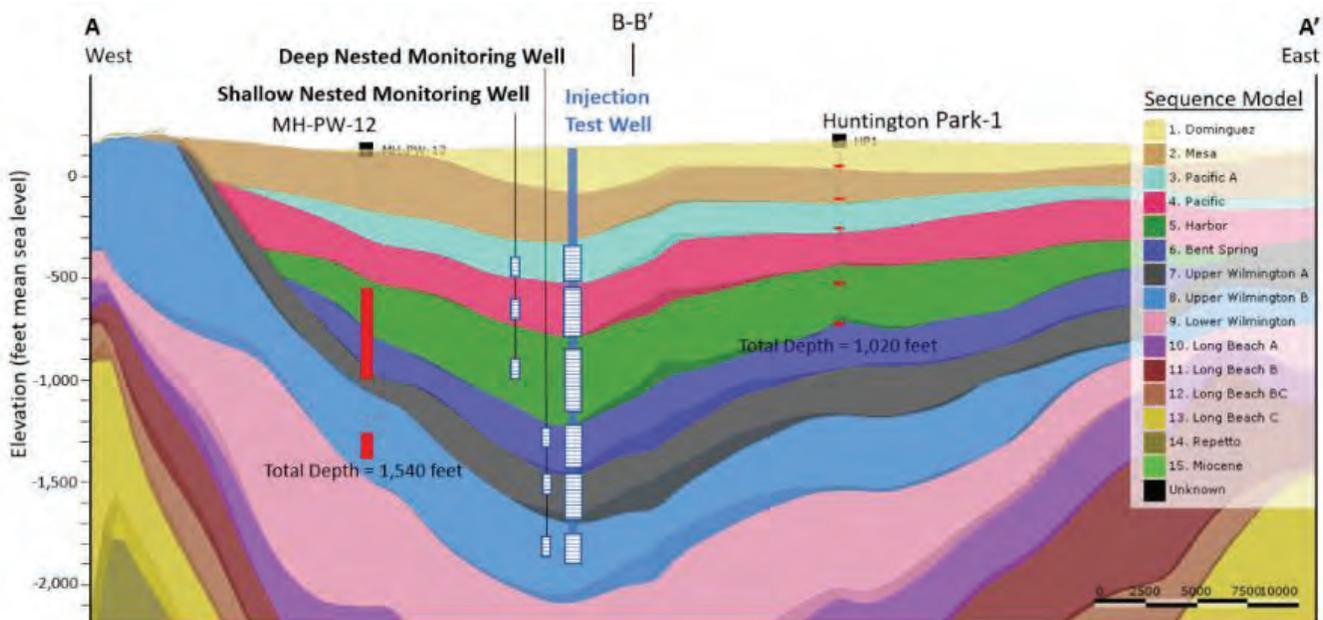
Jacobs' role on the 30-square-mile SFV basin covers the following OUs: North Hollywood (NHOU), Burbank (BOU), Glendale (GOU), Glendale Chromium (GCOU), and Pollock (POU). Soil and groundwater contamination from numerous industries and hundreds of facilities include various VOCs principally PCE and TCE, heavy metals (primarily hexavalent chromium), 1,4-dioxane, perchlorate, and other contaminants. Four OUs have interim groundwater pump and treat systems with a combined treatment capacity of 23 million gallons per day (MGD). In multiple OUs and basin wide, Jacobs has performed fund-led RI activities, including risk assessments and extensive sampling and analytical support. In the NHOU, CH2M prepared a complex Focused FS that evaluated numerous containment, treatment, and end use options as well as oversight of PRP investigations in Burbank, Glendale, and North Hollywood OUs. Our team conducted an exhaustive 4-year study to identify chromium sources and has subsequently provided support for time-critical removal actions, preliminary assessments, site inspections for site assessment, and oversight of remedial actions and removal actions. We have provided negotiation support, litigation support, and cost recovery support in several OUs and expert technical support in establishing Consent Decrees (CDs) with multiple PRPs.

The broad technical oversight has covered every phase of work from RI/FS, through RD/RA and into O&M and LTRA. Other areas of significant technical assistance include oversight of treatability studies/pilot testing, construction retrofit support, and long term community involvement throughout the site, ROD development, and completion of Five Year Reviews in three OUs. We have maintained key technical staff on SFV projects for more than 20 years, providing a wealth of institutional and technical knowledge on all of the SFV OU-specific projects.

Jacobs has an exceptional understanding of the complex physical groundwater conditions in the SFV, treatment requirements for the variety of contaminants in the SFV, and the associated political and water management conditions in the different OU areas. Our technical experts are trusted, highly valued assets that have earned the full confidence of EPA, state and local agencies, and PRP representatives.

Joint Los Angeles Basins Replenishment and Extraction Master Plan, Water Replenishment District of Southern California (WRD), Los Angeles County, CA

The City of Los Angeles is developing the Pure Water Los Angeles program and joined with WRD in selecting Jacobs support an effort to identify opportunities to maximize use of the West Coast and Central Basins. We identified potential water sources, treatment facilities, and replenishment and extraction locations to meet the interagency goals. We also investigated potential well sites and prepared a work plan for monitoring and pilot injection wells and evaluated the hydrogeologic feasibility of injection well sites using the regional groundwater model. We conducted a routing study for the conveyance of advanced treated water to the groundwater basins, and analyzed groundwater modeling, water quality data, site evaluations, and route alternatives to develop implementable alternatives for the next phase of the program. Jacobs was subsequently selected by the City's Department of Water and Power to prepare their Pure Water Los Angeles Master Plan.



Environmental Compliance and Groundwater Remediation Program, Kinder Morgan, Various Locations, CA

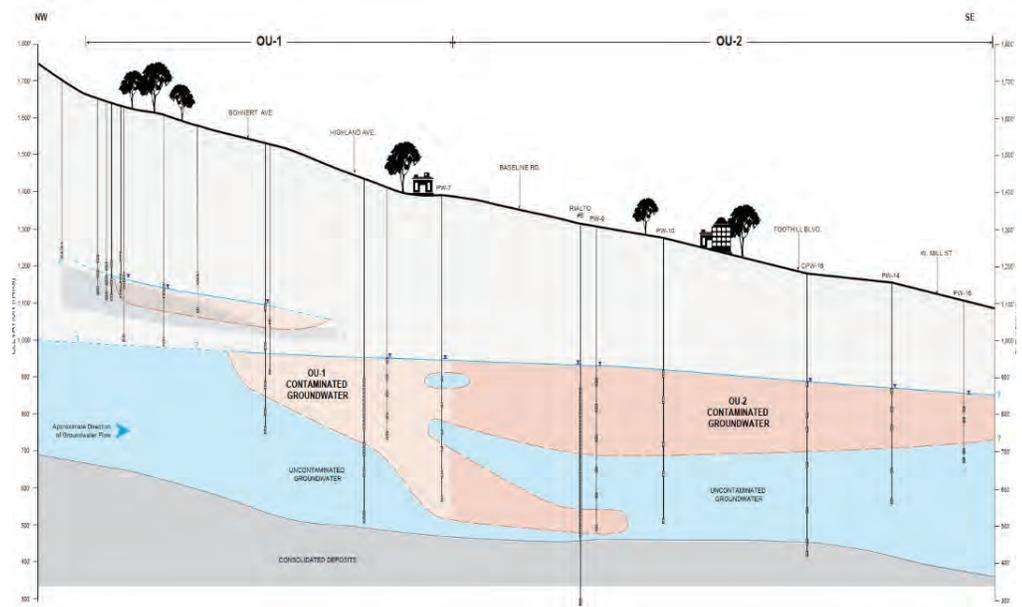
Jacobs supports Kinder Morgan and its subsidiaries to provide environmental compliance and groundwater remediation services along transmission pipelines and at bulk fuel storage terminals nationwide. We've maintained this relationship for over 20 years at multiple terminals in Southern California under regulatory oversight from the Colorado River, Lahontan, Los Angeles, Santa Ana, and San Diego RWQCB.

For many of these project sites, effective source removal is impracticable, and the remedial strategy was to implement hydraulic containment at the site boundaries using extraction wells and, for low-yield formations, recovery trenches. Individual projects have included significant site characterization to refine conceptual models; aquifer testing to support extraction well/trench design; groundwater modeling and containment evaluation; feasibility studies; the design of hydraulic containment, LNAPL recovery, and groundwater treatment systems; coordination of remedial construction and O&M contractors; and data management and reporting activities to document system performance.

Rockets, Fireworks, and Flares (RFF) Superfund Site, US EPA, San Bernardino County, CA

The Rialto-Colton groundwater basin has extensive perchlorate and TCE impacts from the RFF Superfund Site, with contaminant plumes extending several miles and impacting numerous drinking water supply wells. Jacobs completed a streamlined fast-track, fund lead RI and focused FS for the Source Area OU (OU1) and a multimillion dollar field program to facilitate characterization of the downgradient extent of the regional plume (OU2). Implementation of the closely watched RI/FS was concurrent with litigation efforts between local cities and the PRPs and challenging negotiations between EPA and the PRPs. We installed several multi-depth (Westbay) monitoring wells extending hundreds of feet into deeper drinking water aquifers and developed a robust, 3-D, transient groundwater flow model to support the RI/FS and evaluate potential remedial alternatives. The focused FS efforts led Jacobs supporting development of an interim ROD for the higher-concentration portion of the regional plume. The ROD was finalized just 1 year after the site was added to EPA's Superfund list.

Subsequent to the ROD, Jacobs provided extensive enforcement support to EPA's efforts to resolve litigation and reach settlements with the PRPs. This included evaluating contaminant source areas and potential releases and modeling contaminant migration pathways. The PRPs subpoenaed Jacobs staff, requiring multiple days of depositions regarding our technical evaluations. EPA reached settlements with the PRPs to fund implementation of two large-scale regional groundwater cleanup actions with potable end use of the treated groundwater for drinking water supply.

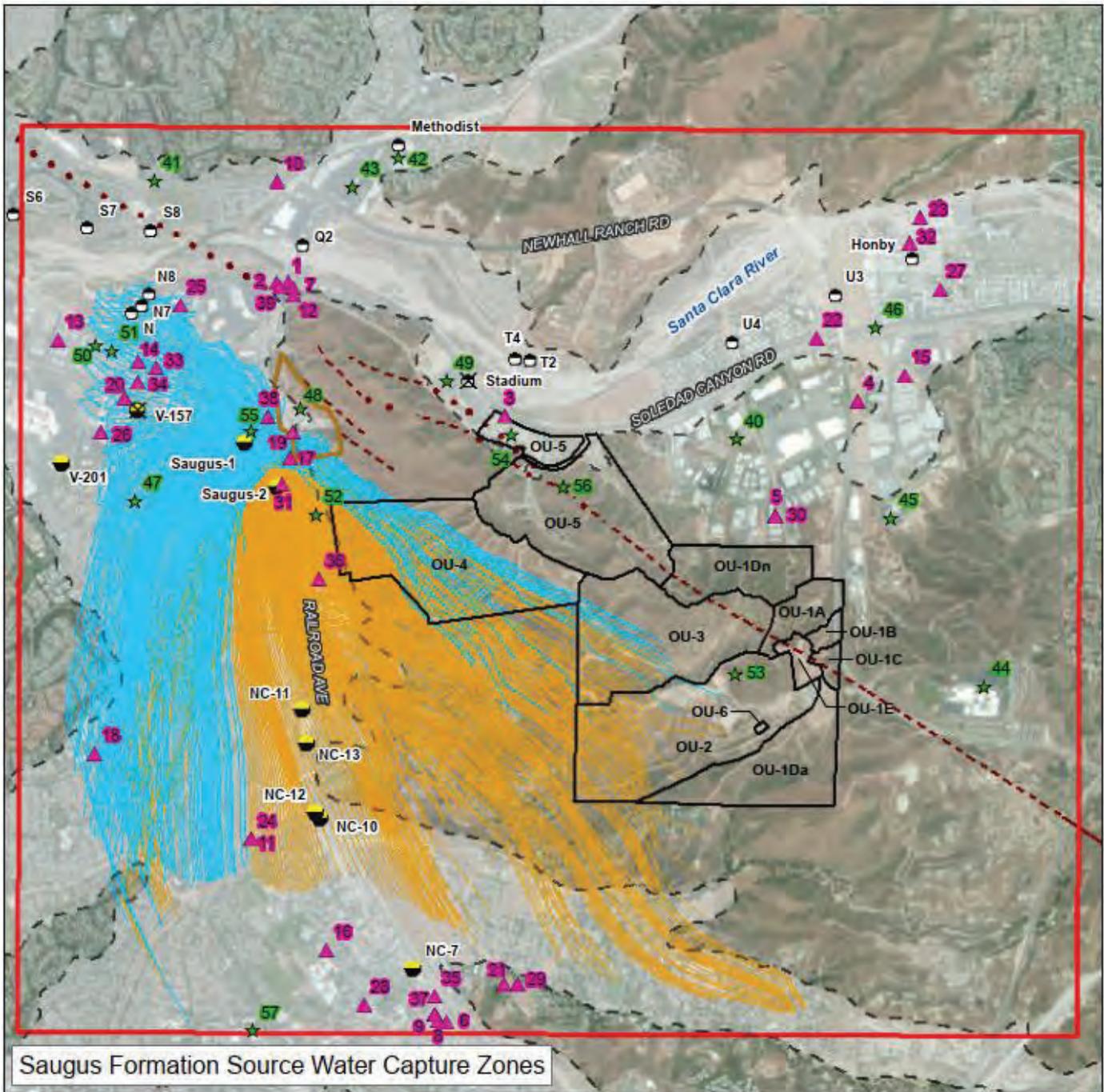


Jacobs has supported EPA with oversight of PRP's RD and RA efforts for the OU1 remedy at the RFF site. Under our oversight, the PRP group evaluating the downgradient extent of the regional perchlorate and TCE plume installed numerous monitoring well clusters and performed extensive groundwater modeling in an effort to fully delineate the plume extent in a complex drinking water aquifer system. From early 2021 into early 2022, we supported EPA in development of a Proposed Plan for the second regional groundwater containment remedy at the leading edge of the miles-long plume. Jacobs supported EPA in multiple stakeholder meetings and briefings to discuss the remedy components and conducted multiple Design Working Group meetings with representatives of EPA, the PRPs, water purveyors and the cities to discuss various design and implementation options for the proposed remedy.

We are currently providing technical review and support to EPA for the OU2 RD where the PRP encountered unexpected hydrogeologic conditions in the area targeted for a new extraction well to provide containment at the leading edge of the plume. These findings have resulted in additional data collection and evaluation under Jacobs oversight to support the RD.

Saugus Formation VOC Investigation, Nossaman LLP and Castaic Lake Water Agency, Santa Clarita, CA

The agency pumps groundwater from two perchlorate-impacted water supply wells and treats the groundwater for potable supply under a 97-005 permit with DDW. The source of perchlorate was identified and the agency receives cost recovery for ongoing O&M of the treatment facility. Low-levels of VOCs were also detected in raw water from the supply wells that required treatment, however the source(s) were not documented. Jacobs performed a study to identify the potential source(s) of VOC contamination detected in the water supply wells and developed an investigation report to document the findings, which were presented to state regulatory agencies (DTSC and DDW). We supported the client in negotiations with the regulatory agencies and potentially responsible parties, which resulted in settlement out of court.





Appendix B: Resumes



Richard Sturn

Project Manager

Richard is a seasoned project manager and hydrogeologist with 28 years of experience serving municipal clients on a wide range of groundwater-related projects. His expertise includes site characterization; feasibility studies; and the design of groundwater extraction systems. He has also served clients on a variety of groundwater resource projects including the planning, siting, and design of groundwater supply and managed aquifer recharge projects. Richard has extensive experience with CERCLA projects and previously supported the Orange County Water District (OCWD) as a project manager and senior hydrogeologist for the North Basin Groundwater Protection Project.

FIRM | HOME OFFICE

Jacobs; Irvine, CA

YEARS OF EXPERIENCE (WITH JACOBS)

28 years

REGISTRATIONS | LICENSES

- California Certified Hydrogeologist: #1070
- California Professional Geologist: #6797

EDUCATION

- MS, Geological Science (Geochemistry), Michigan State University
- BS, Geological Science, University of California Santa Barbara

Relevant Project Experience

North Basin Groundwater Protection Project, Orange County Water District (OCWD), Orange County, CA, Project Manager and Senior Hydrogeologist. Senior Hydrogeologist and Project Manager for a CERCLA RI/FS conducted by the Orange County Water District (OCWD). Managed the development of CERCAL-compliant planning documents for data gaps investigations to support development of the RI/FS, oversight of the field investigations (monitoring well installation/sampling), and the preparation of RI/FS documents. Potential remedies that were considered included large-volume groundwater extraction (10,000 gallons per minute) with treatment for VOCs and 1,4-dioxane, with discharge to recharge basins or injection wells. Coordinated with OCWD and USEPA throughout the project.

Perris North Program Support and As Needed Hydrogeological Consulting Services, Eastern Municipal Water District (EMWD), Riverside County, CA, Quality Assurance and Quality Control. Provided quality assurance and quality control (QA/QC) review of planning documents and well designs for multi-level monitoring

wells monitoring 51 depth intervals at 16 different locations. Jacobs' activities included preparing the preliminary design for the program monitoring wells including developing work plans for Regional Water Quality Control Board review and approval and developing technical specifications for the public bid package.

Extraction Barrier and Brackish Water Treatment Phase 1 Monitoring Wells, United Water Conservation District (UWCD), Ventura County, CA, Quality Assurance and Quality Control. Provided quality assurance and quality control (QA/QC) review of planning documents and technical specifications and plans to drill, install, and test new monitoring wells at Naval Base Ventura County Point Mugu for their Extraction Barrier and Brackish Water Treatment (EBB Water) project. The project consisted of drilling, installation, development, and testing of 21 monitoring well casings at five locations using roto sonic drilling for shallow wells and mud rotary for deeper wells. Well clusters were installed at each well location. The well clusters consisted of a combination of 3-inch diameter single-screened wells, 3-inch diameter nested wells, and 5-inch diameter single-screened wells.

Montrose and Del Amo Superfund Site Dual Site Operable Unit, U.S. Environmental Protection Agency, Torrance, CA, Project Manager. Served as site manager for a large Superfund site in Southern California. The work focused primarily on DNAPL impacts at the site (chlorobenzene and DDT) and the resultant chlorobenzene plume, which is comingled with TCE plumes from adjacent sites. The work included detailed technical review of plans, treatability studies (SVE, ISTD and hydraulic DNAPL recovery), pilot studies (SVE and hydraulic DNAPL recovery), and supplemental field investigations (DNAPL source zone delineation); and oversight of field work.

North Campus, United Technologies Corporation, Chula Vista, CA, Project Manager. Project manager of a fast-track project that required the completion and submittal of regulatory documents (CSM, HHRA, and a RAP) and remedial implementation for the offsite portion of a complex VOC plume, prior to redevelopment of the offsite property as a large hotel complex. Site characterization included extensive CPT/HPT/MIP soundings and discrete-depth sampling for rapid decision making for CSM development. Approval of the regulatory documents was achieved within three months, implementation of the remedy commenced immediately after regulatory approval, and the remedy was completed in four months using multiple field crews, well before grading of the site was scheduled to commence. The approved remedy included multiple ZVI barriers and EVO/KB1 injected in grids within the highest-concentration portions of the VOC plume. More than 400 injection points were advanced.

Manhattan Beach Desalter Feasibility Study, Water Replenishment District of Southern California (WRD), Manhattan Beach, CA, Quality Assurance and Quality Control. Provided quality assurance and quality control (QA/QC) review of a work plan that included additional exploratory drilling, zone testing, and monitoring well construction to address data gaps in water quality delineation of the saline plume in the City of Manhattan Beach. The results of the work plan supported a conceptual design for a remote desalter in the City. The desalter is intended to remediate an isolated plume of brackish groundwater inland of the West Coast Basin Barrier Project which was constructed to prevent seawater intrusion along the west coast of Los Angeles County.

Chino Basin Program, Inland Empire Utilities Agency (IEUA), Chino, CA, Program Manager. Jacobs was selected by Inland Empire Utilities Agency (IEUA) to provide program management, owners engineering services, and strategic funding advisory services for a major regional water management program that will incorporate indirect potable reuse to create a more sustainable, drought-resilient local water supply in the Chino Basin. Richard is responsible for the management of all projects related to the aquifer replenishment (injection) wells for the Chino Basin Program. The scope of this work spans refining the conceptual design for the replenishment wellfield, siting and property acquisition for replenishment wells, managing ongoing field investigations and groundwater modeling, and coordinating with treatment design, permitting, and conveyance teams to coordination with other teams to ensure effective program implementation. The overall replenishment wellfield will consist of up to 16 replenishment wells, each in excess of 1,000 feet deep, with a combined replenishment goal of 15,000 acre-feet- per year of full advanced treated water.

Environmental Compliance and Groundwater Remediation Program, Kinder Morgan, Various Locations, CA., Program Manager and Senior Hydrogeologist. Rich was the west coast program manager and technical lead for Jacobs nationwide contract providing environmental compliance and groundwater remediation services for bulk fuel storage terminal and transmission pipelines. For many of these project sites, effective source removal is impracticable, and the remedial strategy was to implement hydraulic containment at the site boundaries using extraction wells and, for low-yield formations, recovery trenches. Individual projects have included significant site characterization to refine conceptual models; aquifer testing to support extraction well/trench design; groundwater modeling and containment evaluation; feasibility studies; the design of hydraulic containment, LNAPL recovery, and groundwater treatment systems; coordination of remedial construction and O&M contractors; and data management and reporting activities to document system performance. All activities were conducted under oversight of the RWQCB.

Saugus Formation VOC Investigation, Nossaman LLP and Castaic Lake Water Agency, Santa Clarita, CA, Quality Assurance and Quality Control . Senior Hydrogeologist and technical reviewer for project to identify the potential source(s) of VOC contamination in two water supply wells which produce groundwater from a complex multi-layered bedrock aquifer overlain by an alluvial aquifer. Responsibilities include identifying appropriate search area and potential source facilities for the VOCs, review of documents for facilities identified as potential VOC sources, evaluation of regional groundwater flow conditions and the distribution of VOCs in multiple aquifer units, development of conceptual migration pathways for VOC migration from potential sources to impacted water supply wells, and identification of data gaps and recommendations for additional regional investigations. Primary author of investigation report submitted and presented to state regulatory agencies (DTSC and DDW). Project management activities include supporting client in negotiations with regulatory agencies and potentially responsible parties, management of staff, and budget for investigation.

Deep Drilling and Well Installation Project, Carson Regional Groundwater Group, Carson, CA, Project Manager. As Project Manager for the CRGG Deep Drilling and Well Installation Project, responsible for the implementation of a complex regional groundwater investigation in Carson, California. The objective of the project was to evaluate the lateral and vertical extent of methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA), and other fuel oxygenates in deeper aquifers in the study area and to collect data needed to update a groundwater flow model. The program included continuous coring, soil sampling, discrete-depth groundwater sampling, the installation of deep (500 feet) nested monitoring wells at seven well locations, and a month-long aquifer testing program.

Sustainable Groundwater Management Support Services, Collector Well Feasibility Study, City of Reading, Shasta County, CA, Quality Assurance and Quality Control. Provided quality assurance and quality control (QA/QC) review of well installation reports for test well to assess feasibility of installing a collector well and nested monitoring well installed to support long-term monitoring and reporting for the Anderson Subbasin GSP.

Goldsworthy Desalter Expansion, Brackish Groundwater Supply Wells, Water Replenishment District of Southern California, Torrance, CA, Quality Assurance and Quality Control. Provided quality assurance and quality control (QA/QC) review of well designs and well installation report for two 20-inch stainless steel supply wells rated between 1,500 and 2,500 gallons per minute (gpm); five borehole zone sample intervals collected, and mass balances calculated for water quality blending design; two well production step tests; two 48-hour constant-rate tests; two spinner surveys; and data analysis.

Eastern Santa Clarita Subbasin Groundwater Study, USACE, Santa Clarita, CA, Task Manager/Senior Hydrogeologist. Helped develop the project scope; prepared sampling and analysis plans; coordinated with various project stakeholders (water purveyors, PRPs, USACE, local governments, and DTSC); and managed the field program for a \$4.5M groundwater investigation to address perchlorate impacted groundwater in the in the eastern portion of the Santa Clara Subbasin. The project was contracted on a firm-fixed price basis. The field activities included five deep (more than 1,000 feet) Westbay multipoint monitoring wells, shallower alluvium monitoring wells, large-scale aquifer tests, and periodic groundwater monitoring. The results were integrated into a detailed conceptual model for the study area, consisting of 10 hydrostratigraphic units.



Alan Bradford

Senior Technical Review; QA/QC

Alan has more than 37 years of project management and technical support experience at 29 CERCLA sites in California, including remedial investigations (RIs), feasibility studies (FSs), remedial design (RDs), remedial actions (RAs), Record of Decision (ROD) development, physical characterization of hydrogeology, definition of the nature and extent of contamination, conceptual site model development, analysis of fate and transport, long-term monitoring for compliance with highly complex groundwater containment sites, large groundwater extraction and treatment systems using reinjection, distribution to water supply and discharge to surface water, preparation of NCP-compliant planning documents, community involvement, and enforcement support. Alan has provided project management and technical support for regional groundwater cleanups and investigations involving VOCs, 1,4 dioxane, and hexavalent chromium at San Gabriel Valley Superfund Site OUs and numerous other industrial and military facilities with multidisciplinary teams of specialists in hydrogeology, engineering, groundwater modeling, risk assessment, California applicable or relevant and appropriate requirements (ARARs) analysis, removal alternative analysis, and engineering evaluation/cost analysis (EE/CA) study reports. He has also managed design and construction of extraction and monitoring wells and provided on-call hydrogeologic services for municipal water agencies. His project management responsibilities include all aspects of client communication; scope, budget, schedule, and work planning; completing work within allotted budgets for fixed price, cost plus and time and material contract types, and timeframes; and managing project technical staff.

FIRM | HOME OFFICE

Jacobs; Irvine, CA

YEARS OF EXPERIENCE (WITH JACOBS)

37 years (19 years)

REGISTRATIONS | LICENSES

- California Certified Hydrogeologist: #48, 1995 (ex. 07/31/2027)
- California Professional Geologist: #6119, 1995 (ex. 07/31/2027)

EDUCATION

- MS, Hydrology, University of Arizona
- BA, Geology, Dartmouth College

Relevant Project Experience

Perris North Groundwater Contamination Prevention and Remediation Program, Eastern Municipal Water District (EMWD), Riverside County, CA, Project Manager. Prepared the preliminary well design and specifications for four groundwater extraction wells and a monitoring well network consisting of 51 well casings at 16 locations for EMWD's Prop-1 grant-funded Perris North Program. Responsibilities included presenting preliminary designs to stakeholders, preparing work plans for submission to the State, drafting specifications for inclusion in EMWD's public bid packages, and providing bid evaluation support. Led a team of 19 hydrogeologists, geologists, and engineers who provided 24/7 contractor oversight and construction management services during flooded-reverse-circulation and mud-rotary pilot borehole drilling, isolated aquifer zone construction and testing, geophysical logging, final well design, well construction, mechanical and chemical well development, step-rate and constant-rate aquifer testing, and well acceptance testing. Additionally, prepared documentation for the California Drinking Water Source Assessment Protection (DWSAP) Program, developed design parameters for well equipping, and authored multiple well completion reports for the project.

RD/RA Oversight San Gabriel Valley Superfund Site Puente Valley OU (Area 4), US EPA, Los Angeles County, CA, Project Manager and Senior Hydrogeologist. Alan is the project manager for the Design Engineering Services (DES) task order for technical oversight of two potentially responsible party (PRP) groups implementing the shallow zone (SZ) and intermediate zone (IZ) groundwater remedies for a highly complex groundwater containment site impacted by VOCs, hexavalent chromium, 1,4-dioxane, and perchlorate. This work involves oversight of start-up and operation of two constructed groundwater treatment plants that discharge treated IZ water via distribution to potable water supply and SZ-South water to surface water, and RD and construction of a second SZ-North groundwater treatment plant with discharge via reinjection. The project also includes offsite definition of the nature and extent of contamination at selected contaminant source facilities, updating the conceptual site model, review of groundwater modeling and other PRP technical reports, preparing NCP-compliant planning documents, coordinating and securing access on private property and in public rights-of-way, and community involvement support. Prior to 2016, Alan supported reviewed well completion and monitoring reports, preliminary design basis reports, groundwater modeling, and aquifer testing results for the RD.

RD/RA and O&M Oversight, San Gabriel Valley Superfund Site, El Monte OU (Area 1), US EPA, El Monte, CA, Project Manager/Senior Hydrogeologist. Alan is the project manager and senior hydrogeologist responsible for oversight of the RD/RA activities of two separate potentially responsible party (PRP) groups implementing the Interim ROD for this highly complex groundwater site to contain shallow and deep zone groundwater contaminated primarily by the VOCs trichloroethene (TCE) and tetrachloroethene (PCE), as well as removal of 1,4-dioxane, hexavalent chromium, nitrate, and perchlorate. Alan's work has included detailed technical review of RD/RA work plans; conceptual site models; nature and extent of contamination; compliance monitoring, compliance action, and performance evaluation plans and reports; groundwater model construction, calibration, and containment simulations for RD and performance evaluation; remedy enhancement and optimization plans; and 30% and 60% design submittals and construction bid packages for three groundwater treatment systems. Work has also included oversight of RA construction of groundwater monitoring, extraction, and reinjection wells; conveyance pipelines; and three groundwater treatment plants that discharge water via reinjection, distribution to potable water supply, and surface water, respectively. The PRPs entered into agreements, with EPA's and Jacobs' support, with the two water purveyors to operate two groundwater extraction and treatment systems: the City of El Monte and the Golden State Water Company. Alan's project team has also provided community involvement support with RD/RA fact sheets and public meetings, stakeholder meeting support, and EPA's efforts with a Bona Fide Prospective Purchaser Agreement and a removal action for hexavalent chromium at a former metal plating facility. The project received a Contract Performance Assessment Report (CPAR) and Regional Evaluation Summary (RES) Overall Rating of 4, Exceptional, in 2018 from EPA.

FS/RD and O&M Oversight of the San Gabriel Valley Superfund Site, Whittier Narrows OU (Area 1), US EPA, Los Angeles County, CA, Project Manager/Senior Hydrogeologist. This EPA-led regional VOC groundwater plume cleanup project for a highly complex groundwater containment site involved a large groundwater extraction and treatment system (11,000-gallon-per-minute (gpm) capacity) constructed by EPA in 2002 with disposal by both distribution to water supply and to surface water. Alan managed a multidisciplinary team of hydrogeologists, engineers, and scientists to provide on-call drilling; well construction; long-term monitoring for compliance; modeling analysis of fate and transport; preparation of remedy performance evaluation, environmental assessment, and other technical reports including evaluation of potential 1,4-dioxane impacts on the remedy; design of and engineering services during construction for a 500,000-gallon capacity potable water storage tank, booster pump station, pipelines, and instrumentation and controls; evaluation of a range of treated water disposal options; and coordination with stakeholders.

Remedial Investigation, Area 3 of the San Gabriel Valley Superfund Site, US EPA, Los Angeles County, CA, Senior Technical Reviewer. Prepared portions of and reviewed of the RI Report and data gap evaluation for this EPA-led project.

Regional Brackish Water Reclamation Program Feasibility Study; Water Replenishment District of Southern California (WRD); Torrance, California; Senior Hydrogeologist/Task Manager. WRD retained Jacobs to perform a Feasibility Study (FS) for WRD's Regional Brackish Water Reclamation Program. This study addressed the significant plume (approx. 600,000 acre-feet) of high Total Dissolved Solids (TDS) water within the West Coast Basin. The saline plume has been trapped due to seawater intrusion and the implementation of the West Coast Basin Barrier Project (seawater intrusion barrier). Key objectives include evaluating ways to remediate the basin, mitigate the plume, and gain additional groundwater storage. Mr. Bradford was task manager for Task 1E – Source Water Intake Evaluation, which involved evaluation of the basin hydrogeology, saline plume nature and extent, groundwater modeling simulations of extraction well pumping, developing preliminary design options for future saline plume extraction wells, and calculating estimated source water intake structure (extraction well) constituent concentrations to support preliminary design of desalter treatment systems, and preparing a comprehensive technical memorandum documenting the evaluation.

Record of Decision (ROD) Preparation, Montrose Superfund Site OU-3–DNAPL, US EPA, Los Angeles, CA. Task Manager. Alan led preparation of the draft ROD for the Montrose Superfund Site OU-3 – Dense Non-Aqueous Phase Liquid (DNAPL). The ROD defined the remedy and identified ARARs that had to be met while implementing the remedy.

Support on the Investigation and Oversight of a Groundwater Plume and its Sources, San Fernando Valley (SFV) Superfund Sites; US EPA; Los Angeles County, California; Project Manager. Alan is project manager for this task order for 10 Operable Units (OUs), including Basinwide, Area 1, North Hollywood Operable Unit (NHOU) Central, Area 1, NHOU East, Area 1, NHOU West, Area 1, Burbank OU (BOU), Area 2, Glendale OU (GOU), Area 2, Glendale Chrome OU (GCOU), Area 4, Pollock OU (POU) Plume Area 1, Area 4, POU Plume Area 2, and Basinwide - Drilube and other source properties. The SFV Superfund Sites encompass approximately 50 square miles of the eastern portion of the SFV in Los Angeles County, California and are generally bounded by the Santa Monica Mountains on the south, the Hollywood Freeway (CA-170) on the west, the Glendale Freeway on the east (CA-2), and the Verdugo Mountains on the north. The area includes the City of Burbank and portions of the City of Glendale and the City of Los Angeles. In 1986, EPA placed four areas in the SFV on the National Priorities List (NPL) based on the location of drinking water well fields known to be contaminated by volatile organic compounds (VOCs), with subsequent identification of additional contaminants including, but not limited to, 1,4-dioxane and hexavalent chromium. The SFV DES task order scope includes systematic project planning; project-specific plan development; project management, monitoring, and reporting; community involvement support; field investigation and analytical support; treatability studies; remedial investigation/feasibility study (RI/FS); remedial design (RD); oversight support for RI/FS, RD, remedial action (RA), and operations and maintenance (O&M); technical meeting support; negotiation, litigation, and expert witness support; and records management and administrative support.

Naval Air Weapons Station (NAWS) Seal Beach, Detachment Fallbrook, Munitions Response Program (MRP), Remedial Investigation (RI) at MRP Site UXO2; Department of the Navy, Naval Facilities Engineering Command Southwest (NAVFAC SW); California; Senior Technical Consultant. This task order involves preparation of an RI work plan and sampling and analysis plan (SAP), implementation of field investigations, and preparation of an RI report for NAWS Seal Beach, Detachment Fallbrook MRP Site UXO2, which includes two subareas, a former Skeet/Trap Range and a former Small Arms Range. Performed senior technical review of client deliverables.

Naval Air Weapons Station (NAWS) China Lake, Installation Restoration Program (IRP), Site Inspection (SI) for IRP Sites 42 and 48 and Remedial Investigation for IRP Sites 28 and 54; Department of the Navy, Naval Facilities Engineering Command Southwest (NAVFAC SW), China Lake, California, Senior Technical Consultant. This task order involves preparation of a combined SI and RI work plan and sampling and analysis plan (SAP), implementation of field investigations, and preparation of an SI report for NAWS China Lake IRP Sites 28 – Old Defense Property Disposal Office (DPDO) Storage Yard, 42- Randsburg Wash No. 3, 48 – Weapons Survivability Laboratory Holding Pond, and 54 – Area R Slit Trenches. Performed senior technical review of client deliverables.

Rockets, Fireworks, and Flares Superfund Site Remedial Investigation/Feasibility Study (RI/FS); US EPA; San Bernardino County, California; Senior Technical Reviewer and Task Manager. EPA conducted a feasibility study (FS) and concurrent supplemental remedial investigation (RI) under the Federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and prepared an RI/FS report. The RI/FS report combines the RI and FS into one report and evaluates remedial alternatives for mitigating a 1.5-mile long groundwater plume in the Rialto-Colton Groundwater Basin that has impacted several water supply wells. The RI/FS report addressed groundwater contaminated by perchlorate and volatile organic compounds (VOCs) in a portion of the Site that includes the 160 Acre Area ("the upgradient area") and an area extending approximately 1.5 miles downgradient to the southeast from the 160-Acre Area. The report presented and provided detailed evaluations of actions intended to remediate the upgradient area. As part of this evaluation, a detailed evaluation of historical groundwater production by water purveyors in the local Rialto-Colton Groundwater Basin was conducted.



Benjamin (BJ) Lechler

Data Gaps Analysis and Real Estate and Land Access Analysis Lead

BJ is a hydrogeologist and project manager with 23 years of experience in groundwater consulting for municipal, federal, and industrial clients. Throughout his career, he has focused almost exclusively on groundwater projects in Southern California. His expertise includes addressing contaminated water resources and water reuse, characterizing anthropogenic impacts on groundwater quality, conducting regional water quality and hydraulic investigations, evaluating impacted water supply wells, exploring alternative water supplies, and collaborating with multi-party stakeholder groups and regulatory agencies to resolve water resource and quality challenges for clients.

FIRM | HOME OFFICE

Jacobs; Irvine, CA

YEARS OF EXPERIENCE (WITH JACOBS)

23 years (20 years)

REGISTRATIONS | LICENSES

- California Certified Hydrogeologist: #1071, 2019 (ex. 06/30/2026)
- California Professional Geologist: #8229, 2006 (ex. 06/30/2026)

EDUCATION

- MS, Hydrology, New Mexico Institute of Mining and Technology
- BS, Geology, University of Cincinnati

Relevant Project Experience

Perris North Groundwater Contamination Prevention and Remediation Program, Eastern Municipal Water District (EMWD), Riverside County, CA, Lead Hydrogeologist. Prepared the preliminary well design and specifications for four groundwater extraction wells and a monitoring well network consisting of 51 well casings at 16 locations for EMWD's Prop-1 grant-funded Perris North Program. Responsibilities included presenting preliminary designs to stakeholders, preparing work plans for submission to the State, drafting specifications for inclusion in EMWD's public bid packages, and providing bid evaluation support. Led a team of 19 hydrogeologists, geologists, and engineers who provided 24/7 contractor oversight and construction management services during flooded-reverse-circulation and mud-rotary pilot borehole drilling, isolated aquifer zone construction and testing, geophysical logging, final well design, well construction, mechanical and chemical well development, step-rate and constant-rate aquifer testing, and well acceptance testing.

Additionally, prepared documentation for the California Drinking Water Source Assessment Protection (DWSAP) Program, developed design parameters for well equipping, and authored a well completion report summarizing the project.

San Gabriel Valley Superfund Site, Area 3 Operable Unit, U.S. Environmental Protection Agency, Alhambra, CA, Hydrogeologist. Hydrogeologist for RI/FS activities for large area impacted by a relatively dilute VOC plume at the EPA San Gabriel Valley Superfund Site, Area 3 Operable Unit. Conducted RI/site characterization activities, individual site investigations to identify potential source areas, and data gap investigations. Responsible for preparing planning documents (SAPs, QAPPs, work plans), oversight of investigation activities, data analysis, assisting in RI report and supplemental investigation report preparation, data analysis, and coordination of quarterly groundwater monitoring. Field activities included installation of deep (up to 800 feet) Westbay multiport and single-screened monitoring wells. Provided oversight of mud rotary drilling and well installation activities. Assisted in designing wells using a combination of geophysical and lithologic logs. Field team lead for RI activities between 2002 and 2009. Technical lead for data gap investigations 2014 to 2017 and 2019-2020.

Extraction Barrier and Brackish Water Treatment Phase 1 Monitoring Wells, United Water Conservation District (UWCD), Ventura County, CA, Project Manager. Managed a team supporting the UWCD with the technical, permitting, and logistical requirements for drilling, installing, and testing new monitoring wells at Naval Base Ventura County Point Mugu as part of the Extraction Barrier and Brackish Water Treatment (EBB Water) project. The scope included the drilling, installation, development, and testing of 21 monitoring well casings at five locations, utilizing rotosonic drilling for shallow wells and mud rotary drilling for deeper wells. Well clusters were installed at each location, comprising 3-inch diameter single-screened wells, 3-inch diameter nested wells, and 5-inch diameter single-screened wells. Jacobs prepared specifications and plans for a public bid package, provided well design and bid support, oversaw drilling, well construction, and development, and conducted pumping tests to characterize aquifer parameters in the area of potential future extraction wells.

Montrose and Del Amo Superfund Site Dual Site Operable Unit, U.S. Environmental Protection Agency, Torrance, CA, Lead Hydrogeologist. Senior hydrogeologist overseeing potentially responsible parties (PRPs) implementing groundwater remediation projects and tracking groundwater contamination at the Montrose/Del Amo sites. Groundwater impacts at the site include comingled plumes of chlorobenzene, benzene, PCE, TCE, and para-chlorobenzene sulfonic acid originating from numerous source areas. Supports EPA with technical review of PRP documents including field sampling plans, well installation and destruction work plans, standard operating procedures for field monitoring and well rehabilitation, annual groundwater monitoring reports, reports related to nature and extent and fate and transport of contaminants, performance evaluation reports, data gaps investigations, and other documents related to characterization and remediation of groundwater contamination.

Manhattan Beach Desalter Feasibility Study, Water Replenishment District of Southern California (WRD), Manhattan Beach, CA, Hydrogeologist/Technical Lead. Senior hydrogeologist supporting the Manhattan Beach Desalter Feasibility Study to develop a conceptual design for a remote desalter in the City. The desalter is intended to remediate an isolated plume of brackish groundwater inland of the West Coast Basin Barrier Project which was constructed to prevent seawater intrusion along the west coast of Los Angeles County. Evaluated chloride data and identified data gaps in the lateral and vertical delineation of brackish groundwater in the area proposed for the desalter. Developed a work plan that included additional exploratory drilling, zone testing, and monitoring well construction to address data gaps in water quality delineation of the saline plume in the City.

Goldsworthy Desalter Expansion, Feasibility Study and Brackish Groundwater Supply Wells, Water Replenishment District of Southern California, Torrance, CA, Senior Hydrogeologist. Served as Senior Hydrogeologist for this project addressing remediation of a seawater intrusion plume in the coastal portion of the West Coast Basin while supporting an expanded desalter facility for an alternative water supply. The scope included siting and installing two new brackish water extraction wells, each with chloride concentrations exceeding 1,000 mg/L and capable of producing 2,200 gpm. As project manager and technical lead, responsibilities included preparing hydrogeologic cross-sections to identify optimal well sites to meet target chloride levels and yield, assisting with DDW and RWQCB permitting, drafting specifications and plans for well installation and testing, providing technical oversight for the well installation and testing program, designing the wells and aquifer testing program, and analyzing and presenting well installation and testing data.

Conceptual Site Model Data Gaps Investigation, Confidential Power Utility, Mojave Desert, NV, Hydrogeologist. Primary author for work plan to address data gaps in the conceptual site model for a TDS plume surrounding former evaporation ponds at coal fired power plant. The former power plant at the site was co-owned by the power utility and a state agency. The work plan outlined an approach which utilized multiple investigative techniques to evaluate the lateral and vertical extent of TDS in the alluvial aquifer and underlying bedrock. In the alluvium, a hydraulic profiling tool was specified to identify various hydrostratigraphic units within the alluvial aquifer and select depth intervals to collect grab groundwater samples using a direct push rig. In bedrock, where push-ahead techniques were not feasible, the plan specified advancing sonic borings to identify bedrock and constructing temporary wells, which were developed and sampled to assess water quality impacts. Work plan preparation required coordination with the state agency and their consultants, and the approval process included multiple meetings and engagement with the state environmental regulatory agency.

San Fernando Valley Superfund Site, Glendale Chromium Operable Unit, U.S. Environmental Protection Agency, Los Angeles County, CA, Hydrogeologist. Hydrogeologist and Task Manager for EPA RI of regional hexavalent chromium contamination in the San Fernando Valley. Responsibilities included preparation of RI planning documents, interfacing with project stakeholders (including a group of responsible parties and local water purveyors), management of field team, subcontractors, site investigation budget, siting and design of monitoring wells, coordination of well installation activities, evaluation of water level and water quality data, refining the conceptual site model, evaluation of the nature and extent and fate and transport of regional chromium contamination.

Joint Los Angeles Basins Replenishment and Extraction Master Plan, Water Replenishment District of Southern California (WRD), Los Angeles County, CA, Hydrogeologist. Supported this master plan effort with land availability and well siting evaluations for future injection and extraction wellfields in the Central Basin. Coordinated with groundwater modeling and right of way consultants to evaluate hydrogeologic feasibility of injection locations and assess potential locations for development as future well sites. In addition, led development of a work plan to install monitoring wells and a pilot injection well to assess water quality data gaps.

Environmental Compliance and Groundwater Remediation Program, Kinder Morgan, Various Locations, CA. Senior Hydrogeologist and Assistant Project Manager for RWQCB compliance groundwater monitoring, groundwater remediation, and environmental compliance activities at two fuel storage and transfer terminals. The study area includes a complex hydrogeologic environment with an extensive perched groundwater unit containing non-aqueous phase liquids and high concentrations of fuel-related compounds that is underlain by a regional aquifer. A pump and treat system is used to contain impacted groundwater within the terminal property. Responsible for well siting, managing field investigation and groundwater modeling activities, interpretation of groundwater monitoring data, conceptual site model refinement, RWQCB compliance reporting, and interfacing with project stakeholders including RWQCB (Santa Ana Region). Project manager for all groundwater field investigation activities conducted at the terminal; responsibilities include preparation of task order proposals, management of scope, schedule, and budget, managing support staff, and regulatory compliance reporting.

Project Manager and Hydrogeologist for RWQCB compliance groundwater monitoring and remediation activities at a fuel storage and transfer terminal. The terminal is in a dynamic hydrogeologic environment along the Mojave River and downgradient of an artificial recharge facility. Responsible for interpretation of groundwater monitoring data, conceptual site model refinement, RWQCB compliance reporting, and interfacing with project stakeholders including RWQCB (Lahontan Region) and the Mojave Water Agency. Designed and conducted oversight of the drilling and installation of nested groundwater monitoring wells, ozone sparge wells, and air sparge/soil vapor extraction wells used to remediate dissolved phase MTBE in groundwater and residual MTBE contamination in soil. The Cleanup and Abatement Order was satisfied and case closure with the RWQCB was granted in 2015 after addressing all regulatory comments and concerns.

Rockets, Fireworks, and Flares, and Fireworks Superfund Site, U.S. Environmental Protection Agency, San Bernardino County, CA, Hydrogeologist. Hydrogeologist and Task Manager for basinwide RI in the Rialto-Colton groundwater basin to characterize an approximately 5-mile long perchlorate and VOC plume in the drinking water aquifer. Duties included well siting, management of the drilling and installation of six deep (up to 900 feet) multi-port (Westbay) monitoring wells, evaluation of groundwater flow, and contaminant transport evaluations. Groundwater flow analysis included evaluation of the effect of structural controls (faults and basin thickness) on flow directions and the subsequent effect on perchlorate migration. Refinement of the conceptual site model and technical support of groundwater flow model construction. In addition to regional groundwater evaluations, conducted soil vapor probe installation and sampling in the suspected source area for the contamination (160-Acre Area) to evaluate linkage between the source area and regional contamination. Also, on behalf of EPA, conducted oversight of field activities and reviewed technical reports prepared by responsible parties. Managed field staff, subcontractors, and budgets for field activities.

Saugus Formation VOC Investigation, Nossaman LLP and Castaic Lake Water Agency, Santa Clarita, CA, Project Manager/Hydrogeologist. Senior Hydrogeologist and Project Manager for project to identify the potential source(s) of VOC contamination in two water supply wells which produce groundwater from a complex multi-layered bedrock aquifer overlain by an alluvial aquifer. Responsibilities include identifying appropriate search area and potential source facilities for the VOCs, review of documents for facilities identified as potential VOC sources, evaluation of regional groundwater flow conditions and the distribution of VOCs in multiple aquifer units, development of conceptual migration pathways for VOC migration from potential sources to impacted water supply wells, and identification of data gaps and recommendations for additional regional investigations. Primary author of investigation report submitted and presented to state regulatory agencies (DTSC and DDW). Project management activities include supporting client in negotiations with regulatory agencies and potentially responsible parties, management of staff, and budget for investigation.



Tyler Evans

PDI Work Plan Lead

Tyler Evans has over 15 years of experience in geology and environmental remediation. He holds both a B.S. and M.S. in Geology from UC San Diego and is a licensed Professional Geologist in California. At Jacobs, Tyler has served as a Project Manager, overseeing multiple CERCLA task orders under federal environmental contracts. His responsibilities include managing budgets, coordinating field investigations, preparing technical reports, and ensuring compliance with regulatory frameworks, such as CERCLA.

Tyler's project experience spans complex environmental clean-up operations involving groundwater and soil remediation, vapor sampling, and in-situ treatment technologies. He has led drilling efforts, managed junior staff, and facilitated proposal development and execution planning. His work has included multi-year monitoring and remediation programs, often requiring coordination across multiple stakeholders and subcontractors.

Relevant Project Experience

Naval Air Weapons Station (NAWS) China Lake, Installation Restoration Program (IRP), Site Inspection (SI) for IRP Sites 42 and 48 and Remedial Investigation for IRP Sites 28 and 54; Department of the Navy, Naval Facilities Engineering Command Southwest (NAVFAC SW), China Lake, California, Project Manager. This task order involves preparation of a combined SI and RI work plan and sampling and analysis plan (SAP), implementation of field investigations, and preparation of an SI report for NAWS China Lake IRP Sites 28 – Old Defense Property Disposal Office (DPDO) Storage Yard, 42- Randsburg Wash No. 3, 48 – Weapons Survivability

Laboratory Holding Pond, and 54 – Area R Slit Trenches. Tyler managed preparation of three SAPs in advance of the remedial investigation and Data Gap Investigation field work. Following the SAP preparation, Tyler managed the remedial investigation drilling program at Naval Air Weapons Station China Lake at Site 48, 54, and 83, managing the field execution and staff coordination. Responsibilities included subcontractor coordination and ensuring compliance with the SAP, technical specifications and safety protocols. Led a multidisciplinary team conducting groundwater monitoring well installations, soil borehole lithologic logging, and well development across complex desert terrain. Oversaw daily field documentation, sample collection, and subcontractor coordination, ensuring high-quality data acquisition and adherence to CERCLA requirements. Successfully maintained schedule while navigating logistical challenges in a remote environment.

Naval Air Weapons Station Seal Beach Detachments, Fallbrook and Norco, CA. PFAS Site Inspection Projects Fallbrook and Norco, CA, Department of the Navy, Naval Facilities Engineering Command Southwest (NAVFAC SW), Project Manager. Tyler managed field execution for two PFAS Site Inspection projects at military installations in Fallbrook and Norco, California. Oversaw all aspects of drilling operations, including coordination of subcontractors, geologic logging, and installation of groundwater monitoring wells and vapor probes. Directed a multidisciplinary field team responsible for sample collection, geophysical logging, well development, and daily documentation. Ensured compliance with project specifications, safety protocols, and regulatory requirements. Additionally, managed the preparation of the Site Inspection reports, including data interpretation, figure and table generation, and integration of field findings into regulatory deliverables. Maintained schedule and budget across both sites while delivering high-quality data to support PFAS characterization and future remedial planning.

FIRM | HOME OFFICE

Jacobs; San Diego, CA

YEARS OF EXPERIENCE (WITH JACOBS)

15 years (5 years)

REGISTRATIONS | LICENSES

- California Professional Geologist: #9554, 2017 (ex. 04/30/2027)
- Project Management Professional: #3158416, 2021 (ex. 11/07/2027)

EDUCATION

- MS, Geology, University of California San Diego
- BS, Geology, University of California San Diego

Montrose and Del Amo Superfund Site Dual Site Operable Unit, U.S. Environmental Protection Agency, Torrance, CA, Hydrogeologist. Hydrogeologist supporting project manager tracking the status of technical review of PRP documents including field sampling plans, well installation and destruction work plans, standard operating procedures for field monitoring and well rehabilitation, annual groundwater monitoring reports, reports related to nature and extent and fate and transport of contaminants, performance evaluation reports, data gaps investigations, and other documents related to characterization and remediation of groundwater contamination. Project includes PRP groundwater remediation projects and monitoring of groundwater contamination at the Montrose/Del Amo sites. Groundwater impacts at the site include comingled plumes of chlorobenzene, benzene, PCE, TCE, and para-chlorobenzene sulfonic acid originating from numerous source areas.

Southern California Groundwater Clean-up Operations, Raytheon Technologies, Various Locations, CA, Task Manager. Served as Task Manager and field staff manager for multiple groundwater remediation projects across Southern California. Responsibilities included managing junior field staff, leading drilling operations, overseeing monitoring well installation, and conducting routine groundwater sampling and reporting. Supported the Project Manager in budget, scope, and schedule tracking. Compiled technical reports and ensured compliance with regulatory standards.

Supplemental Remedial Investigation for the South Basin Groundwater Protection Project, Orange County Water District, Orange County, CA, South Basin, Staff Lead. Tyler assisted in the development of a Supplemental Remedial Investigation report for the South Basin groundwater protection project. Responsibilities included generating lithologic cross sections to support subsurface characterization and conducting geologic review of historical documentation to inform conceptual site model updates. Contributed to figure and table generation for the comprehensive report, which supported regulatory decision-making and remedial planning. Work involved synthesizing complex datasets and ensuring technical accuracy across deliverables prepared for stakeholder and agency review.

Groundwater and Soil Remediation, Beckman Coulter, Fullerton, CA, Task Manager. Oversaw field implementation of remediation efforts targeting TCE and PCE contamination at a former medical device manufacturing facility. Directed in-situ zero-valent iron injection activities to reduce concentrations of contaminants of concern. Managed drilling operations to remove non-aqueous phase liquids from depths of 80 feet using large-diameter augers. Coordinated sampling events and prepared implementation reports documenting remedy effectiveness and field activities.

Groundwater Monitoring and Reporting, Boeing, Various Locations, CA, Task Manager. Led groundwater and soil vapor monitoring efforts as part of a multi-year clean-up operation for Boeing in Southern California. Managed junior staff, coordinated field logistics, and compiled monitoring reports. Conducted soil vapor and groundwater sampling, supported budget and schedule tracking, and assisted the Project Manager with regulatory compliance and reporting.



Harmony Ann Farnsworth-Warren

PDI Work Plan Support

Harmony has almost two decades of technical and working knowledge in the fields of hydrogeology, hydrology and geology while working with federal, municipal, mining, and geothermal operations. She has extensive experience managing, planning and implementing field projects, monitoring large well networks, compiling & assessing databases, evaluating conceptual hydrogeologic models, characterizing aquifers, writing technical reports, environmental permitting, and performing compliance monitoring. Her current work supports clients including the US Environmental Protection Agency (EPA), Navy, water utilities and various geothermal companies. Harmony has spent a great deal of time coordinating with regulators and stakeholders including EPA, Nevada Division of Environmental Protection (NDEP), Nevada Division of Water Resources (NDWR), Bureau of Land Management (BLM), California Department of Toxic Substances and Control (DTSC), Tribes and public water utilities.

FIRM | HOME OFFICE

Jacobs; Irvine, CA

YEARS OF EXPERIENCE (WITH JACOBS)

18 years (3 years)

REGISTRATIONS | LICENSES

- California Professional Geologist: #10414, 2025 (ex. 1/31/2026)
- Idaho Professional Geologist: #1702, 2017 (ex. 1/10/2026)
- Utah Professional Geologist: #2250, 2012 (ex. 3/31/2027)
- Washington Professional Geologist: #4510, 2018 (ex. 1/10/2026)

EDUCATION

- MS, Hydrogeology, University of Nevada Reno
- BS, Hydrogeology, University of Nevada Reno

Relevant Project Experience

San Gabriel Valley Superfund Site, Puente Valley OU (Area 4), US EPA, Los Angeles County, CA, Assistant Project Manager/Hydrogeologist. Task lead preparing planning documents and field investigation to evaluate the nature and extent of contamination in select areas of the OU. Activities included; determine locations and obtaining access to drill and install monitoring wells, procurement of subcontractors, and preparation of planning documents including a work plan, sampling and analysis plan (SAP) and quality assurance project plan (QAPP) to install and sample 8 new monitoring wells. Analyzed data collected during the field investigation and prepared a comprehensive report for submittal to EPA. In addition to these EPA-lead activities, also assist with oversight of Potentially Responsible Parties (PRPs) activities, including review of planning and reporting documents submitted to EPA, oversight of PRPs field investigations and treatment plant inspections. Compile monthly progress reports to include with invoices to EPA.

San Gabriel Valley Superfund Site, Alhambra OU (Area 3), US EPA, Los Angeles County, CA, Assistant Project Manager/Hydrogeologist. Jacobs initiated this project in Q3/2025 and am currently writing the following project planning documents for a data gap investigation; UFP-QAPP, Field Sampling Plan, Work Plan, Health and Safety Plan, Waste Management Plan and a Data Management Plan. New monitoring well locations will be selected based on data gaps that need to be addressed, access and utility clearances. Mud rotary drilling is scoped to reach depths greater than 400 feet below ground surface. Results from this data gap investigation will be used to determine a remedial design.

San Gabriel Valley Superfund Site, El Monte OU (Area 1), US EPA, Los Angeles County, CA, Assistant Project Manager/Hydrogeologist. Assist with oversight of PRPs activities, including review of planning and reporting documents submitted to EPA, oversight of PRPs field investigations (drilling, well installation and groundwater sampling) and treatment plant inspections. Compile monthly progress reports to include with invoices to EPA.

Lone Mountain Geothermal Monitoring, ORMAT, Esmeralda County, Nevada, Hydrogeologist. Assisted with writing the conceptual site model and was lead author for the Groundwater Monitoring Plan as part of the permitting requirements for the Bureau of Land Management. Selecting new monitoring well locations and providing data quality objectives was one the requirements in the Groundwater Monitoring Plan.

Extraction Barrier and Brackish Water Treatment Phase 1 Monitoring Wells, United Water Conservation District (UWCD), Ventura County, CA, Hydrogeologist. Field team lead drilling, installing, and testing new monitoring wells at Naval Base Ventura County Point Mugu as part of the Extraction Barrier and Brackish Water Treatment (EBB Water) project. The scope included the drilling, installation, development, and testing of 21 monitoring well casings at five locations, utilizing rotosonic drilling for shallow wells and mud rotary drilling for deeper wells. Well clusters were installed at each location, comprising 3-inch diameter single-screened wells, 3-inch diameter nested wells, and 5-inch diameter single-screened wells. Oversaw drilling, well construction, and development, and exploratory borehole drilling with SimulProbe sampling to characterize water quality and lithology in the area of potential future extraction wells.

Santa Susana Field Laboratory, Boeing, Chatsworth, CA, Hydrogeologist. Prepared a Backfill Workplan as required per the DTSC Settlement Agreement of 2022 to replace contaminated soil. Preparation included use of GIS and an extensive literature review to conduct a data gap analysis. The Backfill Workplan has been used as a guide for selecting appropriate backfill for areas to be excavated. The data gap analysis is used to determine if corrective measures areas should be decreased or increased in size.

On-Call Hydrogeological Consulting Services, Eastern Municipal Water District (EMWD), Riverside County, CA, Hydrogeologist. Supported vertical profiling of wells with water quality probes (nitrate, total dissolved solids), and temperature to support the District's Perris South Monitoring and Reporting Program. Field support of deployment and management of the District's groundwater instrumentation and telemetry.

Patua Geothermal Project, Cyrq Energy, Hazen, NV, Project Manager and Hydrogeologist. Designed a well and spring monitoring plan to monitor compliance for an Underground Injection Control Permit. Compliance monitoring includes measuring flow rates, field chemistry, water levels and collecting samples for metals, general chemistry and isotopes for 12 wells, 8 springs, and 1 stream. Prepare annual compliance monitoring reports that summarize monitoring results and present hydrographs, other charts, databases, and statistical evaluations.

Post Falls Community Forest Water Reuse Project, TO Engineers, Post Falls, ID, Hydrogeologist. Assisted the City of Post Falls with irrigation plans on future spreading grounds of partially treated municipal water. Coordinated geophysical surveys and proposed well locations based on geophysical results. Located and sampled new and previously unmapped springs. Prepared designs for monitoring and irrigation wells.

Comstock Mine, Comstock Mining Inc., Gold Hill, NV, Hydrogeologist. Determined locations for new wells and oversaw installation of five monitoring wells (drilled via hollow-stem auger) and one production well (drilled via mud-rotary). Activities included borehole lithologic logging, well development oversight, and conducting a 72-hr aquifer test for the production well. Analyzed pumping test data and prepared a summary report to document the hydrogeologic findings. Also, established and managed weekly Leak Detect and Recovery System for lined ponds, performed quarterly compliance monitoring for five wells and four spring sites, assisted with Water Rights Transfers, and trained Comstock staff to conduct compliance monitoring and the Leak Detect & Recovery System.



Nichola Fulton

Health and Safety Manager

Nichola is a proactive Health and Safety Manager with over 18 years of experience in Occupational Health and Safety and a solid background in Civil and Environmental Engineering. Nichola is currently a Senior H&S Manager for Jacobs and the Geography Manager for Buildings and Infrastructure (B&I) California with responsibilities for all B&I projects and offices throughout the state. Nichola can lead teams and work well in challenging situations. Nichola has driven Health and Safety leadership and operational excellence on large-scale B&I projects in both the US and the UK, spanning market sectors in water, transportation, healthcare, education, commercial, aviation, utilities interiors and more.

FIRM | HOME OFFICE

Jacobs; Irvine, CA

YEARS OF EXPERIENCE (WITH JACOBS)

18 years (18 years)

REGISTRATIONS | LICENSES

- OSHA 510 Occupational Safety and Health Standards for the Construction Industry, 2016

EDUCATION

- BS, Civil Engineering with Environmental Studies, University of Glasgow

Relevant Project Experience

Wells 206, 207, and 208 Construction Management Services and As-Needed Hydrogeological Services, Eastern Municipal Water District (EMWD), Moreno Valley, CA, Health and Safety Manager. Nichola was responsible for ensuring compliance with Jacobs H&S Business Management System and Cal/OSHA and for ensuring the project team had appropriate resources and safety training to mitigate risks across the project which included the drilling, construction, development, and testing of the three 18-inch diameter extraction wells installed for EMWD's Perris North Program. Nichola supported the development of complex safety in design plans for access platforms which would allow the team to perform monitoring activities at height and over water safety. In addition, Nichola was responsible for the pre-qualification of safe subcontractors and for developing and reviewing task specific health and safety plans for hazardous activities (including drilling, working

at height and working over water).

Extraction Barrier and Brackish Water Treatment Phase 1 Monitoring Wells, United Water Conservation District (UWCD), Ventura County, CA, Health and Safety Manager. Nichola was responsible for ensuring compliance with Jacobs H&S Business Management System and Cal/OSHA and for ensuring the project team had appropriate resources and safety training to mitigate risks while drilling, installing, and testing new monitoring wells at Naval Base Ventura County Point Mugu. Nichola supported the development of complex safety and design plans which would allow the team to safely perform monitoring activities around the drilling equipment and in active areas of the Navy base. In addition, Nichola was responsible for developing and reviewing task specific health and safety plans for hazardous activities (including drilling, pumping tests and access surface water for monitoring).

Waste Water Treatment Facility Outfall and Diffuser Project, Yuba City, Yuba City, CA, Health and Safety Manager. Nichola was responsible for the pre-qualification of subcontractors and for pre-task planning for field activities, including geotechnical exploration and work over water, to ensure compliance with internal procedures and with Cal/OSHA. Nichola led incident investigations, project safety orientations and awareness training on the project.

North City Water Reclamation Plant Expansion Project, City of San Diego, San Diego, CA Health and Safety Manager. Nichola was responsible for overseeing subcontractor pre-qualification, facilitating pre-task planning for field operations, and conducting periodic site inspections to ensure adherence to internal protocols and Cal/OSHA regulations. She led incident investigations, delivered project-specific safety orientations, and conducted awareness training to promote a culture of safety throughout the project.

City of Hope Program & Construction Management, Children's Hospital of Orange County (CHOC), Irvine, CA, Health and Safety Manager. The City of Hope Orange County project has a contract value of contract value is approximately \$1 billion and consists of the build-out of an outpatient cancer center and the construction of a new specialty hospital and two parking structures. Jacobs is providing project and construction management services on the project. Nichola was responsible for monitoring the health and safety program implementation, including compliance with Jacobs policies, procedures and Cal/OSHA regulations. Nichola also provided periodic monitoring and inspections of construction activities to ensure compliance with client and contractor construction safety plans, local legislation and Cal/OSHA.

City of Hope, Children's Hospital Los Angeles (CHLA), Los Angeles, CA, Health and Safety Manager. CHLA facilities is undergoing multiple infrastructure upgrades to remove and replace outdated equipment including elevator modernizations, space renovations and installation of new energy saving equipment. Jacobs is providing project management and construction management services on the project. Nichola is responsible for partnering with the project operations team to understand construction safety risks and implement improvement opportunities. Nichola performs incident investigations, reviews safety planning documents and provides guidance on risk mitigation measures to prevent harm to the project.

Program Management Services for the Burbank Airport Replacement Passenger Terminal, Burbank, CA, Health and Safety Manager. Jacobs is providing program planning, design phase support, construction management support and commissioning, start-up and program close-out services for the construction and a replacement passenger terminal building. The contract is estimated at \$1.5 billion. Nichola is responsible for implementing the program Health and Safety Management strategy and construction safety arrangements. This involves working with the project team, client and general contractor to perform a gap analysis of the safety program and to understand the needs, expectations, and contractual responsibilities so H&S commitments can be achieved. Nichola is also responsible for reviewing safety planning documents and monitoring field activities of construction contractors to ensure compliance with internal programs, plans and applicable regulations. Other responsibilities include providing safety training, attending safety committee meetings, reviewing health and safety program implementation and the hiring, coaching and mentoring of project H&S staff.

University of California, San Francisco (UCSF) Campus Expansion Program, San Francisco, CA, Health and Safety Manager. Jacobs is providing Project Management and Construction Management services for an estimated \$1.5 billion of construction costs across various UCSF campuses including the construction of new facilities at the Mission Bay campus, and seismic retrofits and renovations of numerous existing structures. Nichola was responsible for ensuring compliance with Jacobs' policies and procedures. Other responsibilities included bi-weekly safety inspections of construction safety activities to ensure compliance with construction safety plans and Cal/OSHA in addition to leading the Safety Council which engages construction contractor employees in a collaborative setting to share best practices across UCSF projects.



Ron Bruns

Data Manager

Ron is an expert environmental data manager. He manages data in environmental chemistry sampling and analysis programs; site investigation, site assessment, and risk assessment programs; long-term monitoring/long-term operation programs and remediation programs; and historical data migration and warehousing.

He is well versed in all data management platforms for managing environmental data, develops his own tools for data management and visualization, and is an expert in application development using Microsoft Office, especially Microsoft Access and Microsoft Excel using Visual Basic for Applications.

Ron has served as a group leader for Jacobs' Management and Information Systems group and currently co-leads the Environmental Data Management Community of Practice. He works with project managers, data validators, risk assessors, and statisticians, designing both tools for analysis of the data and exports to be consumed by third-party analysis and visualization tools.

Relevant Project Experience

RCRA Facilities Investigation, Confidential Aerospace Client, USA, Lead Data Manager. Supported the Technical Team in all aspects of data management. Responsibilities include overseeing all aspects of data collection, data management, data analysis, and data reporting. Required to answer data questions and provide data outputs for analysis. Oversees the generation of a GIS-based data analysis tool delivered to the Agency on a quarterly basis to aid in the review of our

data reporting and remediation plans. Incorporated the use of a sample management tool that I designed for the client to efficiently manage all areas aspects of field data collection, from creation of the data management plan through data being loaded into the data management system. Built tools along the way to monitor sampling progress; manage over 100,000 documents; and quickly analyze data to determine data gaps so that additional samples could be collected while sampling crews were still in the field, eliminating the need to remobilize. Designed and implemented reporting tools to create various data deliverables directly from the data management system. Interfaced with the PM, technical leads, data validators, and Risk Assessors to develop processes to streamline the transfer of information for the various data requirements.

Quarterly Groundwater Monitoring Program, Confidential Aerospace Client, USA, Lead Data Manager. Supports the Project Team, managing the sampling and gauging of over 150 wells and weekly monitoring of an onsite treatment system. Responsibilities include overseeing all aspects of data collection, data management, data analysis, and data reporting. Worked with the Project Manager in translating the master schedule of sampling requirements into a sample and analysis plan that imports into the project's sample management and reporting tool, which manages the sample analysis plan, creates labels and chains of custody, as well as data outputs for loading into our data management system (DMS). Oversaw the development of an electronic data collection tool and the linking and processing of field-collected data into the sample management tool, for seamless access to the data. Oversaw the development of a data reporting tool that generates the required data reports directly from the DMS.

FIRM | HOME OFFICE

Jacobs; Irvine, CA

YEARS OF EXPERIENCE (WITH JACOBS)

31 years (25 years)

REGISTRATIONS | LICENSES

- None

EDUCATION

- BA, Liberal Arts, Harding University

Environmental Data Management System (EDMS), Confidential Aerospace Client, Nationwide, USA, Lead Data Manager. Oversaw continued developments of a data management system, designed to be the central repository for all project-related data – from field to analytical to all project documents and communications – so that the various consultants and stakeholders would have easy access to everything that had been collected, created, or written about the project. Twenty-one sites across the USA maintain data in the EDMS. Oversees all aspects of the EDMS, including continued improvements, implementing supplemental processes and tools to manage and improve data quality, data reporting and data availability, and training of labs, consultants, and project stakeholders. Developed a tracking tool that allows data users to know the status of the data for a given sampling event. Designed and oversaw the creation of a sample management and reporting tool (SMART) for the client that is to be used on all client sites across the country. The tool allows the user to import sample location information and sample analysis plans. SMART generate labels, chains of custodies, and well sampling forms to be taken to the field. It tracks an event's status, so that progress is easily monitored. SMART also generates the sample location, sampling, sample monitoring, and gauging data exports in the required format for loading into the EDMS. In addition to improving field and sample collection efficiencies, SMART drastically reduced EDMS data loading issues and increased data loading timeliness. Designed status reports that are generated and sent to labs and consultants on a regular basis, showing the status of their data loading requirements. Was instrumental in encouraging the rollout of a web-based data loading tool (DataX) and designing and implementing the rollout plan and process. The plan allowed data owners (labs and consultants) to load their data directly into the EDMS. DataX was designed to assure data quality and data completeness, putting the onus of data quality on the data owner. Developed a DataX users package for both labs and consultants that contained training videos, responsibility flow charts, other pertinent DataX help documents, and the DataX application. DataX was rolled out in 2010 and to date has saved the client over \$3 million.

Metadata Reference System (MDRS), Confidential Aerospace Client, CAUSA, Lead Data Manager. Designed and built the MDRS to manage all documents and data associated with the project. The MDRS consisted of a database and a filing system. All project documents, historic and ongoing reports, well logs, borings logs, and any other pertinent project-related data, as well as well as any electronic data, were stored in the filing system. Any document could be located through a search function in the MDRS and the source of any field, analytical, well, boring, water level, or any other record found in the MDRS database, was directly traceable to a file folder in the filing system. Responsibilities included designing a developing the MDRS and making continued upgrades and improvements; designing procedures and automated processes to streamline data importing and exporting; working with field teams collecting data; and assuring data quality and completeness. By creating this central repository, project information went from being on someone's bookshelf, somewhere on a network drive, or on someone's personal computer, to being quickly and readily available to the entire project team. With all historic and collected data added to the MDRS, standardized analysis, export, and reporting tools were developed that allowed the project team to quickly review and study data trends, export data for use in third-party tools, and generate required charts, tables, and reports. This is before the days of web-based data management systems. The database was too large to distribute, but several companies needed access to information we maintained to provide their expert analysis. We developed a trimmed-down application that contained analytical, gauging, and well information accessible through a map interface, allowing users to query the information they needed and create trend charts, data tables, and data exports. This application was delivered to several companies across the United States.

Quarterly Groundwater Monitoring Program, Kinder Morgan, Multiple Sites in CA/AZ, Sampler/Data Manager/Assistant Project Manager. Quarterly Groundwater Monitoring Program consisting of fifty wells at seven sites in California and Arizona. Was responsible for every aspect of the project from start to finish, including sample planning, sampling, data management, and report generation. Designed and built a data management system for importing lab EDDs and entering field sampling information. Created processes to import data and generate a complete and final groundwater monitoring report. Designed and built a system for sample collection that allowed for efficient sample and sample parameter collection and equipment clean up between wells. Was able to complete the sampling of fifty wells at seven sites in two states in five days.



Bernice Kidd

Project Chemist

Berney has over 31 years in supporting numerous federal, state, and municipal clients in the areas of analytical and environmental chemistry, including over 20 years combined chemical data validation/data quality management. She has worked with a large variety of monitoring and analysis programs such as sampling for drinking water/wastewater, sediment, soil, air/soil vapor, surface water, groundwater, and tissue. She provides chemistry QC which involves regulatory reporting, quality control plan development, sampling design, analysis of toxic/hazardous chemicals, and data validation requirements for USACE, EPA, AFCEC and state agency clients. She approves project-specific Method Quality Objectives (MQO's) and Data Quality Indicators (DQI's) to meet project-specific performance standards. Her data management expertise includes electronic data and database management for SEDD, COELT, ERPIMS, GEOTRACKER and CEDEN data deliverables. She has experience in all chemistry related program goals and works closely with Government personnel and field teams to ensure sample collection requirements are met. She coordinates with the laboratory throughout contract executions, notifies the Government QAM of nonconformance issues, directs the performance of data review and validation, and monitors all corrective action.

FIRM | HOME OFFICE

Jacobs; Redding, CA

YEARS OF EXPERIENCE (WITH JACOBS)

31 years (23 years)

REGISTRATIONS | LICENSES

- California Water Environment Association Laboratory Analyst Grade III

EDUCATION

- BS, Chemistry, Fayetteville State University
- Project Management Certificate, University of California Davis, 2014
- Certificate in Six Sigma, Villanova University, 2014

Relevant Project Experience

PBR for Travis AFB (PBC-13), US Army Corps of Engineers, Solano County, CA, Senior Project Chemist. Project included investigation and remediation at 41 sites across 6,000 acres at Travis AFB and are currently conducting O&M and LTM of four groundwater treatment systems, 90 extraction wells, 176 injection wells, and 677 monitoring wells. This TO includes 21 CERCLA sites, 12 oil water separators, six petroleum-only program sites, and two MMRP sites and contaminants include

CVOCs, SVOCs, pesticides, fluoride, metals, Stoddard solvent, and petroleum. Optimizations use GSR technologies, including situ technologies to optimize systems wherever possible. Duties and Responsibilities: Program Chemist. Berney was responsible for managing data quality and usability following the project specific DQOs, coordinating field events, developing the statement of work (SOW) and UFP QAPP, scheduling analyses with laboratories, managing a team of three junior chemists, generating Data Quality Evaluation Reports, and processing data for ERPIMS. Berney worked closely with the USACE, EPA, and the client to ensure data quality objectives were met, including scoping, and planning meetings and responding to comments on Work Plans and data quality reports. Worked with project team to identify a laboratory capable of reaching very low reporting limits for diesel-range hydrocarbons for wastewater treatment plant permit reporting to determine that low-level detections are not related to diesel range hydrocarbons, making sure of zero permit infringements.

Portland Harbor Superfund Sites River Mile 10 East, B1a and Willbridge Cove, US EPA, Portland, OR, Senior Project Chemist. Manage a team of Jacobs chemists and a third-party validator to assess data quality and usability following the project-specific data quality objectives (DQOs) for these high-profile and complex sediment projects. Coordinate field events, develop SOWs, QAPP and QAPP addenda, implement field change requests, schedule analyses with laboratories, and generate Data Quality Evaluation Reports. Attend meetings with stakeholders and regulators as needed to discuss schedules, corrective actions, and address comments. Lead weekly meetings with project laboratories and clients to discuss identified laboratory errors, provide technical guidance, and discuss schedule of deliverables. Following Phase 1 of sampling, implemented the use of a third-party validation firm to perform the Stage 4 validation for the B1a and River Mile 10 East projects, strengthening the project team and demonstrating an understanding of capacity and schedule to client and stakeholders. As an added value to the client, championed the development of a new tool (DEVA) to validate data more efficiently for the program and automate data validation reports.

Supplemental RI/FS and PP/ROD Zones 2 and 5 and Naknek II, VI Study for Groundwater Zone 2, and SC and Remedy Selection for Lower Naknek River Storage Area Site SS012L, King Salmon Divert, AK, AFCEC, (FFP), (2020-Present) and Supplemental RI Zone 1, Sites SS011 and SS015 and SC of Wastewater Lagoon Release, US Air Force, King Salmon Divert, AK, Senior Project Chemist. Serve as Project Chemist of these complex environmental investigations located in remote Alaska. Manage the UFP-QAPP development, develop the laboratory scope of work (SOW), and review proposals for laboratory selection. Assist with mobilization to the field and scheduling analyses with laboratories, coordinate and provide QA surveillance of laboratories, and coordinated sample shipping and receiving. Manage data quality and usability for a variety of contaminants, multiple media, and numerous point sources following the project specific DQOs. Generate Data Quality Evaluation Reports and process data for ERPIMS. Work closely with the project team to merge data management and GIS activities for client deliverables. As an added value to the client, she directed the development of a tool to generate Staged Electronic Data Deliverables (SEDD) for the USACE when the laboratory was unable to provide due to staffing, to meet Manual for Electronic Deliverables requirements.

PBR at the Former Galena FOL, US Air Force, AK, Senior Project Chemist. Manage data quality and usability following the project-specific DQOs for remediation of multiple point-source, complex petroleum-contaminated sites (soil and groundwater) at two sites that range in size from small, former underground storage tank sites (less than 1 acre) to the large, bulk fuel storage facilities (up to 14 acres). Coordinate field events, develop SOW and QA project plans, schedule analyses with laboratories, manage a team of three onsite sample managers, coordinate sample shipping and receiving with multiple couriers at this remote site, and generate Data Quality Evaluation Reports. Process data for submittal to ERPIMS. Work closely with Jacobs' PBR partner firm, develop DQOs, the project QAPP, and laboratory SOWs. Co-author on the Galena Performance Monitoring Report 2019-2022.

FUDS Phase II RI and RA, US Army Corps of Engineers, Tanaga Island, AK, Alaska Project Chemist. Served as Project Chemist for a Phase II RI and risk assessment related to MEC and MC at the remote Alaska Tanaga Island FUDS and performed a concurrent HTRW RA IAW CERCLA and RCRA to reduce or eliminate source contamination of POL, PCBs, VOCs, and PAHs at select features. Duties and Responsibilities: Managed data quality and usability in both Access-based tools and FUDSchem following project-specific DQOs, IAW EPA's seven-step process for both HTRW and MMRP tasks; amended existing SOW and MR-QAPP to meet updated project requirements; scheduled analyses with laboratories; collaborated with team chemists; generated data quality evaluation reports and processed data for SEDD following the USACE Manual for Electronic Deliverables. Worked with USACE and project manager to verify meeting DQOs, including scoping and planning meetings and responding to comments on work plans and data quality reports. Developed a tool to successfully convert validated data to the USACE SEDD format for client reporting.

Joint Base Elmendorf-Richardson Performance Based Remediation (PBR), US Air Force, Anchorage, Alaska, Senior Project Chemist. Delivered PA/SI, ROD/DD development, RIP, RC, SC, LTM, OES, and CERCLA and ADEC compliance at 57 of the 146 contaminated sites on this active military base in Alaska. Her work allowed our team to achieve regulatory milestones at 45 POL and 12 CERCLA sites on Fort Richardson. Sites have a variety of soil and groundwater contaminants including POL, chlorinated solvents, PCBs, pesticides, dioxins, and white phosphorus. For the project running from 2012 to 2020, Berney's responsibilities included managing data quality and usability following the project specific DQOs, coordinating field events, developing SOW and QA project plans, scheduling analyses with laboratories, coordinating sample shipping and receiving with courier delivery, and generating Data Quality Evaluation Reports. She processed data for submittal to ERPIMS.

Taku Gardens RI/IRA, US Army Corps of Engineers, Fort Wainwright, AK, Project Chemist. Served as Project Chemist for planning, execution, and reporting of a FFP RI/FS regulated by CERCLA and ADEC at a 54-acre housing development at Fort Wainwright impacted by petroleum-related hydrocarbons, PCBs, chlorinated solvents, and munitions. Duties and Responsibilities: Received and validated CERCLA test methods against project specific DQOs, developed project QAPP, on-site setup of a field database to streamline sample collection and custody procedures, and assessing analytical data usability in data quality evaluation reports. Recommended analyzing explosives by SW8321 only instead of split samples by SW8321 and SW8330, because SW8321 is less prone to interferences and false detections, saving project \$36,500 in analytical costs.



Gregory Mah-Hing

PDI Implementation Cost Estimates

Gregory Mah-Hing's 48 years of experience combine exceptional estimating credentials on environmental, water, civil and transportation projects with hands-on construction management and field supervision. He brings to projects a practical, realistic perspective, multifaceted knowledge of the estimating role in the entire project process, and current expertise in state-of-the-art estimating software programs. He has been an integral part of two priority river, lake and wetland environmental remediation and restoration programs currently under way. Gregory is a skilled manager of diverse workforces, committed to collaborative environment for getting the job done right. He brings to projects a practical, realistic perspective, multifaceted knowledge of the estimating role in the entire project process, and current expertise in state-of-the-art estimating software programs.

FIRM | HOME OFFICE

Jacobs; Oakland, CA

YEARS OF EXPERIENCE (WITH JACOBS)

48 years (28 years)

REGISTRATIONS | LICENSES

- California Professional Engineer:
#C30652, 1979 (ex. 03/31/2026)

EDUCATION

- BS, Civil Engineering, University of California Berkeley

Relevant Project Experience

Various Projects (30+) from FS to Final Design and Change Orders, US EPA, Location, Senior Cost Estimator and Constructability Subject Matter Expert (SME). Prepared initial cost estimates for alternate analysis of remediation technologies for EPA projects. Technologies include pump and treat, excavation and disposal, Insitu soil treatment, shoreline restoration, and multi-layer capping. Performed cost estimates for FS, preliminary to final design. Assisted engineers with constructability, scheduling and environmental impacts of projects. Representative projects include: Wyckoff Shoreline Restoration; Allied Paper, Kalamazoo River

Superfund Site; Phoenix OU-3 Pump and Treat; Asarco Tacoma, WA; Pohatcong Valley Superfund Site, Warren Cty, NJ; Bunker Hill GWTP; Diamond Head NJ; Eagle Zinc; Jacobsville Residential Cleanup; Little Scioto River; Tar Creek; White Swan Cleaners.

Railyard Remediation, Shoreline Restoration, Confidential Client, Dunsmuir, CA, Project Senior Cost Estimator and Constructability SME. Removal of 80,000 cy of contaminated soils next to a major river in California, requiring an in-river barrier. Restoration of 1400 lineal feet of shoreline, plus civil, structural, improvements. Prepared initial cost estimates for client and prepared construction documents for 80,000 cubic yard removal project. Worked with contractor, regulatory agencies, fish and wildlife on construction methods; also coordinated work with biologists and local tribes on restoration. Supervised construction management, cost change orders, schedule and interaction with local residents.

Remediation/Restoration Program, Confidential US Manufacturer, Worldwide, Project Senior Cost Estimator, Risk and Constructability SME. Cost estimating and constructability support for the remediation of sites using remedial technologies such as in-situ soil treatment, groundwater pump and treat, soil vapor extraction, dig and haul, thermal soil treatment, demolition and restoration of sites. Prepare and/or review cost estimates for multiple sites. Assist in selection of remediation technologies, project schedule and contracts.

Various Projects including Wastewater Treatment Plants in Yosemite National Park, Glen Canyon Boat Ramps, Molokai Power, Dunn Solar Telescope Demolition, Arecibo Observatory STEM Facility, National Park Service/National Science Foundation, Lead Estimator. Projects included operations building, headworks, flow equalization, odor control, bioreactors, clarifiers, filters, spraying and drying beds and other related facilities. Remote location work includes power improvements on Molokai, Dunn Telescope in New Mexico, Arecibo Observatory in Puerto Rico.. Also worked on Glen Canyon boat ramps, these ramps will be up to 3000 feet long and 150 feet wide, some requiring moving over 400,000 cy of rock. Lead estimator prepared estimates for wastewater treatment plants, boat ramps.

Multiple Projects PFAS/PFOS, AFFF, US Naval Bases, US Navy, Worldwide, Facilities Design Estimating Support.

Treatment of PFAS contaminated water and/or prevention of PFAS/PFOS/AFFF contaminated water reaching drinking water source. Projects included treatment of water for residential use, at the WTP or at the customer's residence; design of facilities to prevent the flow of contaminated water to stormwater and/or sanitary sewer systems. Performs cost estimating and senior review for project cost estimates for designs performed.

Philadelphia Navy Yard, US Navy, Philadelphia, PA, Project Senior Cost Estimator and Scheduler. Cost estimating and constructability support for the renovation of foundry and supporting facilities. Work includes upgrades of specialty equipment, civil, structural, mechanical and electrical improvements. Prepared initial implementation schedule that required 30 days onsite to observe facilities operations and scheduling challenges.

Environmental Remediation Projects, Various Agencies for State of Hawaii, US Navy, Hawaii and other Pacific Islands, Remediation Estimating Support. Remediation of various sites including residential and commercial properties disrupted by the construction of the light rail system; budgetary cost to assist real estate transactions; cleanup of sites for government agencies. Remediation of sites operated by US Navy. Provided cost estimating and senior review for projects on Oahu and other Pacific Islands.

Various Mining Projects, Confidential Client, Yukon Territory, AK, Lead Estimator. Projects included passive water treatment, cutoff walls, pipelines, cover systems, earthwork at remote sites. Lead estimator prepared estimates for landfill construction, mine construction, landfill closures.

Former Petroleum Terminal, Confidential Client, Metro Manila, Philippines, Senior Cost Estimator/Construction Manager. Remediation of 78,000 m³ of petroleum-impacted and 600 m³ of pesticide-impacted soils through a variety of technologies including in situ stabilization (ISS), onsite biotreatment via landfarming, offsite thermal treatment, free product recovery, and onsite groundwater treatment. Provided cost estimating support and Sr Cost Estimate/Risk review for fixed price proposal for remediation work.

Mine Closure Report, Rio Tinto Minerals, Boron, CA, Lead Estimator. Plant demolition, including production facilities, mine, and waste ponds. Performed a site visit to verify the condition and estimated the cost to demolish the plant.

Munition Response Projects, US Army Corps of Engineers, Multiple locations, Hawaiian Islands, Program Cost Estimator. Munitions Response Projects including UXO investigations, munitions removal, site cleanup for multiple sites in the Hawaiian Islands. Led the estimating effort for the planning, field activities and reporting. Used Microsoft Project to develop the schedule and HCSS estimating software to develop the cost estimate. Worked with the team to design a remedy that will save approximately \$10 million.

BRIAN JAMES “BJ” SWANNER



SENIOR PROJECT MANAGER



BJ has over 17 years of experience managing right-of-way programs for a variety of public infrastructure projects from small to large. He has demonstrated experience managing projects, as well as developing and implementing technological solutions to real estate challenges utilizing GIS and other systems. Throughout his career, BJ's focus has been on supporting engineers and planners during the pre-acquisition phases of project development. As a recognized leader in the Southern California right-of-way profession, he is knowledgeable about local markets and infrastructure, and has relationships with key stakeholders in the region.

17 YEARS EXPERIENCE

EDUCATION

BACHELORS
Geography, GIS and Remote Sensing, UCLA

LICENSES

REAL ESTATE SALESMAN
State of California
CA#02231697

AFFILIATIONS

IRWA
International Right-of-Way Association

FUN FACT!

When he isn't developing software or managing projects, BJ can be found in the great outdoors. He is an avid trail runner, likes to compete in triathlons, and spends time rock climbing and mountaineering.

PROJECT EXPERIENCE

CROWN VALLEY PIPELINE REPLACEMENTS PROJECTS

Moulton Niguel Water District | Laguna Niguel, CA

BJ performed preliminary property evaluations of three (3) potential new sites for relocating Master Meter No. 1 as part of a series of pipeline replacement projects. Once the preferred location was chosen, BJ coordinated the completion of a real property appraisal of the preferred site to assist the District in acquiring the necessary rights.

GROUNDWATER MODELING SUPPORT SERVICES FOR JOINT LOS ANGELES BASIN REPLENISHMENT AND EXTRACTION MASTER PLAN PROJECT

Water Replenishment District of Southern California, Los Angeles Department Water & Power | Los Angeles County, CA

Real Estate/Right-of-way Lead. WRD in partnership with LADWP is embarking on an effort to develop a Groundwater Master Plan to optimize groundwater resources within West Coast and Central Basins. The goal of the Master Plan is to develop reliable local water supplies and to alleviate reliance in purchased imported water within the LA basin. This effort is aimed at identifying implementable projects that involve the following project elements: Replenishment sources for water; source water treatment; injection locations, infrastructure and capacities; extraction locations, infrastructure and capacities; and conveyance/distribution. BJ analyzed proposed wellfield areas, validated previously identified well sites, and recommended additional well sites based on screening criteria developed for this study. He also assisted with a feasibility study to expand the Leo J. Vander Lans Advanced Water Treatment Facility, including construction of a new treatment facility and identifying additional injection and extraction well sites to accommodate the increased treatment capacity. BJ's responsibilities included real estate acquisition cost estimates, layout plans, GIS mapping services, required permits, and draft and final memos.

SITING STUDY FOR REGIONAL BRACKISH WATER RECLAMATION PROJECT

Water Replenishment District of Southern California | Los Angeles County, CA

Real Estate/Right-of-way Lead. BJ prepared a siting study to evaluate potential sites for a future Centralized Treatment Facility and supporting extraction wells to treat an area of high chloride concentration in the aquifer beneath the South Bay. He used GIS to identify potential sites based on criteria developed by the project team, targeting vacant land, underutilized property and properties currently for sale and lease. This resulted in a real estate cost estimate for each site based on the type and size of each facility to be constructed.

PROPERTY ACQUISITION FEASIBILITY STUDIES FOR GROUNDWATER MASTER PLAN

Los Angeles Department Water & Power and Water Replenishment District of Southern California | Los Angeles County, CA

BJ was the Right-of-way Lead assigned to identify new sites potentially suitable for treatment facilities, well fields, and spreading grounds in the Central Basin identified as part of the 2019 Groundwater Development and Augmentation Plan Phase I report prepared for LADWP. In addition, he prepared cost estimates and evaluated potential conveyance routes from Hyperion Advanced Water Treatment Facility to proposed well fields.

PALOS VERDES LATERAL

West Basin Municipal Water District | Torrance and Palos Verdes Estates, CA

As Right-of-way Lead, BJ prepared a Right-of-way Requirements report for the proposed Palos Verdes Lateral pipeline through Torrance and Palos Verdes Estates. The purpose of the report was to identify additional property rights required to construct, operate, and maintain the pipeline and corresponding facilities. The report provided estimates of costs and schedule, identified potential challenges, and recommended mitigation measures.

INDIRECT REUSE REPLENISHMENT PROJECT

Upper San Gabriel Valley Municipal Water District | Los Angeles County, CA

As Right-of-way Lead, BJ used GIS mapping to plot existing rights and overlaid the project design to quickly identify potential conflicts. Utilizing ArcGIS, BJ worked with the District to identify existing rights and determine where new easements and permits were necessary for the construction of a new pipeline.

INTERSTATE 5 IMPROVEMENTS, NORTH FROM INTERSTATE 405 TO STATE ROUTE 55, PA&ED

Orange County Transportation Authority | Irvine and Tustin, CA

Right-of-way Planner. Caltrans and OCTA proposed improvements to the I-5 to address freeway congestion and make travel more efficient. The project entailed two build alternatives and is approximately nine miles. BJ managed the right-of-way scope for this project which included preparing a Draft Relocation Impact Statement and Caltrans Right-of-way Data Sheets for two build alternatives with multiple design options.

PA&ED FOR STATE ROUTE 55 IMPROVEMENTS, FROM INTERSTATE 5 TO STATE ROUTE 91

Orange County Transportation Authority | Tustin and Anaheim, CA

The proposed project adds general-purpose and auxiliary lanes in each direction at strategic locations along State Route 55 between just north of the I-5 and SR 55 Interchange and just south of the SR 55 and SR 91 Interchange. BJ prepared right-of-way Data Sheets that identified temporary impacts to adjacent properties, estimated acquisition and personal property relocation costs, and estimated utility relocation costs. BJ worked with the design team and OCTA real property staff to identify and estimate right-of-way capital and support costs.

INGLEWOOD TRANSIT CONNECTOR

City of Inglewood | Inglewood, CA

The ITC Project is a 1.6-mile-long elevated automated people mover that will provide direct connections between the LA Metro Crenshaw/LAX Line and Inglewood's major employment, commercial, housing, sports, and entertainment centers. Monument is assisting the City of Inglewood with strategic planning and implementation. This includes 60 business relocations and 70 acquisitions. BJ is Monument's Project Manager for this landmark Project and has been involved in both the planning phase, as well as the right of way acquisition and relocation phase. During planning, BJ conducted initial right-of-way impact analyses and relocation studies, and cost estimates to support project programming. During the right-of-way acquisition phase, BJ has been managing a team of appraisers and agents to acquire the necessary rights for the project and relocate displaced businesses.

SEPULVEDA PASS TRANSIT (TUNNEL)

Los Angeles County Metropolitan Transportation Authority | Los Angeles, CA

This project is in the planning phase and various transit options are being evaluated to provide a new transit connection between West Los Angeles to the San Fernando Valley. Monument is working with the design team to evaluate the right-of-way impacts for various alignments for the subterranean tunneling option being considered. BJ is managing Monument's team of analysts and agents who are providing right of way impact analysis in support of the design and planning efforts. BJ is coordinating closely with the design team and Metro Real Estate staff to document the potential right-of-way requirements and estimate the right-of-way cost associated with the transit alternatives.

SANTA ANA RIVER TRAIL, PHASE 2

Riverside County Transportation Authority | Corona, CA

RCTC, in coordination with the Riverside County Regional Park and Open-Space District (Riverside County Parks) and other project partners, is proposing the construction of a 12.8-mile section of the Santa Ana River Trail (SART). At the onset of the project, BJ prepared a cost estimate and right-of-way data sheets for the SART 2 project using 30% design plans. He reviewed the utility and right-of-way impacts and analyzed the potential damages and loss of business impacts to the Green River Golf Course. BJ later revisited the cost estimate to perform a cost comparison if a retaining wall was installed on the Golf Course property instead of the proposed slope.



EXCELS IN GIS AND TECHNOLOGICAL SOLUTIONS



EXPERT IN THE LOCAL MARKET



SKILLED AT IDENTIFYING AND MANAGING RISK



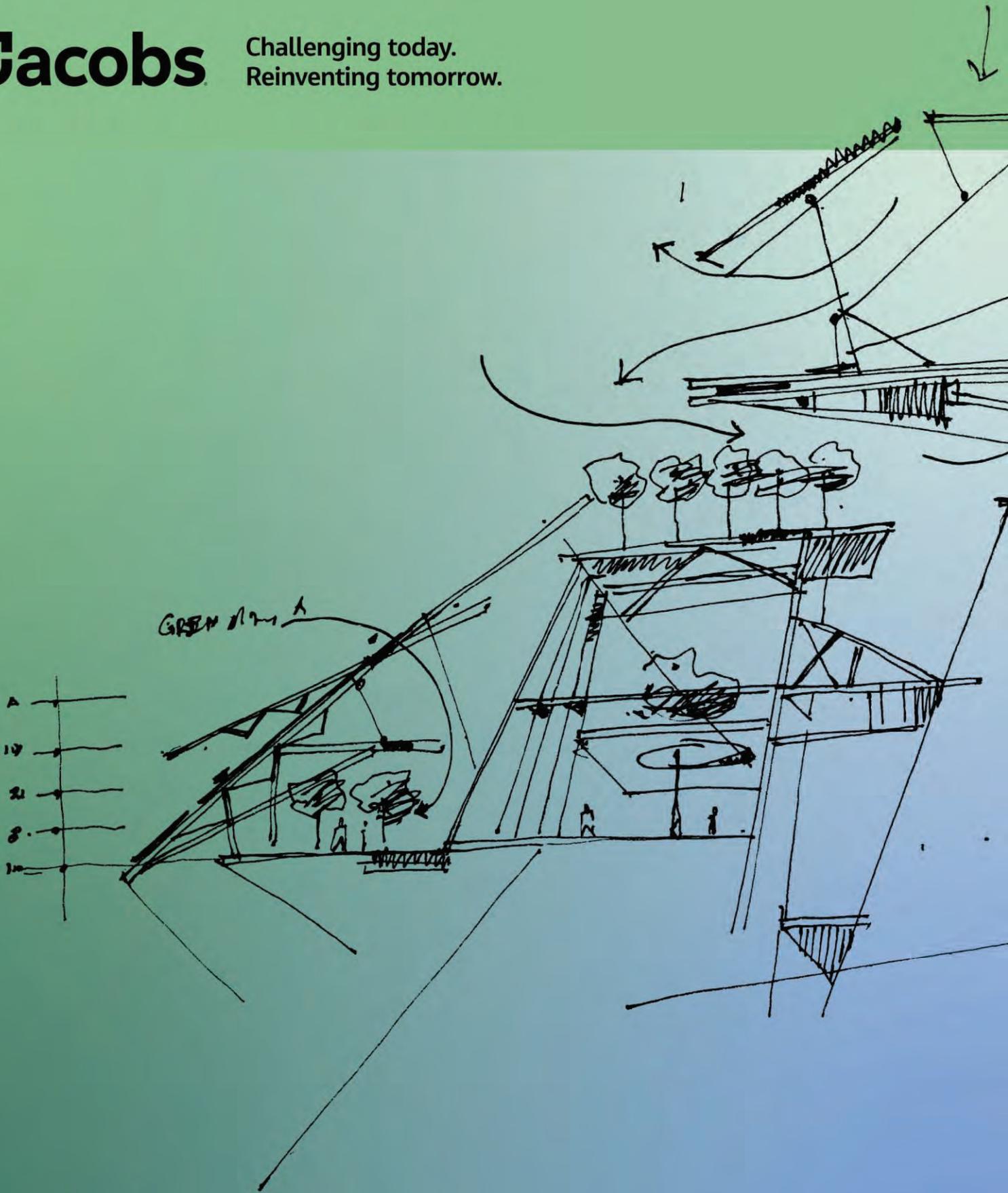
RESPECTED BY HIS CLIENTS FOR HIS KNOWLEDGE



ABLE TO BRING PARTIES TOGETHER FOR SUCCESS

Jacobs

Challenging today.
Reinventing tomorrow.



AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Patel

Budgeted: Yes

Budgeted Amount: \$1,750,000

Cost Estimate: \$1,850,287

Funding Source: R&R

Program/Line Item No.: R25006

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

**Subject: PURCHASE OF REVERSE OSMOSIS REPLACEMENT MEMBRANE
ELEMENTS FOR GWRS REVERSE OSMOSIS SYSTEM**

SUMMARY

The original Groundwater Replenishment System (GWRS) reverse osmosis (RO) treatment facility consisted of twenty seven, 5-mgd RO units. The typical lifespan of a membrane operating on municipal wastewater can be anywhere from 4-6 years. Staff believe replacement of membranes in three RO units of Train A is needed to address performance issues.

Attachments:

- Dupont Water Solutions quotation dated December 29, 2025
- Toray Membrane, USA quotation dated December 29, 2025 (posted separately)
- Water Surplus quotation dated December 29, 2025

RECOMMENDATION

Agendize for January 21 Board Meeting:

1. Authorize issuance of a Purchase Order to Dupont water Solutions for an amount not to exceed \$541,798 for 1,060 BW30XFRLE reverse osmosis membranes for one unit in the GWRS reverse osmosis system;
2. Authorize issuance of a Purchase Order to Toray Membrane, USA for an amount not to exceed \$502,440 for 1,060 TLF-400DG reverse osmosis membranes for one unit in the GWRS reverse osmosis system;
3. Authorize issuance of a Purchase Order to Water Surplus for an amount not to exceed \$806,049 for 1,060 NanoStack coated BW30XFRLE reverse osmosis membranes for one unit in the GWRS reverse osmosis system; and
4. Authorize additional funds in the amount of \$100,287 for R&R account R25006.

BACKGROUND/ANALYSIS

The GWRS RO treatment facility consists of twenty-seven RO units each capable of producing 5-mgd with one unit in reserve. There are fifteen original RO units in operation since 2008, six that were added in 2015 as part of the GWRS Initial Expansion, and six additional units added as part of the GWRS Final Expansion. Each unit contains 1,050 RO membranes.

As membranes age, overall performance, including permeability and rejection decline. The expected industry lifespan of membranes is 4 to 5 years when operating in a water reuse application such as GWRS. This lifespan is based on several factors with the two most important being increasing feed pressure requirements (due to irreversible fouling) and loss of salt rejection efficiency. The RO membranes in 3 of the 15 original RO units contain LG BW400-ES membranes that have been in operation since October 2018 and now require replacement. The three units are part of Train A and designated units A01, A02, and A03. These units show signs of irreversible fouling in the form of increased feed pressure requirements and lower salt rejection efficiency as compared to units with newer membranes.

The membranes in all the remaining twenty-four RO units (three units each in Trains B, C, D, E, and F) contain the Dupont Filmtec BW30XFRLE model RO membrane. A past performance comparison memo drafted in May 2022 by Separation Processes, Inc. on behalf of the Orange County Water District (OCWD) has shown a 28% energy savings for the Filmtec membrane as compared to those supplied by Hydranautics and LG Chem when operated in the GWRS RO system. Upon the introduction of OC San Plant 2 water in December of 2023 after the completion of the GWRS Final Expansion, this trend continues. Based on the memo results staff solicited a quote for pricing on RO membranes from Dupont Water Solutions for their Filmtec BW30XFRLE membrane. To ensure continued lowest possible operating costs in an RO unit, staff recommends the purchase of 1,060 BW30XFRLE RO membranes (1,050 required plus 10 spare elements) for one of the three RO units in Train A of the GWRS RO facility.

Water Production staff continues to work with the Research and Development (R&D) department to test other RO membrane models from different manufacturers using the satellite vessel testing apparatus set up as part of the original GWRS RO system installation (see figure 1). As a result of this testing staff is also recommending the purchase of specific new RO membrane types for the other two RO units in Train A. The other two types of RO membranes are known as the Toray TLF-400DG and the Water Surplus Nanostack coated version of a Dupont Filmtec BW30XFRLE membrane. Staff solicited a quote for pricing for both products along with the quote for the Dupont Filmtec product.

By installing three different types of RO membranes (all previously tested in the satellite vessel testing system by R&D) at the same time in side-by-side RO units in Train A will allow a direct full-scale evaluation of the existing most commonly installed RO membrane and two alternatives. The Toray product has shown promise in reducing energy costs through lower feed pressure requirements. Toray supplies RO membranes

for hundreds of RO facilities around the world and is one of the main competitors to Dupont Filmtec. Water Surplus' Nanostack product is a proprietary coating that has also shown significant potential to decrease energy costs through testing in the satellite vessel system. The coating acts to inhibit fouling which is the main cause of feed pressure increases across the RO membranes leading to higher energy usage.



Figure 1 – RO Satellite Test Vessel Highlighted in Blue

The total purchase price for 1,050 membranes plus ten spares for each of the three units in RO Train A along with sales tax and freight costs is \$1,850,287. Table 1 below shows the breakdown of costs from each manufacturer. The R&R budget for fiscal year 2025-2026 has a budgeted item R25006 in the amount of \$1,750,000 for replacement of RO membranes in each of the three RO units in Train A.

RO Membrane Manufacturer	RO Membrane Model	Price Per Membrane Element	Price for 1,060 Membrane Elements
Dupont Filmtec	BW30XFRLE	\$511.13	\$541,798
Toray Membrane, USA	TLF-400DG	\$474.00	\$502,440
Water Surplus	NanoStack coated BW30XFRLE	\$810.42	\$806,049

Table 1 – Price Quotations Received from Manufacturers

Based upon the three quotations received, the total price to replace membranes in all three RO units of Train A along with ten spare membranes per unit is \$1,850,287. The Nano Stack coated membrane is the most expensive of the three due to the cost of applying the special coating to inhibit fouling. As mentioned previously, the Nano Stack coating has shown up to a twenty percent reduction in feed pressure required during testing in the satellite vessel system. If this same reduction in pressure were to be realized on a full-scale RO unit it could lead to a significant reduction in electricity costs. The quotations received from the other two manufacturers was in keeping with pricing seen in the past for a typical RO membrane with no special coating. R&D and Water Production staff feel the direct comparison of all three RO membrane element types

operating in side-by-side full scale units will provide valuable information on determining which membrane provides the lowest overall cost. That information can then inform the choice of membrane for future replacements while also furthering the goals of the satellite vessel applied membrane testing program.

Staff recommends the issuance of three separate purchase orders for 1,060 RO membranes for each of three units of RO Train A to Dupont Filmtec, Toray Membrane USA, and Water Surplus for a total cost of \$1,850,287. Staff also requests an increase to the R25006 budget in the amount of \$100,287 for a total budget of \$1,850,287.

PRIOR RELEVANT BOARD ACTIONS

10/20/2021, R21-10-150 Authorize issuance of a Purchase Order to Dupont Water Solutions for an amount not to exceed \$1,306,048 for 3,200 BW30XFRLE reverse osmosis membranes for the GWRs reverse osmosis system.

08/15/2012, 2012, R12-8-102 Purchase Order to CSM (Woongjin Chemical America, Inc.) for GWRs Advanced Water Purification Facility Reverse Osmosis Membranes

OCWD - IFQ-25-004 – SUPPLY AND DELIVERY OF RO MEMBRANES - DUPONT

PRICE SHEET

BY

Film Tec Corporation
(Name of Firm)

FOR

RO MEMBRANES

The undersigned declares that he or she has examined the Invitation for Quotes for Supply and Delivery of RO Membranes-Dupont and hereby proposes to supply and deliver the RO membrane that is required by the District during the period specified in the IFQ documents, and in accordance with all provisions of the IFQ documents, for the following price:

Product Name and Number: Bw30XFKLE-400/34

Price per Membrane: \$ 470.00

Sales tax: \$ 41.13

Delivery Fees: Included

Other: _____

Total Price per Membrane: \$ 511.13

* The proposed price shall be fully-loaded to include all costs to supply and deliver RO Membranes to the District. Respondent shall be responsible for and pay all costs of delivery and assume risk of loss and damage to the destination point. OCWD shall not pay Contractor nor its subcontractors for any direct or reimbursable expenses incurred for implementation of the scope of services described in this IFQ, including but not limited to the manufacture, labor, cartage, any State and/or Federal taxes, mileage, freight equipment, supplies, assessments, surcharges, permits, licenses, overhead, profit, markups, etc. Although OCWD does not anticipate compensating the Vendor for any additional items or expenses, any such additional amounts to be charged to OCWD shall be built into the Price Sheet. Costs NOT identified in the Price Sheet, may not be added at the time of invoicing. If applicable, the Price Sheet shall include any delivery pricing for special order deliveries outside of normal scheduled delivery orders.

Special Delivery Order Charge:

Payment Discounts: please specify below.

FilmTec Corporation
Name of Firm

5400 Dewey Hill RD
Edina, MN 55439-2085
Address

12/22/2025
Date

Vincent Marzullo Vincent Marzullo
Signature Name/Title Sales Rep

719-331-1614
Telephone

Vincent Marzullo
Authorized Signature



WATERSURPLUS



**Proposal for
Reverse Osmosis (RO) Membranes -
WaterSurplus – NanoStack Coating of Dupont
BW30XFRLE; IFQ-25-005**

Dileep Agnihotri, PhD
CTO & Beverage Division Lead
726 Beacon St. | Loves Park, IL 61111
Phone# 512.740-7941; Fax# 815.636.8844
Email: dileep.agnihotri@@watersurplus.com
Date of submission: 12/29/2025

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To,

Via-email to Procurement: procurement@ocwd.com

cc: Mehul Patel, P.E. mpatel@ocwd.com

cc: Jim Vickers jvickers@spi-engineering.com

Paper Mail To:

Orange County Water District

Administration Office Building

Attention: Bobby Velasco

Address: 18700 Ward Street

Fountain Valley, CA 92708

December 29th, 2025

Subject: Quote Submittal - IFQ-25-005 Supply and Delivery of Reverse Osmosis (RO) Membranes - Water Surplus – NanoStack Coating of Dupont BW30XFRLE.

Dear Bobby Velasco,

We are including herewith a response to the IFQ-25-005 for 1060 NanoStack coated Dupont BW30XFRLE coat 1050 membrane elements for installation in one of the trains.

Per request under section 4.2, we are including herewith our qualification statement document. We are excited to partner with OCWD for the next phase of this full-train study to reduce long-term RO operational costs with NanoStack™ technology.

Respectfully submitted,

Dileep Agnihotri

Dileep Agnihotri, PhD | WaterSurplus, Inc.

CTO & Beverage Division Leader

726 Beacon St. | Loves Park, IL 61111

Direct: 512.740-7941

Email: dileep.agnihotri@watersurplus.com

Project# 50052523

END OF ADDENDUM

MANDATORY FORM

ACKNOWLEDGE RECEIPT OF ADDENDUM NO.1

**INVITATION FOR QUOTES
SUPPLY AND DELIVERY OF REVERSE OSMOSIS (RO) MEMBRANES -
WATER SURPLUS - NANOSTACK COATING OF DUPONT BW30XFRLE
(IFQ-25-005)**

12/22/2025

Proposer shall acknowledge receipt of this addendum by detaching, signing and attaching to his/her proposal, one (1) copy of this sheet.

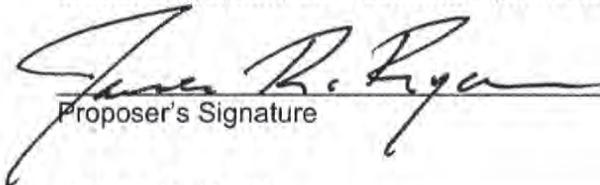
I, James R. Ryan, Executive Vice President WaterSurplus, Inc.

Name of Proposer, Company Name

726 Beacon St. Loves Park, IL 61111

Address, City, State, Zip

Hereby acknowledge receipt of Addendum No.1 to the **Invitation for Quotes (IFQ-25-005) SUPPLY AND DELIVERY OF REVERSE OSMOSIS (RO) MEMBRANES - WATER SURPLUS - NANOSTACK COATING OF DUPONT BW30XFRLE** and have considered these revisions in the preparation of my proposal. This addendum, consisting of this acknowledgement, shall become a part of any contract made pursuant thereto.


Proposer's Signature

James R. Ryan
Printed Proposer's Name

12/23/2025
Date

Addendum No.1
IFQ for SUPPLY AND DELIVERY OF REVERSE OSMOSIS (RO) MEMBRANES - WATER SURPLUS -
NANOSTACK COATING OF DUPONT BW30XFRLE
Orange County Water District
12/22/2025

Page 3 of 3

OCWD - IFQ-25-005 – SUPPLY AND DELIVERY OF RO MEMBRANES - Water
Surplus – NanoStack Coating of Dupont BW30XFRLE

PRICE SHEET

BY

WaterSurplus, Inc.

(Name of Firm)

If payment is made within Net 10 days after invoice: 0.5%
FOR

RO MEMBRANES

The undersigned declares that he or she has examined the Invitation for Quotes for Supply and Delivery of RO Membranes- Water Surplus – NanoStack Coating of Dupont BW30XFRLE and hereby proposes to supply and deliver the RO membrane that is required by the District during the period specified in the IFQ documents, and in accordance with all provisions of the IFQ documents, for the following price:

Product Name and Number:: NanoStack Coated Low-fouling OEM RO Membrane Elements
Product Number NanoStack BWXFRLE-400

Price per Membrane: \$711.57

Sales tax: \$61.18 per Membrane (includes sales tax on delivery fees)

Delivery Fees: \$12.67 per Membrane (excludes sales tax-included above)

Other: 100% post-coating wet testing \$25.00 per Membrane

Please see price proposal for more pricing detail.

Total Price per Membrane: \$810.42

* The proposed price shall be fully-loaded to include all costs to supply and deliver RO Membranes to the District. Respondent shall be responsible for and pay all costs of delivery and assume risk of loss and damage to the destination point. OCWD shall not pay Contractor nor its subcontractors for any direct or reimbursable expenses incurred for implementation of the scope of services described in this IFQ, including but not limited to the manufacture, labor, cartage, any State and/or Federal taxes, mileage, freight equipment, supplies, assessments, surcharges, permits, licenses, overhead, profit, markups, etc. Although OCWD does not anticipate compensating the Vendor for any additional items or expenses, any such additional amounts to be charged to OCWD shall be built into the Price Sheet. Costs NOT identified in the Price Sheet, may not be added at the time of invoicing. If applicable, the Price Sheet shall include any delivery pricing for special order deliveries outside of normal scheduled delivery orders.

Special Delivery Order Charge:

OCWD - IFQ-25-005 – SUPPLY AND DELIVERY OF RO MEMBRANES - Water
Surplus – NanoStack Coating of Dupont BW30XFRLE

Payment Discounts: please specify below.

Volume Purchase Discount per Membrane: (\$50.00)

Prompt Payment Discount per Membrane: If payment is made within Net 10 days after invoice: 0.5%

Membrane Buyback Discount: WaterSurplus Purchase of OCWD Used Membranes: (\$20.00) per Membrane

WaterSurplus, Inc.

Name of Firm

726 Beacon Street, Loves Park, IL 61111

Address

December 24, 2025

Date

James R. Ryan, Executive Vice President

Signature Name/Title

815-240-0422

Telephone



Authorized Signature

1. EXHIBIT A-1:

PRICE SHEET
 BY
WATERSURPLUS, INC.
 (Name of Firm)
 FOR
 RO MEMBRANES

The undersigned declares that he or she has examined the Invitation for Quotes for Supply and Delivery of RO Membranes- Water Surplus – NanoStack Coating of Dupont BW30XFRLE and hereby proposes to supply and deliver the RO membrane that is required by the District during the period specified in the IFQ documents, and in accordance with all provisions of the IFQ documents, for the following price:

Total Price Proposal	Unit Price	Unit Type	Quantity	Total Price
NanoStack Coated Low-Fouling OEM RO Membrane Elements (includes Installation Supervision): Product Number NanoStack BWXFRLE-400	\$711.57	Per Element	1060	\$754,264.20
Discount to OCWD	(\$50.00)	Per Element	1060	(\$53,000.00)
Delivery Fees (to WaterSurplus to OCWD):	\$12.67	Per Element	1060	\$13,430.20
Other: 100% post-coating wet testing	\$25.00	Per Element	1060	\$26,500.00
NanoStack BWXFRLE-400	\$699.24			\$741,194.40
California Sales Tax Rate @ 8.75%	\$61.18	Per Element	1060	\$64,854.51
Total Price Proposal	\$760.42	Per Element	1060	\$806,048.91

Payment Discounts Offered	Unit Price	Unit Type	Quantity ¹	Total Price
WaterSurplus Purchase of Used Membranes through Membrane Buyback Program	(\$20.00)	Per Element	1050	(\$21,000.00)

Notes

¹ Quantity of Membrane Buyback Purchase could vary up or down based upon testing of used elements.

Includes new OEM membrane, NanoStack Coating, 6-days of onsite support for supervising loading, special discount for >1000 element bulk quantity, and special discount for pilot validation.

* The proposed price shall be fully loaded to include all costs to supply and deliver RO Membranes to the District. Respondent shall be responsible for and pay all costs of delivery and assume risk of loss and damage to the destination point. OCWD shall not pay Contractor nor its subcontractors for any direct or reimbursable expenses incurred for implementation of the scope of services described in this IFQ, including but not limited to the manufacture, labor, cartage, any State and/or Federal taxes, mileage, freight equipment, supplies, assessments, surcharges, permits, licenses, overhead, profit, markups, etc. Although OCWD does not anticipate compensating the Vendor for any additional items or expenses, any such additional amounts to be charged to OCWD shall be built into the Price Sheet. Costs NOT identified in the Price Sheet may not be added at the time of invoicing. If applicable, the Price Sheet shall include any delivery pricing for special order deliveries outside of normal scheduled delivery orders.

Special Delivery Order Charge:

One single full truck load (FTL) delivery to OCWD applies. Partial deliveries (as less than full load, LTL) will increase delivery charges.

Project# 50052523

Payment Discounts: please specify terms below.

- Pricing and shipping terms are valid for 60 days following the date of this proposal.
- The payment installments for this proposal are as follows:
 - o All payments are NET30 due after invoice.
 - o 0.5% discount on payment is offered for payment with NET10 after invoice.
 - o 30% invoiced on Purchase Order.
 - o 30% invoiced on receipt of OEM Membranes at WaterSurplus facility.
 - o 30% invoiced on shipment date of the Coated Membranes to GWRS.
 - o 10% invoiced on earlier of either
 - Start of the membrane loading
 - 60 days after the shipment date

WATERSURPLUS, INC.
Name of Firm

726 BEACON ST. LOVES PARK, IL 61111
Address

12/24/25
Date

James R. Ryan, Executive Vice President
Signature Name/Title

+1-815-240-0422
Telephone



Authorized Signature

2. SCOPE SUMMARY

- WaterSurplus will supply a quantity of 1060 new BW30-XFRLE-400 membrane elements, initially sourced from OEM Dupont, followed by coating them with hydrophilic NanoStack coating for fouling resistance and flux improvement; per Exhibit A of the IFQ.
- Original 5% wet test data from OEM Dupont will be requested and supplied per Exhibit-A.
- In addition, after NanoStack Coating, 100% of the membrane elements will be wet-tested, and results will be documented for requirements under the IFQ' Exhibit-A requirement with the following exception under section 2.02B –
 - Wet test duration will be 20 minutes under pressure and two elements in series will be tested with interstage permeate block in-between two elements to individually assess quantity and quality of each membrane. To get most accurate testing conditions to published specifications, average pressure of feed/concentrate will be matched to 150 psi and average feed flow and feed TDS to each element would be with 10% (first element little higher, second element little lower) and specific flux and specific rejection for each membrane will be calculated averages over each membrane for pressure, flow, and TDS to achieve maximum possible accuracy.
- Supply test results, and other information as required by the specification.
- On-site representation during membrane installation, 2 days per unit for a total of 6 days.
- Freight from Dupont to WaterSurplus facilities and from WaterSurplus to OCWD, single FTL shipment each. A partial shipment or LTL to OCWD from WaterSurplus could result in additional Freight cost, which is not yet included in the proposal.
- OEM pass-through warranty on defects in workmanship, and other warranties by WaterSurplus per Exhibit-A section 1.03E
- 12 spare brine seals.

3. LEAD TIME

Lead time to ship 1060 membrane elements from the WaterSurplus facility is 10-11 weeks after the receipt of new membranes from Dupont at WaterSurplus facility. WaterSurplus will deliver all membranes to OCWD in a single FTL shipment.

4. STATEMENT OF EQUAL OPPORTUNITY/AFFIRMATIVE ACTION

WaterSurplus is an equal opportunity employer that is committed to diversity and inclusion in the workplace. We prohibit discrimination and harassment of any kind based on race, color, sex, religion, sexual orientation, national origin, disability, genetic information, pregnancy, or any other protected characteristic as outlined by federal, state, or local laws.

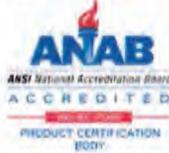
This policy applies to all employment practices within our organization, including hiring, recruiting, promotion, termination, layoff, recall, leave of absence, compensation, benefits, training, and apprenticeship. WaterSurplus makes hiring decisions based solely on qualifications, merit, and business needs at the time.

5. NSF61 CERTIFICATION

Attached below is a copy of NanoStack™ Coating' NSF/ANSI/CAN61 certificate and listing details with IAPMO R&T Product Listing.

IAPMO RESEARCH AND TESTING, INC.

4755 East Philadelphia Street, Ontario, CA 91761-2816 • (909) 472-4100 • Fax (909) 472-4244 • www.iapmort.org



IAPMO R&T Product Listing

NSF/ANSI/CAN 61

IAPMO Research and Testing, Inc. is a product certification body in which its product certification system includes inspection and testing of samples taken from the supplier's stock or from the market or a combination of both to verify compliance to the requirements of applicable codes and standards. This activity is coupled with periodic surveillance of the supplier's factory and/or warehouses as well as the assessment of the supplier's Quality Assurance System. This listing is subject to the conditions set forth in the characteristics below and is not to be construed as any recommendation, assurance or guarantee by IAPMO Research and Testing, Inc. of the product acceptance by Authorities Having Jurisdiction.

This IAPMO R&T Listing is current as of 8/26/2025

Product: Drinking Water System Components - Health Effects File No. B-17456

Issued To: WATERSURPLUS
726 BEACON STREET
LOVES PARK, IL 61111

Identification: Each product shall be permanently and legibly marked with the manufacturer's name or trademark. The product may also be marked with the standard designation "NSF/ANSI/CAN 61".

Characteristics: Materials or products that come into contact with drinking water and/or drinking water treatment chemicals. Products and materials may include process media, protective materials, joining and sealing materials, pipes and related products, mechanical devices used with treatment/transmission/distribution systems, and mechanical plumbing devices. To be installed in accordance with the manufacturer's instruction. Lead free requirements are addressed under a separate certificate of listing.

Products listed on this certificate have been tested by an IAPMO R&T recognized laboratory. This recognition has been granted based upon the laboratory's compliance to the applicable requirements of ISO/IEC 17025.

Products are certified to the following standard(s):

NSF/ANSI/CAN 61-2024

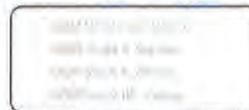
Product Type	Coating	
Model Number	Water Contact Temp	Water Contact Material
Nanostack Coating ¹	Cold (23C)	Various

¹ The certification of this product includes a use limitation requiring that the product not be used with water containing oxidizing agent Free-Chlorine (also known as Sodium Hypochlorite or NaOCl).

The attached nameplate has been approved for use as NSF/ANSI/CAN61 that will be attached to the NanoStack™ coated element boxes.



NanoStack™ Coated Low-Fouling OEM RO Membrane Element



This product has been enhanced with a proprietary hydrophilic polymer coating to increase fouling resistance, cleanability, and membrane life.



NanoStack™ coating is certified to NSF/ANSI/CAN 61 by IAPMO R&T

The NanoStack™ Coating is certified to NSF/ANSI/CAN 61 by IAPMO R&T

Project# 50052523

6. DOMESTIC SERVICE RATES 2026

Products and Services shall be billed as cost plus and negotiated rate per schedule listed below.

Products and Services	Pricing Matrix
Process Water Expert / PE	\$275/Hour
Principle Process Engineer / Consulting	\$270/Hour
Electrical/Controls Engineer	\$215/Hour
Field Service Engineer	\$205/Hour
Equipment Service Technician	\$125/Hour
Travel and Duration of Stay Expenses (mileage, airfare, rental car, hotel, parking, etc.)	Actual Cost-Plus 15%
Meals Per-Diem Rate	\$100 per man-day (may be higher in some locations)

Notes:

- Rates listed are \$USD.
- Engineering/Consulting rate applies to on-site and off-site services.
- The automobile mileage rate is based on federal standards at the time of travel.
- Hourly rates are based on work and travel occurring during standard business hours 7am – 5pm Monday through Friday, excluding holidays.
 - In excess of eight hours per weekday 1.5x hourly rate
 - Time on Saturdays up to eight hours 1.5x hourly rate
 - In excess of eight hours on Saturday 2x hourly rate
 - Time on Sundays and Holidays up to eight hours 2x hourly rate
 - In excess of eight hours on Sunday or Holiday 2.5x hourly rate

7. GENERAL TERMS AND CONDITIONS

Following Terms and Conditions Apply:

1. Definitions: All terms not defined herein shall be defined in the Form of Agreement or the Special Conditions.

2. Exclusive Terms and Conditions: Together with the PROPOSAL, these General Terms and Conditions form the exclusive terms ("Agreement") whereby Buyer agrees to purchase products and services, and Water Surplus (Seller) agrees to provide products advice, instruction, and other services. Notwithstanding any provisions communicated in any way by Buyer to Seller prior to this Agreement including any terms contained in any request for quote by Buyer, Buyer agrees that the Agreement will control the relationship by accepting products and services from Seller, even if Buyer sends to Seller other terms and conditions to which Seller may not respond. This Agreement may only be revised by a change order approved in writing by both parties.

3. Products and Services: The Products to be delivered and the Services to be provided shall be as set out in this Agreement.

4. Prices and Payment: Buyer shall pay Seller for the Products and Services in accordance with the Payment Schedule. If Seller shall have any doubt at any time as to Buyer's ability to pay, Seller may decline to make deliveries except on receipt of satisfactory security. Seller may require a Letter of Credit or other payment guarantee, in which case the stated amount of the guarantee will be adjusted by Buyer in the event of any currency-based adjustment to prices or payment amounts per the Payment Schedule, and Buyer shall deliver the adjusted guarantee within five (5) days of request by Seller. Buyer agrees to reimburse Seller for collection costs, including 2% interest per month, should Buyer fail to timely pay Seller for the Work. The buyer shall have no rights to make any deduction, retention, withholding, or setoff relating to any payments due under this Agreement.

5. Taxes and Duties: Unless expressly stated, the prices quoted herein do not include any taxes or duties. Buyer shall be directly responsible, and reimburse Seller, for the gross amount of any present or future bond, sales, use, excise, value added, or other similar tax or duty applicable to the price, sale or delivery of any equipment or services furnished hereunder. Buyer shall furnish Seller with evidence of tax exemption acceptable to taxing authorities if applicable.

6. Delivery: Unless otherwise specified in this Agreement, Seller shall deliver all products to Buyer FCA (Incoterms 2021) Seller's facility. The time for delivery of the products to Buyer shall be specified in this Agreement. Seller's sole liability for any delay in delivery of the products shall be as expressly set out in the Agreement. The place of delivery specified herein shall be firm and fixed, provided that Buyer may notify Seller no later than 45 days prior to the scheduled shipment date of the products of an alternate point of delivery. Provided the parties agree to a change order to consider any additional cost or delay incurred by Seller in implementing this change, the alternate place of delivery shall become the agreed place of delivery for all purposes under this Agreement. Failure by Buyer to take delivery of the products shall be a material breach of this Agreement.

7. Title and Risk of Loss; Liens: Title and risk of loss to the products shall be transferred from Seller to Buyer upon delivery in accordance with the Agreement. Title and risk of loss to the Services shall pass as they are performed. Seller shall (a) keep the products free and clear of construction, mechanics or similar liens arising due to acts or omissions of Seller or its agents, and (b) indemnify and defend Buyer against any claims thereof.

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8. Warranties and Remedies: Notwithstanding anything to the contrary in the Agreement, Seller warrants that the products shall conform to any specifications set out in the Agreement and shall be free from defects in material and workmanship; and that any services shall be performed with the degree of skill which can reasonably be expected from a seller engaged in a comparable business and providing comparable services under comparable circumstances. Seller's warranty does not cover the results of improper handling, storage, installation, commissioning, operation, or maintenance of the products by Buyer or third parties, repairs or alterations made by Buyer without Seller's written consent, influent water which does not comply with agreed parameters, or normal wear and tear.

Any claim for breach of these warranties must be promptly notified in writing upon discovery thereof, and Buyer shall make the defective item available to the Seller, or the claim will be void. Seller's sole responsibility and Buyer's exclusive remedy arising out of or relating to any breach of these warranties is limited to repair or (at Seller's option) replacement of defective items of Equipment, and performance of defective Services. In the event of a warranty claim, Buyer shall make maintenance and operation records available to the Seller upon written request during the warranty period.

The buyer is not entitled to extend or transfer this warranty to any other party. The foregoing warranties and remedies are in lieu of and exclude all other warranties and remedies, statutory, express, or implied, including any warranty of merchantability or of fitness for a particular purpose. Unless otherwise expressly stipulated in the Agreement, Seller gives no warranty or guarantee as to process results or performance of the products or services, including but not limited to product quality, flow, production, capacity, membrane life, chemical consumption, regulatory compliance, or energy consumption.

10. Buyer's Responsibilities: Unless otherwise stipulated in this Agreement, the unloading, handling, storage, and installation of the products shall be the responsibility of the Buyer. Seller will not control the actual operation of either Buyer's systems or the Equipment at the Site. Buyer shall also:

- a) Provide Seller with complete and accurate data concerning all relevant conditions at the Site, including but not limited to any existing Buyer facility, equipment or processes, influent water, or other substances to be treated or measured with the Equipment;
- b) Operate and maintain its facility and all related systems in good operating condition and within the agreed parameters or, if no parameters have been agreed, within generally accepted industry practice;
- c) Operate and maintain the Equipment in accordance with Seller's operations and maintenance manuals or where such manuals are silent, in accordance with generally accepted industry practice.

If Buyer's fails to fulfill the foregoing obligations, Seller shall be relieved of any obligations with respect to warranties or any other commitments under this Agreement, and Seller shall have no liability for any loss, damage, or injury which Buyer may sustain as a result.

11. General Indemnity: Seller shall indemnify and hold harmless Buyer from claims for physical damage to third party property or injury to persons, including death, to the extent caused by the negligence, willful misconduct or fraud of Seller or its officers, agents, employees, and/or assigns while engaged in activities under the Agreement. Buyer shall likewise indemnify and hold

harmless Seller from claims for physical damage to third party property or injury to persons, including death, to the extent caused by the negligence, willful misconduct or fraud of the Buyer, its officers, agents, employees, and/or assigns. In the event such damage or injury is caused by the joint or concurrent negligence of Seller and Buyer, the loss shall be borne by each Party in proportion to its negligence.

12. Compliance with Laws and Permits: All permits and licenses which are required to construct, install and/or operate Buyer's facility or equipment, to use the Equipment, or to manage and dispose of any wastes and residues resulting from Buyer's use of the Equipment, shall be obtained, and maintained by Buyer at Buyer's sole expense. Buyer is responsible for compliance with all laws and regulations applicable to the storage, use, handling, installation, maintenance, removal, and registration and labeling of all Equipment after delivery of the Equipment, as well as for the proper management and disposal of all wastes and residues. If any change in applicable laws, codes or standards occurring after the date of Seller's proposal to Buyer requires a change to the Equipment or to the performance of the Services, and it is technically feasible to comply with such change, the Seller shall effectuate such change and be entitled to an equitable adjustment to price and schedule.

13. Buyer's Facility Conditions: Seller shall be entitled to assume that any data furnished by the Buyer concerning conditions at Buyer's Facility is accurate and complete, and reserves the right to utilize the most appropriate design compatible with generally accepted engineering practices and conditions, and, in order to do so, make conforming changes in details of design, manufacture and arrangement of Equipment unless precluded by any limitations specified in the Agreement. Seller shall notify Buyer in writing of (1) any conditions at Buyer's Facility which materially differ from those indicated in the data furnished by Buyer, (2) any previously unknown physical conditions at Buyer's Facility of an unusual nature, not revealed by previous investigations and differing from those ordinarily encountered in the type of Work provided for in the Agreement, and (3) the presence of any Hazardous Materials (as defined below), unexploded ordinance, or archaeological remains. If such conditions cause an increase in Seller's cost or in the time required for the performance of Seller's obligations, Seller shall be entitled to an equitable adjustment in the Contract Price and an extension in the time for performance.

14. Hazardous Materials and Wastes: In the event that Seller encounters any hazardous materials (meaning toxic substances, hazardous substances, pollutants, contaminants, regulated wastes, or hazardous wastes as such terms may be defined or classified in any law, statute, directive, ordinance or regulations promulgated by any applicable governmental entity) (collectively, "Hazardous Materials") at Buyer's Facility, other than Hazardous Materials introduced by Seller or that are otherwise the express responsibility of Seller under this Agreement, Buyer shall immediately take whatever precautions are required to legally eliminate such Hazardous Materials so that the Seller's Work under this Agreement may safely proceed. At no time shall Seller be deemed to have taken title to or the responsibility for the disposal of any wastes, Hazardous Materials, influent water, any resultant product streams, wastewater streams, cleaning materials, or any other materials or substances processed by the Equipment or otherwise located at Buyer's Facility. Seller does not take responsibility for and hereby expressly disclaims responsibility for the characterization of wastes, Hazardous Materials, or for the identification or selection of disposal facilities for any wastes.

15. Excusable Delays: Seller shall not be liable nor in breach or default of its obligations under this Agreement to the extent performance of such obligations is delayed or prevented, directly or indirectly, due to causes beyond the reasonable control of Seller, including, but not limited to: acts of God, natural disasters, unusually severe weather, fire, terrorism, war (declared or undeclared), pandemics and epidemics (including COVID-19), material shortages, insurrection,

act (or omissions) of Buyer or Buyer's suppliers or agents, any act (or omission) by any governmental authority, strikes, labor disputes, transportation shortages, or vendor non-performance ("Force Majeure"). The delivery or performance date shall be extended for a period equal to the time lost by such reason of delay or nonperformance, provided that the Party claiming to be affected by Force Majeure shall promptly, and in any event no later than ten (10) days following the occurrence of such event, notify the other Party in writing on the occurrence and on the cessation of the circumstance which constitutes Force Majeure and shall use its commercially reasonable efforts to minimize the disruption as much as possible, including by resorting to alternative measures. If delivery or performance is delayed for a period exceeding ninety (90) days, then both Parties shall confer with one another in good faith and decide on the next steps to be taken. Either Party may, as an outcome of those discussions, terminate the Agreement without further liability provided that Seller shall be paid an amount equal to that which would be payable to Seller under the Article entitled "Termination for Cause". If Seller is delayed by any acts (or omissions) of Buyer, or by the prerequisite work of Buyer's other contractors or suppliers, Seller shall be entitled to an equitable adjustment in schedule, price and/or performance, as applicable.

16. Material Escalation: If, prior to the execution of a contract award between Seller and Buyer and prior to material purchase orders being secured by Seller, and during the performance of the Agreement, the price of the material significantly increases, through no fault of the Seller, the price shall be equitably adjusted by an amount reasonably necessary to cover any such significant price increases. As defined herein, a significant price increase shall mean any increase in material price utilized for the basis of Contract award by Buyer to Seller which is greater than three percent (3%) but not to exceed twenty percent (20%) from the date of the submitted proposal. Such price increases shall be documented by Seller through quotes, invoices, industry metrics, or receipts and approved by Buyer through a Contract Change Order. Where the delivery of material is delayed, through no fault of the Seller, as a result of the shortage or unavailability of materials, Seller shall not be liable for any additional costs of damages associated with such delay(s). Seller will identify the initial estimated cost of the Stainless Steel in the project proposal.

18. Intellectual Property: Both Parties agree to keep confidential the other Party's proprietary nonpublic information, if any, which may be acquired in connection with this Agreement. Buyer will not, without Seller's advance written consent, subject Equipment to testing, analysis, or any type of reverse engineering. The seller retains all intellectual property rights including copyright which it has in all drawings.

19. Limitations on Liability: Notwithstanding anything else contained in the Agreement, to the maximum extent permitted by law, and regardless of whether a claim is based in contract (including warranty or indemnity), extra contractual liability, tort (including negligence or strict liability), statute, equity or any other legal theory:

(a) THE TOTAL LIABILITY OF THE SELLER FOR ALL CLAIMS ARISING OUT OF OR RELATING TO THE PERFORMANCE OR BREACH OF THE AGREEMENT OR USE OF ANY EQUIPMENT OR SERVICES SHALL NOT EXCEED THE TOTAL PRICE PAID BY BUYER UNDER THIS AGREEMENT OR (IN THE CASE OF AN AGREEMENT FOR SERVICES WITH A TERM OF MORE THAN ONE YEAR) THE ANNUAL PRICE PAYABLE BY BUYER UNDER THIS AGREEMENT;

(b) SELLER SHALL NOT BE LIABLE FOR ANY ADVICE, INSTRUCTION, ASSISTANCE OR ANY SERVICES THAT ARE NOT REQUIRED UNDER THIS AGREEMENT OR FOR WHICH SELLER DOES NOT CHARGE BUYER;

(c) IN NO EVENT SHALL SELLER BE LIABLE FOR ANY LOSS OF PROFIT OR REVENUES, LOSS OF PRODUCTION, LOSS OF USE OF EQUIPMENT OR SERVICES OR ANY ASSOCIATED EQUIPMENT, INTERRUPTION OF BUSINESS, COST OF CAPITAL, COST OF REPLACEMENT WATER OR POWER, DOWNTIME COSTS, INCREASED OPERATING COSTS, CLAIMS OF BUYER'S CUSTOMERS FOR SUCH DAMAGES, OR FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, INDIRECT, PUNITIVE OR EXEMPLARY DAMAGES;

(d) ALL LIABILITY ON THE PART OF SELLER SHALL TERMINATE AT THE EXPIRY OF THE APPLICABLE WARRANTY PERIOD.

For the purposes of this article, "Seller" shall mean Seller, its affiliates, subcontractors and suppliers of any tier, and their respective agents and employees, individually or collectively. If Buyer is supplying Seller's Equipment or Services to a third party, Buyer shall require the third party to agree to be bound by this clause. If Buyer does not obtain this agreement for Seller's benefit for any reason, Buyer shall indemnify and hold Seller harmless from all liability arising out of claims made by the third party in excess of the limitations and exclusion of this clause.

21. Termination for Cause: This Agreement and any performance pursuant to it may be terminated or suspended by either Party, and the consequences of such termination shall be as set out in the next Article, if the other Party

(a) becomes insolvent, makes an assignment for the benefit of its creditors, has a receiver or trustee appointed for the benefit of its creditors, or files for protection from creditors under any bankruptcy or insolvency laws; or

(b) fails to make any payment when due or to establish any payment security required by this Agreement or commits a material breach or defaults in its material obligations under this Agreement, and such default is not cured within thirty (30) days of written notice from the other Party.

22. Consequences of Termination: Upon the termination of this Agreement by Seller for cause, or by Buyer without cause, Buyer shall pay to Seller within thirty (30) days of receipt of invoice the price of all Equipment or Services delivered at the date of termination, plus an amount equal to all costs and expenses incurred in the engineering, sourcing, financing, procurement, manufacture, storage and transportation of the Equipment including materials, work in progress and any cancellation charges assessed against Seller by Seller's suppliers including reasonable overhead and profit on all such costs and expenses. Alternatively, if any schedule of termination payments has been agreed between the Parties, Buyer shall pay to Seller within thirty (30) days of receipt of invoice the amounts set out in that schedule.

23. Governing Law and Dispute Resolution (US Sales): This Agreement shall be governed by the substantive laws of the State of Illinois. In the event of a dispute concerning this Agreement, the complaining party shall notify the other party in writing thereof. Management level representatives of both parties shall meet at an agreed location to attempt to resolve the dispute in good faith. Should the dispute not be resolved within thirty (30) days after such notice, the complaining party shall seek remedies exclusively through arbitration. The rules of the arbitration will be the Commercial Arbitration Rules of the American Arbitration Association, which are incorporated by reference into this clause.

24. No Nuclear Use: Save as expressly permitted by the Agreement, the Buyer warrants that it shall not use or permit the use of the Equipment in connection with any nuclear installation or activity. The seller shall have no liability whatsoever for any nuclear or other damage, injury or contamination arising in connection with any such use.

25. Export Control: Buyer acknowledges that all US origin equipment, software, and data are potentially subject to US export control laws and undertakes not to divert or re-export such items from the agreed destination except in accordance with those laws.

26. Global Sourcing: Seller may manufacture and source the Equipment and any part thereof globally in the country or countries of its choosing, provided that the Equipment complies with all the requirements specified in the Agreement.

27. Changes: All changes to the Equipment or Services shall be subject to mutual agreement via a written change order or variation, which shall only become effective once signed by both Parties.

28. Conflicts, Survival, and Assignment: If there is any conflict between the Agreement and any written proposal or quotation provided by Seller, then the terms and conditions set forth in the Agreement shall prevail. If any term or condition of the Agreement or any accompanying terms and conditions are held invalid or illegal, then such terms and conditions shall be reformed to be made legal or valid, or deleted, but the remaining terms and conditions shall remain in full force and effect, and this Agreement shall be interpreted and implemented in a manner which best fulfills our intended agreement. The Agreement may be assigned by Seller to any affiliate of Seller but shall not otherwise be assigned by either Party without the other Party's prior written consent, and any assignment without such consent shall be void.

29. No Third-Party Beneficiary: Except as specifically set forth in the Article entitled "Limitations on Liability", this Agreement is not intended to and does not give to any person who is not a party to this Agreement any rights to enforce any provisions contained in the Agreement.

30. Entire Agreement: The Agreement embodies the entire agreement between Buyer and Seller and supersedes any previous documents, correspondence, or agreements between them. No modification, amendment, revision, waiver, or other change shall be binding on either Party unless agreed in writing by the Party's authorized representative. Any oral or written representation, warranty, course of dealing, or trade usage not specified herein shall not be binding on either Party. Each Party agrees that it has not relied on, or been induced by, any representations of the other Party not contained in the Agreement.

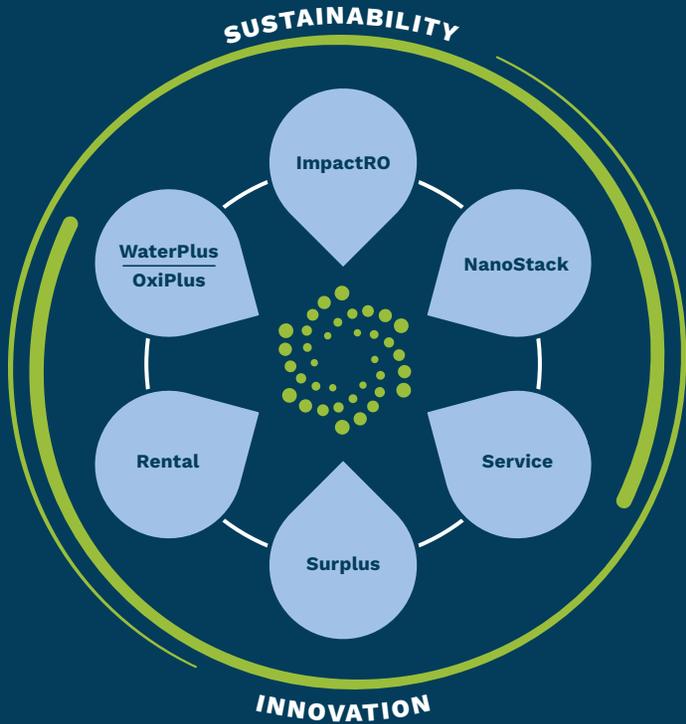


P: 1-800-919-0888
E: info@watersurplus.com

Sustainable water solutions by trusted experts.

STATEMENT OF **QUALIFICATIONS**

watersurplus.com



WaterSurplus develops and delivers innovative water-treatment solutions that promote clean water and sustainability across a broad range of industrial and public works applications.

To do so, we employ a variety of approaches, including custom engineering and design of new products and systems such as our patented ImpactRO reverse osmosis technology and NanoStack membrane elements. We also offer rapid-response PFS treatment, pre-engineered filtration systems, a proprietary line of catalytic media, and an industry-leading rental fleet. Plus, we developed and continue to operate the world's first global marketplace for surplus water-treatment resources.

The result is a company with a powerful, diverse toolkit alongside a strong commitment to innovation. WaterSurplus is a water-treatment industry leader that's uniquely equipped to craft custom solutions for our clients that deliver unparalleled performance, value, and reliability.

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COMPANY OVERVIEW

Established by John Barelli in Rockford, Illinois in 1989, WaterSurplus has grown from a one-man operation to over 50 employees out of our Loves Park, Illinois campus. We take pride in the fact that we are a local company that is recognized worldwide for its expertise in water treatment solutions. We have the human resource talent and expertise, as well as the leading treatment technologies, to deliver custom and targeted water treatment solutions to our customers.

WaterSurplus has been profitable every year since its inception and our personnel has over 350 collective years of experience in the water treatment industry serving customers in over 80 countries.

OUR CAPABILITIES

- Process Chemistry
- Engineering Design
- Civil, Mechanical, Electrical, and Plumbing
- Systems Integration
- Computer Aided Drafting
- Programmable Logic Control
- Manufacturing, Fabrication, and Assembly
- Project Management
- Diverse Partnership Network
- Field Service
- Sustainability Initiatives For All Industries

AREAS OF FOCUS

- Custom Design-Build Of Membrane and Pressure Filtration Systems
- Water Treatment Equipment Rental Services
- Surplus Water Treatment Equipment In Stock
- Full Inventory Of RO Membranes, Catalytic Media, And Resin Products
- Total Water Plant Optimization Services
- Water Treatment Investment Recovery
- RO/NF/UF Membrane Buyback Program
- Water Reuse, Recovery, And Sustainability

KEY MARKETS



AGRICULTURE



FOOD & BEVERAGE



METALS



MINING & MINERALS



MUNICIPAL



OIL & GAS



PULP & PAPER



POWER



REMEDIATION



FOOD & BEVERAGE

A TRUSTED PARTNER

WaterSurplus is a trusted partner to many major beverage manufacturers and copackers providing everything from initial support for budgets and CapEx to water chemistry analyses for process risk and custom high recovery water rooms for optimized RO operations.

WaterSurplus provides key differentiators in the bottling space through expertise in MF, UF, ACT, UV, RO, performance optimization, rental equipment for temporary projects, and our patented high efficiency/high recovery RO technology, ImpactRO.



OUR CAPABILITIES

- Initial support for budgets and CapEx planning
- Water chemistry analysis for process risk and optimum recovery
- Plant component sizing for optimized water footprint
- Water room engineering with GA layout for space optimization
- Water room engineering to deliver projects (PIDs layouts, process piping)
- Full scale retrofits for existing equipment
- Temporary rental equipment commissioning
- Full system commissioning
- Advanced troubleshooting & operator training
- Sustainability program implementation

FOOD & BEVERAGE EXPERTISE

With our team of trusted applications engineers, process engineers, and service professionals, WaterSurplus has to-date completed six turnkey water rooms, seven temporary rental projects, ten copacker projects, and over twenty field service upgrades ranging from 50 gpm to 2 mgd in the bottling space. Through this, we have established a vast market presence for major bottlers providing a value add for new equipment supply, service contracts, sustainability initiatives, and process consulting.



KEY DIFFERENTIATORS

- Expertise in MF, UF, ACT, UV, and RO
- Water chemistry and performance optimization
- Vast rental fleet with quick delivery for temporary projects (50-1000 gpm)
- High efficiency / high recovery patented RO technology to reduce energy, water, and chemical footprint
- New membrane supply program to reduce lead times, product SKUs, and downtime
- Membrane Buyback Program to reduce landfill waste and contribute to ESG goals
- Secure remote monitoring with weekly reports, anomaly notification, and trends analysis for actionable items

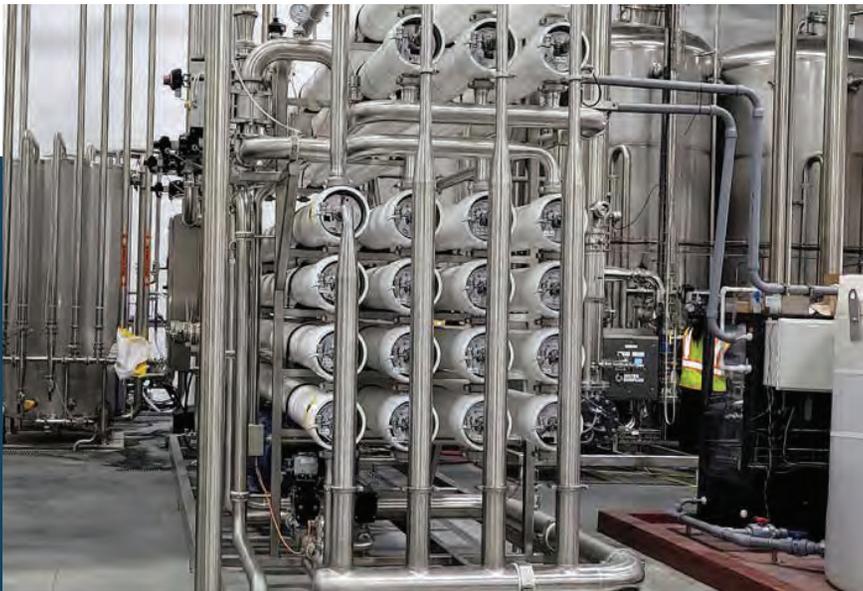
PROJECT PROFILE: FOOD & BEVERAGE

MAJOR BOTTLER – COLORADO

BACKGROUND

During the height of the COVID-19 pandemic, a major soft drink bottler announced plans to construct its largest bottling facility in the United States. The 1.2 million square-foot plant near the Denver International Airport will not only be this company's largest, but also its most technologically advanced, and sustainable. When commissioned, the facility is expected to produce several of the bottler's most successful brands.

WaterSurplus was awarded the contract to design, build, and integrate its largest turnkey water room to date equipped with high efficiency ImpactRO systems as the primary treatment. This will minimize the plant's water footprint and contribute to the company's overarching water reuse and sustainability initiatives.



PROJECT PROFILE: FOOD & BEVERAGE

WHAT WE DID

SOLUTION

ImpactRO is the workhorse of this water room. Our cutting-edge technology allows both high-recovery and high-efficiency performance in an easy-to-operate integrated system. As it was designed and built for this customer, the water room delivers the following benefits:

- 95% RO recovery
- 4-10% reduction in energy consumption because of reduced pressure loss and optimized crossflow velocities
- Reduced fouling of the first stage elements because of flux balancing technology
- Reduced scaling of final stage elements because of micro-disruption technology
- Reduced scaling of concentrate valve because of micro-disruption technology
- Reduced CIP related production loss because of:
 - Longer time between CIPs
 - Shorter CIP cycle time
 - Single-stage isolated cleaning

PROJECT DETAILS

Location

Denver, CO

Size

1 MGD

Technology

ImpactRO Water Room

Divisions

New

Project Lead

Steven Johnson

EQUIPMENT

- Triplex CF Skid
- Quinplex Self Cleaning Filters
- Triplex GAC Filter System
- UV Skid
- Double Pass ImpactRO System
- Single Pass ImpactRO System
- Chemical Feed Tanks & Pumps
- RO CIP Skid

RESULTS

- On time turnkey installation, service & startup
- Achieved 95% RO recovery
- System-wide remote monitoring

PROJECT PROFILE: FOOD & BEVERAGE

MAJOR BREWER – S. CAROLINA

BACKGROUND

With the explosive growth of hard seltzer and flavored malt beverages, this major brewer set out to meet the growing demand by rapidly expanding its brewing capability nationwide. This included constructing the largest new brewery in the US in more than 28 years.

The \$400 million greenfield project in South Carolina included a state-of-the-art 2 mgd WaterSurplus water room. The facility now produces several of the most famous brands in the sector.

WaterSurplus was selected to design, build, start-up, and remotely monitor the water room because of the advantages of the ImpactRO system, and the engineering and support staff standing behind it.



PROJECT PROFILE: FOOD & BEVERAGE

WHAT WE DID

SOLUTION

Our sophisticated ImpactRO is the foundation of this custom 2 mgd water room. The easy-to-operate integrated system delivers the water our customer needs — when they need it, efficiently and sustainably. As it was designed and built for this customer, the water room delivers the following benefits:

- 92% RO recovery
- 4-10% reduction in energy consumption because of reduced pressure loss and optimized crossflow velocities
- Reduced fouling of the first stage elements because of flux balancing technology
- Reduced scaling of final stage elements because of micro-disruption technology
- Reduced scaling of concentrate valve because of micro-disruption technology
- Reduced CIP related production loss because of:
 - Longer time between CIPs
 - Shorter CIP cycle time
 - Single-stage isolated cleaning

PROJECT DETAILS

Location

Columbia, SC

Size

2 MGD

Technology

ImpactRO Water Room

Divisions

New

Project Lead

Dr. Dileep Agnihotri

EQUIPMENT

- Triplex Raw Water Pump Skid
- Triplex CF Skid
- Quadplex Tekleen Filter
- Quadplex GAC Filter System
- UV Skid
- Single Pass Impact RO Systems
- Chemical Feed Tanks & Pumps
- RO CIP Skid
- Integrated Control System

RESULTS

- On time turnkey installation, service & startup
- Achieved 92% RO recovery
- System-wide remote monitoring

ENGINEERING SERVICES

Our diverse team of subject matter experts possess extensive industry-specific experience and professional certifications in Mechanical, Electrical, Civil, and Chemical Engineering. We have the expertise to address and optimize your organization's application-specific water treatment needs.

Our engineers are responsible for **efficient skid designs, effective plant system layouts, fast and accurate design and drawing turnaround times.**



PROCESS SOLUTIONS



DESIGN



PILOT



VALIDATE



OPTIMIZE



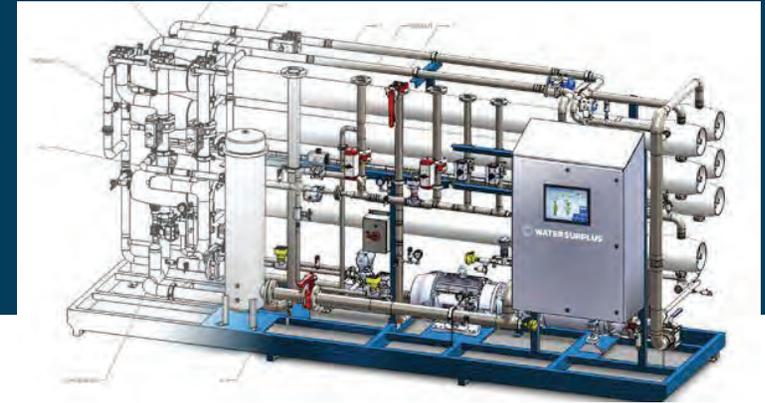
TRAIN



PROPOSE & EXECUTE

TURNKEY SOLUTIONS

Our engineering team has proven valuable to many Fortune 100 companies who choose to outsource the design and installation of their entire water treatment facility. On turnkey projects we typically act as the general contractor, activating our **exceptional stable of mechanical, electrical, and civil engineering subcontractors with focused expertise in the food and beverage industry.**



DESIGN EXPERTS

Our engineering team optimizes site specific processes with our designed solutions to manage energy, antiscalant chemicals, brine discharge, membrane cleaning frequency, and filtration backwash requirements to minimize OPEX. Our team of trusted engineers carefully analyze water chemistry to develop the most efficient and cost effective treatment options.

Through hundreds of years of combined experience, our diverse staff designs site specific solutions rooted in operational efficiency and sustainability, such as membrane fouling mitigation and RO efficiency including reduction in energy, brine, and antiscalants while achieving membrane life extension and system optimization.

PROJECT PROFILE: ENGINEERING

MAJOR BOTTLER – MICHIGAN

BACKGROUND

WaterSurplus began interacting with this major bottler on an investment recovery basis to recycle and refurbish their old RO membranes. These transactions evolved from investment recovery transactions, to new consumables transactions and service jobs. Over the years it has grown into a valued partnership for turnkey high efficiency and high recovery RO water rooms for its new capital projects.

This installation represents a larger market share in the bottling marketplace in multiple regions. Our engineering team was instrumental in managing and executing this project as our first capital equipment turnkey project for this bottler.



PROJECT PROFILE: ENGINEERING

WHAT WE DID

SOLUTION

Together with our supply chain partners, WaterSurplus has solidified our ImpactRO system as one of the most sophisticated high recovery and high efficiency reverse osmosis solutions in the marketplace. The system designed for this customer allows the following benefits:

- Reduction in pressure loss while achieving optimum crossflow velocities and therefore reducing energy consumption by 4-10%
- Increased flux balance between stages resulting in reduced fouling of the first stage
- Disruption of scale forming conditions resulting in reduced scaling of the last stage
- Reduction in scale potential of the concentrate valve
- Reduction in downtime for CIP by proactively disrupting scaling or fouling
- Ease of effectiveness of CIP with reduced number of valves
- To keep system operational via isolation of the last stage for maintenance while keeping remaining system in production mode

PROJECT DETAILS

Location

Detroit, MI

Size

500 gpm

Technology

ImpactRO Water Room

Divisions

New

Project Lead

Steven Johnson

EQUIPMENT

- Quadplex High Flow CF Skid
- UF Pretreatment Skid
- Ultrafiltration System
- Duplex GAC Towers
- High Recovery ImpactRO System
- RO CIP Skid
- Control Programs Integration

RESULTS

- 90% RO Recovery (Performance Guarantee)
- Project management service support
- Remote monitoring and weekly system reviews, diagnostics and technical support

RENTAL FLEET

READY-TO-RUN SOLUTIONS

WaterSurplus maintains a large and diverse rental fleet of mobile water treatment equipment providing water and wastewater treatment technologies for your emergency, short-term, or long-term applications.

Mobile water treatment solutions can be designed and installed using individual assets or in combination to form complete systems with our trailers, containerized units, or skidded equipment.



POPULAR RENTALS



BWRO



SWRO



FILTRATION TANKS



ION EXCHANGE



SOFTENERS



CIP SYSTEMS



CLARIFIERS



FILTER PRESS

MOBILE RENTAL SOLUTIONS

Our large rental fleet allows our customers to focus on investing in their core business while we take responsibility for the commissioning and training, optimization, and maintenance of the water treatment system. It also provides equipment and capital efficiency for customers with future expansion requirements.



AVAILABILITY ADVANTAGE

- Vast inventory of ready-to-run water and wastewater treatment equipment
- Expertise in process design and applications engineering
- Efficient and sustainable mobile treatment solutions with on-site support
- Customer-centric focus
- Price flexibility and responsive mobilization
- Superior service, training, and consulting
- Consistent and reliable remote monitoring and reporting

PROJECT PROFILE: RENTAL FLEET POWER PLANT ZLD

A zero liquid discharge power plant was experiencing issues with cooling tower blowdown water. As a result, four million gallons of untreatable water accumulated and needed offsite disposal or onsite treatment. Cost estimates for hauling and disposal of the water was \$1.00 per gallon for a total of \$4,000,000. Within two weeks of being contacted, WaterSurplus was able to deploy equipment and services to help mitigate the problem by reducing the volume of untreatable water by 85%.



PROJECT SCOPE

Project Flow

400 GPM

Project Location

Western, United States

Project Phase

Complete

PROJECT OUTCOMES

- Rapid equipment deployment
- Rapid equipment startup service
- Reduce untreatable water by 85%
- Save hauling and disposal fees of \$3,150,000

PROJECT PROFILE: RENTAL FLEET MUNICIPAL – FLORIDA

WaterSurplus delivered and commissioned a temporary municipal drinking water plant for a municipal water authority in Florida. This long-term rental system is expected to operate for 2-3 years until permanent treatment equipment can be brought online. WaterSurplus quickly mobilized a fully automated triplex sand filter, 300 GPM RO skid, and 250 GPM clean-in-place skid along with startup and training services.



PROJECT SCOPE

Project Flow

300 MGD

Project Location

Florida

Project Phase

In Service

PROJECT OUTCOMES

- Rapid equipment deployment
- Rapid equipment startup service
- Remote monitoring service
- Remote monitoring reporting and analyses

PFAS TREATMENT

A CUSTOMIZED APPROACH

As PFAS regulations are finalized, WaterSurplus is prepared to deploy both temporary and permanent filtration solutions with a technology-agnostic approach for municipal drinking water and groundwater remediation. These options include temporary treatment or a new turnkey treatment system.

We work with engineering firms, environmental contractors, and municipalities to address the contaminants and its levels, determine the most cost effective treatment technology, and deploy equipment and start up solutions.



PFAS TREATMENT TECHNOLOGIES

✓ Granular Activated Carbon

Adsorption most effective on longer chain carbons
Typically provides a larger system footprint

✓ Anion Exchange Resin

Most effective on shorter chain carbons providing a smaller footprint
No contaminant waste stream to handle, treat, or dispose of

✓ Reverse Osmosis

Removes a wide range of PFAS, both short and long chain
Concentrate waste stream difficult to dispose of without destruction technologies

EMERGING CONTAMINANTS FILTRATION SOLUTIONS

Our vast rental fleet of skidded and trailerized filtration equipment allows for rapid response to prevent well shutdowns and quickly treat to non-detect levels of PFAS. While we treat PFAS immediately at its source, we also provide custom design, engineering, and commissioning of permanent treatment plants lead by our team of trusted PFAS experts.



PROJECT LIFECYCLE AND SCOPE

1. Sample collection by Service Team
2. Analyze feedwater data by Application Engineering Team
3. Treatment technology development
4. Pilot testing and media selection by Service Team
5. Design full scale treatment system
6. Deploy temporary or permanent equipment (trailers or skids)
7. System start-up and operator training
8. Media change out services
9. Media destruction or disposal services

PROJECT PROFILE: PFAS TREATMENT TOWN OF RIB MOUNTAIN, WI

In June of 2022, WaterSurplus delivered and commissioned the first Department of Natural Resources (DNR) approved potable water PFAS treatment system in the state of Wisconsin. This long-term anion exchange rental system is expected to operate in Rib Mountain, Wisconsin for 2–3 years until permanent treatment equipment or alternative wells can be brought online.



PROJECT SCOPE

Project Flow

450 gpm

Project Location

Rib Mountain, WI

End User

Rib Mountain Sanitary District

Project Phase

In Service

PROJECT OUTCOMES

- Deploy rapid response, start-up service and treatment
- Restore Rib Mountain's well no.1 production
- Treat to non-detect pfas levels
- Achieve smaller footprint with anion exchange vessels
- Treat below Wisconsin DHS PFAS health advisory levels
- Treat below US EPA regulatory levels
- Haul away and destroy PFAS-loaded resin

PROJECT PROFILE: PFAS TREATMENT VILLAGE OF WESTON, WI

In September of 2022, WaterSurplus delivered and commissioned the second Department of Natural Resources (DNR) approved potable water PFAS treatment system in the state of Wisconsin. This long-term anion exchange rental system is expected to operate in Weston, Wisconsin for 2–3 years until permanent treatment equipment or alternative wells can be brought online.



PROJECT SCOPE

Project Flow

600 gpm

Project Location

Weston, WI

End User

Village of Weston

Project Phase

In Service

PROJECT OUTCOMES

- Deploy rapid response, start-up service and treatment
- Restore Weston's well no.4 production
- Treat to non-detect pfas levels
- Achieve smaller footprint with anion exchange vessels
- Treat below Wisconsin DHS PFAS health advisory levels
- Treat below US EPA regulatory levels
- Haul away and destroy PFAS-loaded resin

FILTRATION FE & MN TREATMENT

WaterSurplus provides Iron and Manganese filtration solutions nationwide for municipal and industrial customers using our pre-engineered WaterPlus multimedia filters. WaterPlus filters combined with our catalytic filtration media add efficiencies that reduce groundwater treatment project cost and size by up to 50% while reducing backwash wastewater volumes. In addition to stocking catalytic media, we have pre-engineered systems in stock that can considerably reduce delivery times.



WaterPLUS™ CATALYTIC FILTER BENEFITS

- ✓ Higher loading rates than traditional media
- ✓ Smaller filter footprint than traditional systems
- ✓ Reduced building costs
- ✓ NSF61/ANSI certified materials of construction and filter media
- ✓ Greater cost efficiency
- ✓ Shorter backwash times than traditional systems
- ✓ Unique, straightforward design simplifying operation and maintenance

OUR FILTRATION SOLUTIONS

WaterPlus filtration systems are designed for the challenging waters of the industrial and municipal markets. These dependable systems were created using industry leading filtration knowledge and extensive application experience with our NSF/ANSI 61 Certified OxiPlus catalytic media. With more than 100 installations, our media offers proven efficiency for a wide variety of applications and industries.



OUR CATALYTIC & HIGH SURFACE LOADING RATE FILTER MEDIA

 **OxiPlus⁷⁵™**

 **OxiPlus¹²™**



 **SandPLUS™**

PROJECT PROFILE: FE & MN TREATMENT CITY OF BELVIDERE, IL

A new well was drilled in the City of Belvidere with an expected capacity of 2,000 gpm, but was contaminated with iron and manganese. WaterSurplus worked with the engineering firm, Strand Associates, to design a high-rate filter plant using catalytic OxiPlus75 filter media. If traditional treatment using potassium permanganate feed was implemented, a 60,000 gallon detention basin and two 10' diameter by 36' long horizontal vessels would have been required. With design expertise from WaterSurplus, the final system required just one 10' diameter by 34' long horizontal filter.



PROJECT SCOPE

Project Flow

3 MGD

Project Location

Belvidere, IL

End User

City of Belvidere

Project Phase

In Service

PROJECT OUTCOMES

- Oxidized and precipitated Mn without potassium permanganate feed or detention basin
- Cut projected treatment equipment cost estimate by 60%
- Successfully operated at a high loading rate of 2,000 gpm
- Improved backwash capabilities with air scour installation
- Successfully removed iron to less than 0.1 mg/L

PROJECT PROFILE: FE & MN TREATMENT CITY OF PARK CITY, UT

The City of Park City discovered manganese in their GAC permeate prior to entering their UF system that needed to be removed immediately. WaterSurplus deployed two quadplex 54" vessels using pyrolox media to remove the Mn prior to the UF while a permanent design was completed. Upon completion, WaterSurplus installed a permanent solution of four quadplex 48" vessels with catalytic filter media.



PROJECT SCOPE

Project Flow

3 MGD

Project Location

Park City, UT

End User

City of Park City

Project Phase

In Service

PROJECT OUTCOMES

- Deployed rental treatment equipment
- Finalized design for permanent treatment
- Oxidized and precipitated Mn without potassium permanganate feed or detention basin
- Achieved high surface loading rate
- Saved money on material cost
- Saved room on footprint building space

NEW OEM DISTRIBUTOR

A TRUSTED OEM PARTNER

Did you know WaterSurplus manufactures and sells new water treatment equipment? From our own line of innovative products and equipment to our industry-trusted OEM partner brands, we carry the new products you need to operate, expand, or overhaul your water treatment facility.

WaterSurplus has partnered with leading brands in the water treatment industry. We maintain a large inventory of new equipment, membranes, media, resin, and parts. Our pricing and availability are second to none.



OEM PRODUCT OFFERINGS

- Reverse Osmosis Equipment
- Reverse Osmosis Membranes
- Reverse Osmosis Chemicals
- Nanofiltration Membranes
- Ion Exchange Tanks and Resin
- Pressure Filtration Systems
- Clarifiers
- Ultraviolet Systems
- UF, MF, and NF Systems
- Filtration Housings
- Ultrafiltration Equipment
- Ultrafiltration Modules
- Filtration Housings
- Cartridge Filters
- Bag Filters
- Pumps & Motors
- Filter Presses
- Filter Media

OEM PARTNER BRANDS



SURPLUS EQUIPMENT

The Surplus Division is the industry leader in providing high-value industrial water treatment equipment, reverse osmosis (RO) systems, RO membrane elements, ion exchange resin, and other critical ancillary items to meet your project specifications at great prices. Through this, we have exported to over 80 countries worldwide. The vast majority of our surplus equipment is Rebuilt and Ready to Run, so when you need it, we can ship it. We call this the Availability Advantage.

Our expert buyers locate and procure the very best surplus and used water treatment equipment on the market today. We have purchasing contracts in place across many industries that consistently supply us with higher quality equipment that cannot usually be found on the secondary market. Plus, our experienced technicians can inspect, clean, and repair every item when required.



RO SYSTEMS



MEMBRANES



IX RESIN

MEMBRANE BUYBACK PROGRAM

WaterSurplus started the Membrane BuyBack Program more than 20 years ago when we realized that water treatment facilities were disposing of membranes that still met the specification requirements of more severe applications like industrial wastewater treatment.

Together with our Member Organizations we have prevented thousands of membranes from going into landfills. Those membranes have gone on to treat millions of gallons of water after the end of their initial lifecycle and recycle hundreds of tons of raw materials.



MEMBRANE BUYBACK SUMMARY

By repurposing membranes destined for the landfill, we have created a sustainable solution to:

- Reduce the solid waste footprint of water treatment facilities
- Extend the useful life of the membranes
- Eliminate and reverse disposal costs
- Deliver lower cost, used membranes to industries with less stringent performance requirements

FOUR YEAR SNAPSHOT

2019 MEMBRANES RECYCLED	4,002
2020 MEMBRANES RECYCLED	4,447
2021 MEMBRANES RECYCLED	7,143
2022 MEMBRANES RECYCLED	6,555
TOTAL:	22,147

PROJECT PROFILE: SURPLUS GELATIN MANUFACTURER

WaterSurplus was approached by a major gelatin manufacturer for a large order of surplus refurbished RO membranes. Contributing to the circular economy, WaterSurplus was able to expedite 2,000 brackish RO membranes directly from stock to the customer within one week. This ultimately saved the customer ~\$1M in opex compared to buying new elements.



PROJECT SCOPE

Project Flow

2000 membranes

Project Location

Guanajuato, Mexico

Project Phase

Complete

PROJECT OUTCOMES

- \$1M saved in opex compared to OEM membranes
- 70,000 lbs. of raw material saved from landfill
- 35 tons of raw material recovered
- 35% RO unit savings compared to OEM pricing
- These membranes will go on to treat ~2B gallons of water

PROJECT PROFILE: SURPLUS URANIUM FUEL FACILITY

A major uranium production facility approached WaterSurplus in need of two 260 GPM ROs and a quick delivery. WaterSurplus was able to utilize its in house engineering, design, and fabrication teams to complete a custom refurbishment of these units within 4 weeks. This expedited shipment allowed the plant to stay online and save major capital costs.



PROJECT SCOPE

Project Flow

550 gpm

Project Location

Texas

Project Phase

Complete

PROJECT OUTCOMES

- \$46,000 OpEx savings on system consumables
- Beat OEM RO lead time/delivery by 12 weeks
- Beat OEM membrane delivery by 6 weeks
- 35% CapEx savings on RO unit compared to new OEM pricing

INVESTMENT RECOVERY

EXPERIENCE COUNTS

WaterSurplus was founded on the idea of promoting and advancing circular economics, raw material recycling, industrial sustainability and adding value to the supply chain.

As the premier buyer and seller of surplus water treatment process equipment in the world, the industry expects us to maintain the finest inventory of top-quality used and overstock equipment and components. Because of that, we are always on the lookout for stranded and idle assets to add to our listings.



EQUIPMENT & CONSUMABLES RECYCLING

Our team of investment recovery specialists will help you determine the most advantageous way to turn your surplus water treatment assets into cash. We will provide you with an expert analysis of the value of your equipment, then partner with you to customize a transaction to meet your needs.

We can even handle the rigging, freight, and storage of your equipment if you need to free up space in your facility immediately. Deal with a team that understands the actual value of your specialized equipment. We've specialized in this industry for more than 30 years.



SOME OF OUR INVESTMENT RECOVERY PARTNERS



WHAT WE BUY

- Reverse Osmosis Equipment
- Reverse Osmosis Membranes
- Ion Exchange Tanks and Resin
- Pressure Filtration Systems
- Wastewater Equipment
- UF, MF, and NF Systems
- Filtration Housings

PURCHASING OPTIONS

- Direct-sale to WaterSurplus
- Membrane BuyBack Program
- On-site Treaty Sale
- Off-site Treaty Sale
- On-site Consignment
- Off-site Consignment
- Equipment Trade-in

SITE SERVICES

EXPERIENCE COUNTS

Our expert service engineers and trusted technicians are responsible for **starting up, optimizing, maintaining, and repairing water treatment systems specific to your industry standard and applications.**

We utilize a large pool of diverse marketplace resources as well as our own highly available inventory of equipment, spare parts, membranes, and media, allowing us to respond quickly to unplanned shutdown or emergency repair requirements.



TRUSTED TECHNICIANS

MEMBRANE CLEANING

RO SYSTEM RETROFITS

RESIN REGENERATION

FEED WATER TESTING

MEMBRANE COATING

PLANT OPTIMIZATION

8
TECHNICIANS

250+
PROJECTS DONE

100+
CUSTOMERS

OUR SERVICE SOLUTIONS



EQUIPMENT COMMISSIONING



SYSTEM OPTIMIZATION



TANK INSPECTION



MEMBRANE CHANGEOUT



TANK CHANGEOUT



PILOT PLANTS



TROUBLESHOOTING



REMOTE MONITORING



OPERATOR TRAINING

INNOVATION & INTELLECTUAL PROPERTY

30+ YEARS OF INNOVATION

With over 350 years of water treatment experience throughout our management team, WaterSurplus has leveraged its collective intelligence to provide sustainable and innovative products and services across industries and around the world. These developments include antifouling membrane coating, high recovery and high efficiency Reverse Osmosis design solutions, and high-flow rate catalytic media.

From initially unlocking capital for both buyers and sellers by introducing the concept of a surplus marketplace specific to the global water and wastewater industry, to developing and commercializing patented innovations that transform decades of standardized water treatment practices, WaterSurplus' identity and philosophy is rooted in innovation, collaboration, and collective intelligence.

OUR INNOVATION PROCESS



Identify Areas of Opportunity



Apply Engineering Rigor



Tap Our Strategic Relationships



Challenge the Status Quo

PRODUCT LINES



ANTI-FOULING MEMBRANE SURFACE MODIFICATION

Our patented NanoStack coating is a bio-inspired membrane surface modification for use in industrial applications with notoriously hard-to-treat water. This super-hydrophilic coating creates a protective water barrier between the membrane surface and unwanted foulants. The result is a reduction in foulant adhesion, allowing the normal cross-flow velocity of the feed water to sweep unwanted contaminants more easily to drain.



HIGH RECOVERY & HIGH EFFICIENCY REVERSE OSMOSIS

The patented ImpactRO was developed to address some of the most vexing problems associated with modern reverse osmosis (RO) technology. Our system can be calibrated to meet your needs as a high efficiency or high recovery RO system. ImpactRO is well suited for the full range of water treatment applications, from bottling to reuse, and everything in between.



PRE-ENGINEERED SOLUTIONS AND HIGH-FLOW FILTER MEDIA

Our WaterPlus product line includes high flow rate NSF/ANSI 61 certified filter media, pre-engineered skidded and trailerized media filters designed to optimize system efficiency and minimize footprint, as well as pre-engineered wastewater equipment such as clarifiers and filter presses in various sizes.



ANTI-FOULING MEMBRANE SURFACE MODIFICATION

Our patented NanoStack coating is a bio-inspired membrane surface modification for use in industrial applications with hard-to-treat water. The coating is superhydrophilic, pulling clean water towards the membrane surface and repelling everything else. This creates a protective water barrier between the membrane surface and unwanted foulants. The result is a reduction in foulant adhesion, allowing the normal cross-flow velocity of the feed water to sweep unwanted contaminants more easily to drain.

For customers struggling to treat high-fouling waters, our patented NanoStack coating increase membrane life expectancy and mitigates membrane fouling as well as operational downtime and associated expenses. Combined with our patented ImpactRO system, the two technologies increase membrane resilience and resistance when processing hard-to-treat waters.

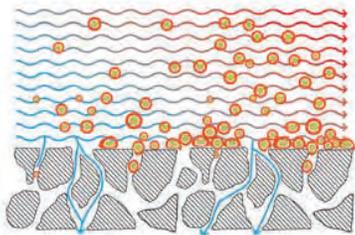
CHALLENGES OF UNCOATED MEMBRANES

- Sensitive to operating conditions
- Rapid fouling/scaling
- Frequent system shutdowns for CIP
- Intense cleaning required for scale buildup
- Reduced performance after each CIP

BENEFITS OF NANOSTACK MEMBRANES

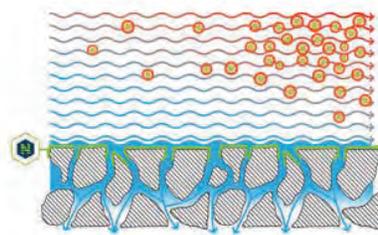
- Forgiving in sub-optimal operating conditions
- Significantly reduced fouling/scaling rate
- Significant increase in time between CIP
- Easier to clean
- Greater performance recovery after CIP

UNCOATED MEMBRANES



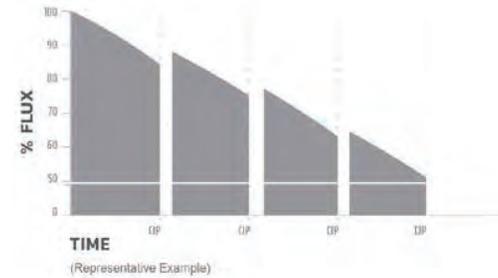
UNCOATED MEMBRANE

NanoSTACK™ COATED MEMBRANES



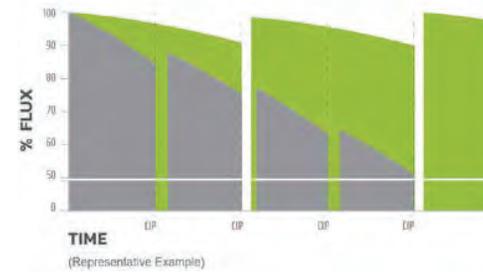
NANOSTACK COATED MEMBRANE

STANDARD UNCOATED MEMBRANE PERFORMANCE



NANOSTACK COATED VS. UNCOATED PERFORMANCE

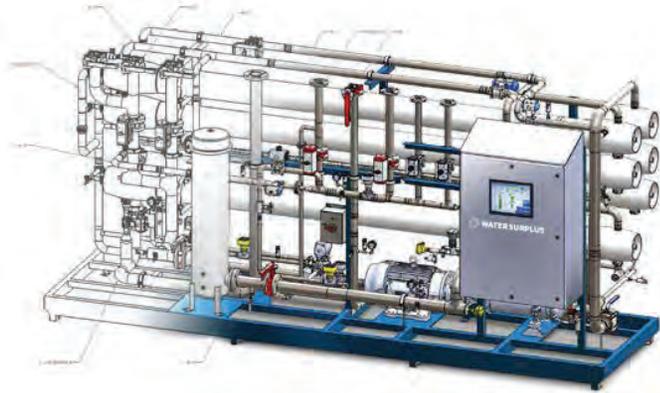
In those same high-fouling environments, NanoStack coated membranes are shown to be significantly more resistant to fouling and scale, which reduces the frequency of offline CIP's. Plus, after cleaning, they recover most of their original performance, increasing system up-time and membrane life.





HIGH RECOVERY & HIGH EFFICIENCY REVERSE OSMOSIS

With over fifteen turnkey installations, the ImpactRO was developed to address some of the most vexing problems associated with modern reverse osmosis (RO) technology. Our system can be calibrated to meet your needs as a high efficiency or high recovery RO system. ImpactRO is well suited for the full range of water treatment applications, from bottling to reuse, and everything in between.



CHALLENGES OF STANDARD RO SYSTEMS

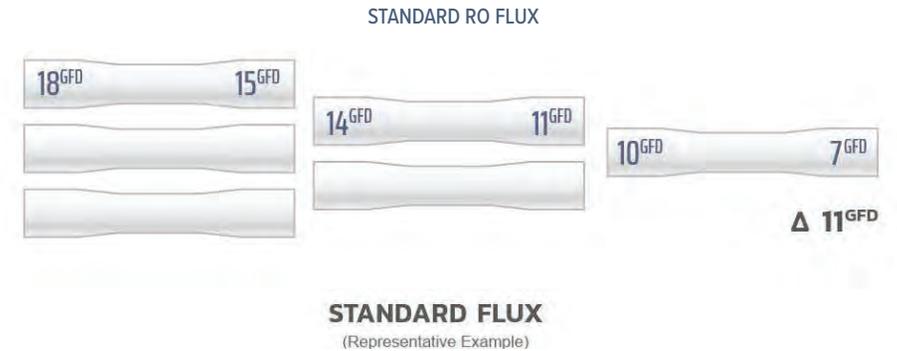
- Flux Imbalance in multi-stage systems leads to faster fouling
- Recycle loop to balance flux leads to scaling and requires higher operating pressure
- Pressure losses over time lead to greater energy use and higher opex
- Long downtime for standard single-stage CIP or large capital expense for multistage CIP
- Near static concentration polarization layer (CP Layer) prone to scaling

BENEFITS OF IMPACT RO

- Parallel feed balances flux across stages and reduces fouling
- No recycle loop, reduces operating pressure and avoids recirculation of foulants
- Lower operating pressure reduces energy consumption and opex
- Parallel CIP cleans all three stages at one time, reducing downtime by 67%
- Intermittent micro-disruptions reduce the formation of CP Layer

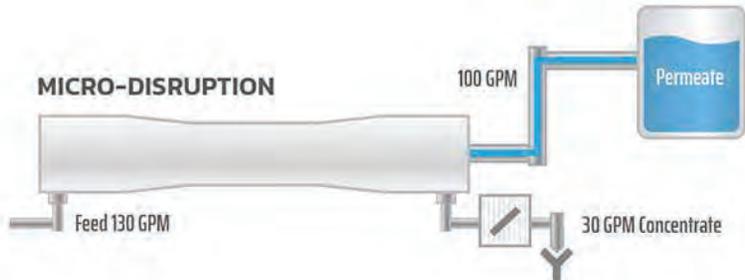
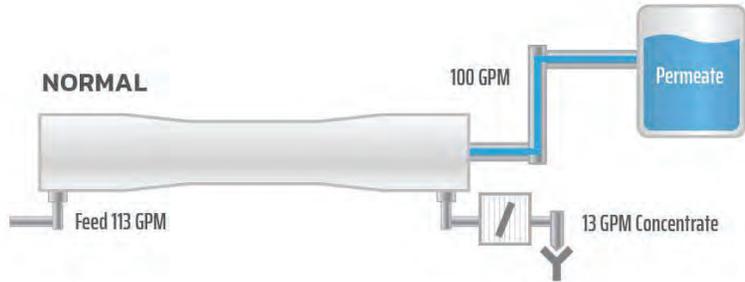
FLUX BALANCING DESIGN

Our patented ImpactRO improves flux distribution in all three stages of a high-efficiency and high recovery reverse osmosis system.



VARIABLE RECOVERY

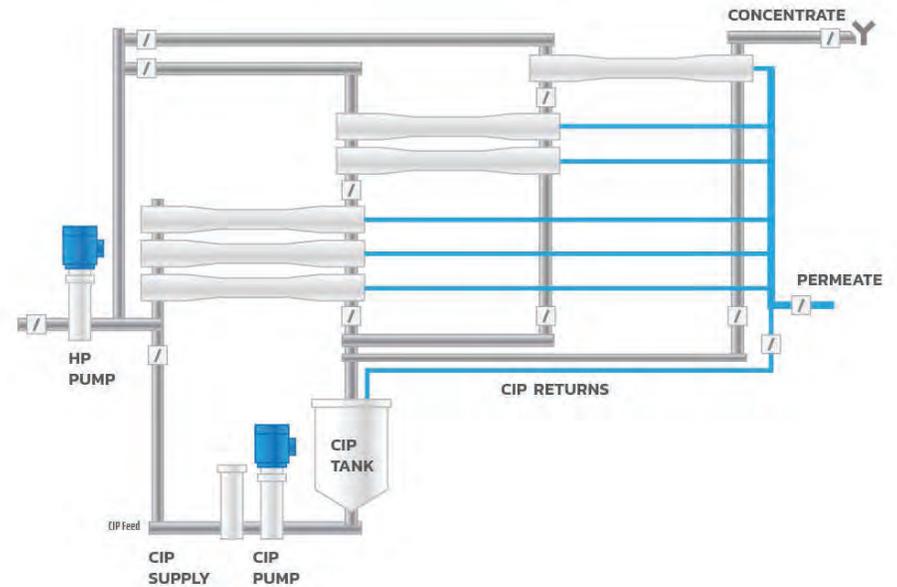
Variable recovery is a temporary disruptive state wherein flow paths, feed, permeate, and concentrate flow rates are engineered to dynamically establish a new ratio of salt concentrations and flow rates, leading to hydrodynamic shear forces to disrupt the concentration polarization at the membrane interface, thus reducing fouling and scaling particularly in high recovery applications.



SYSTEM DESIGN: ImpactRO™

Patented in the United States, Canada, Japan, Korea, Germany, France, and EP Territories, the ImpactRO is designed to:

- Solve flux imbalance
- Protect and extend the life of the RO membrane elements
- Reduce cleaning frequency and operational downtime
- Reduce chemical consumption
- Minimize brine/concentrate waste to drain
- Improve ease of operation compared to other high recovery RO designs





Pre-Engineered Solutions and High-Flow Filter Media

Our WaterPlus line of pre-engineered pressure vessels and high flow-rate filter media are cost-competitive, long-lasting, and NSF/ANSI 61 certified. With more than 100 installations, our media offers proven efficiency for a wide variety of applications and industries. OxiPlus works great in any media filtration system, but our pre-engineered pressure vessels are designed to optimize system efficiency, ensure ease of operation, and minimize the overall system footprint.



CATALYTIC MEDIA PRODUCTS



CATALYTIC MEDIA OVERVIEW



OxiPlus75 is a highly effective NSF/ANSI 61 certified media for the removal of iron, manganese, arsenic, radium, and hydrogen sulfide. This proprietary filter media has proven highly successful in municipal and industrial pretreatment applications where manganese is present in the water. The catalytic properties of OxiPlus75 allow for higher treatment rates than traditional media. The result? A smaller plant footprint with up to a 50% reduction in overall project cost. Combine OxiPlus75 with our pre-engineered filter units, and you get a highly effective, economical, and operator-friendly filtration system. With our industry-leading filtration knowledge, we can ensure the proper media is being used in your system so you can achieve the results you need at a price you can afford.



Combining industry-leading filtration knowledge with the correct application of OxiPlus12 media, WaterSurplus has created efficient and durable filtration systems that are designed to operate at high loading rates for use in the reduction of total suspended solids, silt density, and iron. OxiPlus12 is a black filter media used for removing soluble iron, manganese, hydrogen sulfide, arsenic, and radium from groundwater supplies. The manganese dioxide-coated surface of the OxiPlus12 acts as a catalyst in the oxidation-reduction reaction of iron and manganese. The silica sand core of OxiPlus12 allows it to withstand waters that are low in silica, TDS, and hardness without breaking down. OxiPlus12 can also filter out particles down to 10 microns in size. This media has an NSF/ANSI 61 certification for use in treating potable water.



SandPlus is a high rate filter media with improved filtration performance when compared to other media. The hardness, stability, uniformity, and microporous character all help the media perform in both water and wastewater applications. While most filtration media filters down to 8-15 micron nominal size, SandPlus can filter down to 3-5 micron particle removal. SandPlus can be used for industrial applications like cooling tower turbidity removal or pretreatment prior to reverse osmosis systems. It can be used in gravity or pressure filters with lower pressure drops and improved filtration performance. It can also be used in potable and irrigation applications or in stormwater or wastewater reuse applications.

CATALYTIC MEDIA APPLICATIONS & BENEFITS



APPLICATIONS

- Fe Removal
- HS Removal
- As Removal
- Ra removal
- Locations with space limitations

BENEFITS

- Higher loading rates
- Smaller filters
- Reduced plant footprint
- Greater cost efficiency



APPLICATIONS

- Supercharged greensand with 3x the catalytic coating is ideal for economical retrofits
- Fe, Mn, HS, As, and Ra removal
- Systems may be designed using either vertical or horizontal pressure filters, as well as gravity filters

BENEFITS

- More effective at higher operating temperatures
- Higher differential pressures than the competition
- Higher MnO₂ surface content at 12% minimum vs. 4.5-5% for competitive products
- Longer run times between backwashes and a greater margin of safety



APPLICATIONS

- SDI, TSS, Fe, & turbidity reduction
- SandPlus removes particles smaller than 5 microns at loading rates up to 20 gpm/ft²

BENEFITS

- Significantly reduced system footprint
- Higher particulate removal efficiency down to 3 to 5 micron particles
- Long media life allowing for economical water treatment operation



Our line of high flow-rate filter medias are cost-competitive, long-lasting, and NSF/ANSI 61 certified-offering proven efficiency for a wide variety of applications. See how you can benefit by pilot testing one or all of them.



	 75 OxiPlus ⁷⁵	 12 OxiPlus ¹²	 Sand ^{PLUS}
	These catalytic particles allow for higher flow rates, smaller filters, and economical treatment systems	Supercharged greensand with 3x the catalytic coating- Ideal for economical retrofits	Remove particles smaller than 5 µm at loading rates up to 20 gpm/ft ²
Application	Fe, Mn, H ₂ S, As, & Ra removal	Fe, Mn, H ₂ S, As, & Ra removal	SDI, TSS, Fe, & turbidity reduction
Composition	Naturally mined ore, 75% MnO ₂ by weight (on average)	Silica sand with 12% manganese dioxide coating	High purity aluminosilicate
Weight (lbs/ft ³)	115	84	55
Service flow (gpm/ft ²)	2-12	2-8	2-20
Typ. Oxidant Chlorine*	✓	✓	✓
Recommended backwash flow at 55°F (gpm/ft ²)	25 gpm/ft ² for 5 minutes	15-18 gpm/ft ² for 8-10 minutes	13-22 gpm/ft ² for 8-10 minutes
Typical bed depth	36" or 42"	12-36"	24-48"
Particle removal	≥ 10 micron	≥ 10 micron	≥ 3-5 micron
Mesh size	20 x 40	18 x 45	14 x 40
Effective size (mm)	0.3 - 0.5	0.55	0.45 - 0.55
Uniformity coefficient	< 1.65	< 1.6	≤ 1.7
Specific gravity (g/cm ³)	3.8	2.7	2.6
pH required	6.5 - 9	6.2 - 8.5	6 - 9
Porosity	50%	50%	55%
Freeboard	25% minimum	40% minimum	40% minimum

*No need for potassium permanganate and a detention basin!

LEADERSHIP BIOGRAPHIES

The recruiting of subject-matter experts to the ranks of WaterSurplus has driven our careful expansion over the decades, and remains our key to success in the future. Our collaborative and innovative business model only works because of the commitment of our team.



JOHN BARELLI

President / Owner

In 1989, John Barelli founded Pure Solutions, a manufacturer's representative company focused on water treatment equipment for industrial users. In 1999, John rebranded the company as WaterSurplus and narrowed its focus to investment recovery. Today the company's divisions include working to replenish the world's water and serve customer needs.



DILEEP AGNIHOTRI

Chief Technology Officer & Bev. Division Lead

Dileep Agnihotri, PhD is an expert in a multitude of water related technologies such as water-chemistry, membrane-based ultrafiltration and reverse osmosis, high-recovery and high-efficiency beverage water rooms and produced water treatment. At WaterSurplus, Dileep serves in multiple team leader roles including application and process engineering, beverage division operations, technology innovation, and R&D.



JIM GROOSE

Senior VP Business Development

Jim Groose, is an expert in water chemistry, groundwater treatment, municipal water treatment, and activated carbon filtration. He has 40 years of experience in the municipal water treatment industry. Jim is responsible for overseeing all sales, marketing, and filtration activities for WaterSurplus. Jim also developed the OxiPlus product line of NSF/ANSI-61 certified filtration media.



JON REINKE

Senior VP Rentals & Site Services

Jon Reinke, an expert in water treatment with over 30 years of experience, has served as Vice President of Rentals and Site Services at WaterSurplus since 2017. Before joining WaterSurplus, Jon owned an independent water treatment consulting firm. Prior to that he was an Applications and Project Engineer at U.S. Filter and Interlate Water Systems and was a Mechanical Designer/Engineer at Illinois Water Treatment.



STEVEN JOHNSON

Senior VP Operations

Steven Johnson has over 30 years of experience working in the water treatment industry. Since joining WaterSurplus in 2012, Steven has brought internal infrastructure and procedural processes to business operations and engineering, increasing production efficiency and improving quality. Steven oversees all operations and including the production staff in refurbishment and new equipment.



WARREN MATHIEU

Vice President New Products Division

Warren Mathieu is an expert in reverse osmosis water treatment and ion exchange resin systems. Since joining WaterSurplus in 2000, Warren has developed partnerships with original equipment manufacturers allowing WaterSurplus to stock and showcase thousands of new products. Prior to joining WaterSurplus, Warren served in management at U.S. Filter, Sybron Chemicals, and Illinois Water Treatment.

THANK YOU



CONTACT US

PHONE : (800) 919-0888

E-MAIL : INFO@WATERSURPLUS.COM

LOCATION : 726 BEACON ST, LOVES PARK, IL 61107

2024

watersurplus.com

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Patel/B. Smith

Budgeted: Yes

Budgeted Amount: \$365,000

Cost Estimate: \$357,920

Funding Source: R&R

Program/Line Item No.: R24020

General Counsel Approval: N/A

Engineers Report: N/A

CEQA Compliance: Cat. Ex.

Subject: K-2025-1: KRAEMER BASIN CHECK VALVE REPLACEMENTS: NOTICE OF COMPLETION AND RATIFY CHANGE ORDER

SUMMARY

Construction of the Kraemer Basin Check Valve Replacement project by Innovative Construction Solutions began in February and was completed in December 2025. Staff recommends filing a Notice of Completion and ratifying a change order for Contract K-2025-1.

RECOMMENDATION

Agendize for January 21 Board Meeting:

1. Ratify issuance of Change Order No. 1 to Innovative Construction Solutions for a total amount of \$10,420; and
2. Accept completion of work and authorize filing a Notice of Completion for Contract No. K-2025: Kraemer Basin Check Valve Replacements.

BACKGROUND/ANALYSIS

The Kraemer Basin pump station and associated piping were constructed in 1990. The 35-year-old pump station is used to dewater the basin for cleaning and to maximize storage for stormwater capture. The pumping system includes three pumps with a 30-inch check valve on each one's discharge piping. The check valves ensure that water only travels away from the pumps, thereby preventing water from entering the basin in a way that would cause the pumps to spin backwards. The original ball check valves have failed, and the District awarded Contract K-2025-1 to Innovative Construction Solutions on February 12, 2025, to replace the valves with traditional tilted disc check valves.

One change order was executed under the General Manager's signing authority. Change Order No. 1 included additional work to remove and replace mortar on the flange joints, and removal and replacement of grout in the pipe saddle supports. The change order value is \$10,419.13, which represents a 3% percentage for this contract. The project budget is summarized in Table 1.

Staff recommends ratification of Change Order No. 1 and authorizing a Notice of Completion for Contract K-2025-1 with Innovative Construction Solutions.

Table 1: K-2025-1 Project Budget

Description	Budget 2/12/2025	Final Expenses
Design, Construction Management, Permitting		
In-House	\$ 0	\$ 0
Construction		
Contract K-2025-1	\$ 347,500	\$ 347,500
Change Order 1	-	\$ 10,420
Project Contingency	\$ 17,500	\$ 0
Total Project Budget	\$ 365,000	\$ 357,920

PRIOR RELEVANT BOARD ACTIONS

2/12/25, R25-2-17: Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. K-2025-1; Increase Kraemer Basin Check Valve Replacement project budget by \$165,000, for a total project budget of \$365,000; and accept bid and award contract K-2025-1 to Innovative Construction Solutions for an amount not to exceed \$347,500.

11/20/24, R24-11-133: Publication of Notice Inviting Bids is authorized for Contract No. K-2025-1: Kraemer Basin Check Valve Replacements project. Filing of a Categorical Exemption for the Kraemer Basin Check Valve Replacements project in compliance with the California Environmental Quality Act (CEQA) guidelines.

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026
To: Water Issues Committee
Board of Directors
From: John Kennedy
Staff Contact: C. Johnson/J.Dadakis

Budgeted: Yes
Budgeted Amount: \$67,500
Cost Estimate: \$60,000
Funding Source: General Fund
Program/ Line Item No. 1046.53001.9922
General Counsel Approval: N/A
Engineers/Feasibility Report: N/A
CEQA Compliance: N/A

Subject: AGREEMENT WITH DDB ENGINEERING FOR THE PREPARATION OF 2025 GWRS ANNUAL REPORT

SUMMARY

Staff recommend issuance of a Professional Service Agreement with DDB Engineering Inc. for the preparation of the calendar year 2025 GWRS Annual Report. Preparation of the Annual Report by an engineer registered in California and experienced in the fields of wastewater treatment and public water supply is a requirement of the GWRS Regional Board permit and state Title 22 regulations. DDB Engineering possesses the qualifications and long-standing familiarity with the GWRS project to prepare the required Annual Report efficiently.

Attachment: DDB Engineering Inc. proposal dated December 15, 2025

RECOMMENDATION

Agendize for January 21 Board meeting: Authorize issuance of Agreement to DDB Engineering Inc. for an amount not to exceed \$60,000 to provide consulting services for the preparation of the calendar year 2025 GWRS Annual Report.

BACKGROUND/ANALYSIS

The District's permit to operate the Groundwater Replenishment System (GWRS) was issued by the Santa Ana Regional Water Quality Control Board (RWQCB) via Order No. R8-2022-0050 on December 2, 2022. The permit requires an Annual Report to be submitted to the RWQCB by June 30 of each year. California Code of Regulations Title 22 additionally requires that the report be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply.

The purpose of the report is to present an in-depth review of GWRS treatment, Talbert Barrier, Mid-Basin Injection, and Miller/Kraemer/Miraloma/La Palma Basin operations, performance, and water quality for the calendar year. The Annual Report is used as a primary reference by District staff and is frequently distributed to external parties seeking information about the project.

Since 2004, the GWRS Annual Report has been produced each year by DDB Engineering, Inc. (DDBE). DDBE has been involved with the GWRS treatment and

permitting process since the inception of the project. Throughout design, startup, and operations of the original GWRS project, GWRS Initial Expansion, and GWRS Final Expansion projects, DDBE provided a range of regulatory support and engineering services for all permit applications, amendments, and compliance related issues, including development of the required Operation Optimization Plans (OOP) and Title 22 Engineering Reports.

DDBE is uniquely qualified to prepare the Annual Report and brings a wide range of comprehensive knowledge and direct experience with the GWRS treatment processes, as well as regulatory permit and compliance issues. Debra Burris, P.E., the firm's principal, and her staff have done an outstanding job of helping the District comply with GWRS reporting requirements from the RWQCB and the state Division of Drinking Water (DDW). Furthermore, DDBE's history with the project, plus experience preparing Annual Reports and earlier GWRS permits, provides significant cost and time efficiencies to the District.

PRIOR RELEVANT BOARD ACTIONS

1/15/25, R25-1-4: Authorize issuance of Agreement to DDB Engineering Inc. for an amount not to exceed \$58,000 to provide consulting services for the preparation of the calendar year 2024 GWRS Annual Report

1/17/24, R24-1-4: Authorize issuance of Agreement to DDB Engineering Inc. for an amount not to exceed \$62,580 to provide consulting services for the preparation of the calendar year 2023 GWRS Annual Report

1/18/23, R23-1-8: Authorize issuance of Agreement to DDB Engineering Inc. for an amount not to exceed \$58,825 to provide consulting services for the preparation of the calendar year 2022 GWRS Annual Report

1/19/22, R22-1-5: Authorize issuance of agreement to DDB Engineering Inc. for an amount not to exceed \$57,750 to provide consulting services for the preparation of the calendar year 2021 GWRS Annual Report.

7/21/21, R21-7-104: Authorize amendment to existing agreement with DDB Engineering Inc. issued pursuant to Board Action R17-11-144 for an amount not to exceed \$151,350 to provide additional permitting and regulatory support services for the GWRS Final Expansion Project.

December 15, 2025

Orange County Water District
Attn: Mr. Jason Dadakis, P.G., C.HG
Executive Director of Water Quality and Technical Resources
18700 Ward Street
Fountain Valley, CA 92708

Subject : Groundwater Replenishment System
Proposal for 2025 Annual Report

Dear Mr. Dadakis:

DDB Engineering, Inc. is pleased to submit this proposal to prepare the 2025 Annual Report for the Groundwater Replenishment System (GWRS) for your consideration.

The Annual Report will fulfill requirements designated in the current GWRS permit for submittal of an annual report to the State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW) and Regional Water Quality Control Board (RWQCB). The report will summarize how the GWRS complied with the permit and Title 22 Water Recycling Criteria for groundwater replenishment using purified recycled water as well as non-potable uses. Water quality results for health and performance-based chemicals of emerging concern and surrogates per the SWRCB Recycled Water Policy and required by the permit will also be presented. The report will provide information about purified recycled water production, water quality, source water, treatment process performance, facilities' operations, groundwater recharge and monitoring, and non-potable uses. Effectively, the annual report will memorialize the GWRS performance during 2025.

We anticipate that the organization of the 2025 Annual Report will be similar to that of the previous year's report, featuring a clear format to document regulatory compliance with appendices of detailed supporting information about the GWRS performance. We will use OCWD's flow and water quality data, monthly operating reports, groundwater monitoring records, and other available information to prepare the report. We will coordinate with District staff to present the hydrogeologic evaluations in the annual report.

The attached spreadsheet itemizes the tasks associated with the scope of work for preparation of the 2025 GWRS Annual Report, showing the estimated level of effort and cost associated with each task. As we have done in the past, three submittals (draft, revised draft, and final) and one focus review meeting are envisioned. The initial data gathering will be handled via email or taken from monthly operations reports. The next step will be to analyze the data and prepare the draft report for the District's review. We believe that electronic markups of the draft report are an efficient review method. Following revisions, the revised draft report will be submitted for District review and input. At that point, we will hold a workshop with the District to address any outstanding comments. Lastly, we will prepare the final report, delivering one unbound hardcopy original, stamped and signed, plus an electronic copy (pdf format) for reproduction (as needed) for the District's submittal to the RWQCB and DDW before the June 30th deadline.

Mr. Jason Dadakis
Orange County Water District

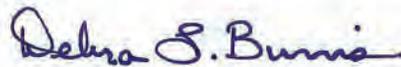
Page 2
December 15, 2025

Having worked on numerous facets of GWRS for many years, including preparation of annual reports, we believe DDB Engineering, Inc. is uniquely positioned with the necessary project background to efficiently develop and complete the 2025 Annual Report. As Principal Engineer, I will accomplish the majority of the effort and be responsible for the report; Brandi Thrasher, P.E., who has worked on prior annual reports, will serve as Project Engineer and provide as-needed support.

We appreciate this opportunity to continue to serve the District. Please contact me if you have any questions or need more information.

Sincerely,

DDB Engineering, Inc.



Debra L. Burris, P.E., BCEE, D. WRE
Principal

Cc: Claire Johnson, OCWD

Enclosure



**PROPOSAL for PROFESSIONAL ENGINEERING SERVICES for GROUNDWATER REPLENISHMENT SYSTEM
2025 ANNUAL REPORT
submitted to
ORANGE COUNTY WATER DISTRICT**

Estimated Labor and Fee Breakdown

Task	Description*	Labor (Manhours)		Miscellaneous Expenses	Total Estimated Fee
		Principal Engineer	Project Engineer		
	Hourly Rate	\$227	\$168		
2025 Annual Report					
1.	Gather information re: operations/flows/water quality data	2			\$ 454
2.	Analyze water quality data, process performance, operating records	80	16		\$ 20,848
3.	Prepare and submit draft report for review	104	2		\$ 23,944
4.	Revise report and submit revised draft report for review	44	1		\$ 10,156
5.	Meet (1) to receive and discuss comments on revised draft report	4		\$ 30	\$ 938
6.	Prepare and submit final report	16		\$ 28	\$ 3,660
TOTAL		250	19	\$ 58	\$ 60,000

* Notes & Assumptions:

- Table of contents (outline) for the 2025 report is anticipated to be similar to that of the 2024 annual report.
- Water quality data, flow data and operations reports are available from OCWD.
- Hydrogeologic evaluations are by OCWD for incorporation into the report.
- Draft and revised draft submittals are electronic files. Review comments on draft and revised draft are electronic files (track-changes with comments).
- Final report submittal is a pdf and one hardcopy mock-up for reproduction (by OCWD). Final report Word and Excel files will be available.
- One focus meeting is anticipated for the revised draft report review.
- Expenses include mileage/postage/delivery and minor reproduction costs (major reproduction will be by OCWD).

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Herndon/D. Mark

Budgeted: Yes

Budgeted Amount: \$1,331,000 (FY26-27)

Cost Estimate: \$1,331,000

Funding Source: General Fund

Program/Line Item No.: 1050.56026.9932

General Counsel Approval: N/A

Engineers/Feasibility Report: N/A

CEQA Compliance: N/A

Subject: ALAMITOS SEAWATER BARRIER 2026-27 OPERATIONS AND MAINTENANCE BUDGET

SUMMARY

Staff recommends approval of the 2026-27 Alamitos Barrier operations and maintenance (O&M) budget of \$3,320,000, of which \$1,331,000 is the District's share, as proposed by the Alamitos Barrier Joint Management Committee (JMC).

Attachment: Alamitos Barrier 2026-27 Operation and Maintenance Budget Table

RECOMMENDATION

Agendize for January 21 Board meeting: Approve the Alamitos Barrier 2026-27 total O&M budget in the amount of \$3,320,000 and authorize the amount of the District's share not to exceed \$1,331,000 payable to the Los Angeles County Department of Public Works after receipt and review of invoices.

BACKGROUND/ANALYSIS

In 1964, the District entered into an "Agreement for the Cooperative Implementation of Alamitos Barrier Project," with the Los Angeles County Flood Control District (now part of the Los Angeles County Department of Public Works - LACPW). Under the terms of the agreement, the LACPW operates and maintains the Alamitos Seawater Barrier and its physical facilities under the direction of the interagency Joint Management Committee (JMC). The JMC comprises eight agency staff members, half appointed by LACPW and half appointed by the District.

Each year the JMC reviews and recommends for approval an O&M budget for the upcoming fiscal year. The barrier O&M budget comprises several activities including injection facilities O&M and administration, monitoring well data collection and maintenance, data analysis and reporting, and insurance. The total O&M budget is divided between LACPW and OCWD in proportion to the water injected into the barrier by each agency. The District's share of total injection (8,000 AF/year) is estimated to be about 40% or 3,200 AF/year.

On November 13, 2025, the JMC proposed a total O&M budget of \$3,320,000 for 2026-27, of which the District's estimated share is \$1,331,000. These amounts include

\$140,000 for liability insurance premiums which are shared equally between LACPW and OCWD. There is a lag time in receiving invoices from LACPW, so one-half of the annual expenses is paid in FY26-27, and the other half is paid in FY27-28. Staff recommends Board approval of the O&M budget and payment of the District's share.

PRIOR RELEVANT BOARD ACTIONS

1/15/25, M25-5 - Approve the Alamitos Barrier 2025-26 total O&M budget in the amount of \$3,265,000, and authorize the amount of the District's share not to exceed \$1,304,500 payable to the Los Angeles County Department of Public Works after receipt and review of invoices; and appoint Brendan Neel to replace retiring Gary Yoshiba to serve on the Alamitos Barrier Joint Management Committee.

9/16/15, R15-9-125 - Approve and authorize execution of *Amendment to Agreement for Cooperative Implementation of Alamitos Barrier Project, Supplement No. 8* with the Los Angeles County Department of Public Works (LACDPW) to revise the District's annual payment to LACDPW that incorporates a prorated portion of the actual costs of the Alamitos Barrier maintenance yard.

9/17/14, R14-9-126 - Approve and authorize execution of the cost-sharing *Agreement for Construction of Additional Facilities for the Alamitos Barrier Project Supplement No. 7* with the LACDPW for the design and construction of injection and monitoring well facilities and payment by LACDPW to OCWD at one-half of the cost of the new facilities located between Points B and C for a total not to exceed \$1,253,000; and approve an increase to the Alamitos Barrier Improvement Project budget by \$4,693,000 for a revised total capital project budget of \$14,752,000.

12/18/13, M13-181 – Authorize general liability insurance policy for the Alamitos Barrier for calendar year 2014 and authorize inclusion of general liability insurance premiums in future Alamitos Barrier annual O&M budgets submitted separately for Board approval.

9/16/98, R98-9-141 - Approve and authorize execution of Supplement No. 6 to Alamitos Barrier Project agreement with LACDPW. Provides for the District to construct additional barrier facilities identified in Geologist's Report on Alamitos Barrier Improvement Project Construction Unit 12, consisting of 5 new injection wells, one new extraction well, and 3 new monitoring wells.

3/17/93, R93-3-44 - Authorize execution of Supplement No. 5 to Alamitos Barrier Project agreement with Los Angeles County Flood Control District (now part of Los Angeles County Department of Public Works). Supplement provides for expansion of Alamitos Barrier Joint Management Committee from six to eight members (LACFCD and the District each to appoint one additional member)

10/4/89, R89-10-201 - Authorize execution of Supplement No. 4 to Alamitos Barrier Project agreement with Los Angeles County Flood Control District providing for joint participation in design, construction, operation and maintenance of the Alamitos Barrier Project. Provides for the District to design and construct required additional Alamitos Barrier facilities identified in the District's Engineer's Report regarding Seawater Intrusion at the Alamitos Barrier, approved 5/3/89 by Resolution No. 89-5-90.

4/17/85, R85-4-41 - Approve and authorize execution of Alamos Barrier Hydroelectric Project Site lease and Royalty Agreement with Los Angeles County Flood Control Dist. & Hydro Electric Constr. Inc.; & Supplement No. 3 to Alamos Barrier Project Agreement to provide for construction of hydroelectric project at Alamos Barrier.

9/25/69, R69-9-96 - Approve Supplement No. 2, Amending the Agreement for Cooperative Implementation of the Alamos Barrier Project.

1/20/65, R891 – Authorize Agreement with LACFCD for Geologic Services on Alamos Barrier Project (Supplement No. 1).

6/17/64, R831 - Approve Agreement for Cooperative Implementation of the Alamos Barrier Project.

ABP FY 2026-27 Operation and Maintenance Budget

JMC Item No.	Budget Item Description	Fiscal Year	TOTAL (LACFCD & OCWD)		LACFCD		OCWD	
			Budget	Actual	Budget	Actual	Budget	Actual
01	Injection Operations (Analysis and Direction)	2022-23	\$ 250,000	\$ 187,786	\$ 150,000	\$ 117,780	\$ 100,000	\$ 70,006
		2023-24	\$ 250,000	\$ 218,309	\$ 150,000	\$ 141,901	\$ 100,000	\$ 76,408
		2024-25	\$ 250,000	\$ 180,044	\$ 150,000	\$ 107,126	\$ 100,000	\$ 72,918
		2025-26	\$ 250,000		\$ 150,000		\$ 100,000	
		2026-27	\$ 250,000		\$ 150,000		\$ 100,000	
02	Injection Well Maintenance and Repair	2022-23	\$ 450,000	\$ 495,523	\$ 270,000	\$ 310,793	\$ 180,000	\$ 184,729
		2023-24	\$ 500,000	\$ 486,434	\$ 300,000	\$ 316,182	\$ 200,000	\$ 170,252
		2024-25	\$ 525,000	\$ 642,083	\$ 315,000	\$ 382,039	\$ 210,000	\$ 260,044
		2025-26	\$ 525,000		\$ 315,000		\$ 210,000	
		2026-27	\$ 550,000		\$ 330,000		\$ 220,000	
03	Operations of Injection Wells	2022-23	\$ 75,000	\$ 64,234	\$ 45,000	\$ 40,288	\$ 30,000	\$ 23,946
		2023-24	\$ 75,000	\$ 104,164	\$ 45,000	\$ 67,707	\$ 30,000	\$ 36,457
		2024-25	\$ 75,000	\$ 65,830	\$ 45,000	\$ 39,169	\$ 30,000	\$ 26,661
		2025-26	\$ 75,000		\$ 45,000		\$ 30,000	
		2026-27	\$ 75,000		\$ 45,000		\$ 30,000	
04	Extraction Operations (Analysis and Direction)	2022-23	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		2023-24	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		2024-25	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		2025-26	\$ -		\$ -		\$ -	
		2026-27	\$ -		\$ -		\$ -	
05	Extraction Well Maintenance, Repair, and Redevelopment	2022-23	\$ 10,000	\$ -	\$ 10,000	\$ -	\$ -	\$ -
		2023-24	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ -	\$ -
		2024-25	\$ 5,000	\$ -	\$ 5,000	\$ -	\$ -	\$ -
		2025-26	\$ 5,000		\$ 5,000		\$ -	
		2026-27	\$ 5,000		\$ 5,000		\$ -	
06	Extraction Well Operations	2022-23	\$ 5,000	\$ 912	\$ 5,000	\$ 912	\$ -	\$ -
		2023-24	\$ 5,000	\$ 2,386	\$ 5,000	\$ 2,386	\$ -	\$ -
		2024-25	\$ 5,000	\$ 3,459	\$ 5,000	\$ 3,459	\$ -	\$ -
		2025-26	\$ -		\$ -		\$ -	
		2026-27	\$ -		\$ -		\$ -	
07	ABP Supply line and Vaults (Maintenance and Repair)	2022-23	\$ 400,000	\$ 433,476	\$ 240,000	\$ 271,877	\$ 160,000	\$ 161,599
		2023-24	\$ 450,000	\$ 335,176	\$ 270,000	\$ 217,864	\$ 180,000	\$ 117,312
		2024-25	\$ 475,000	\$ 290,872	\$ 285,000	\$ 173,069	\$ 190,000	\$ 117,803
		2025-26	\$ 475,000		\$ 285,000		\$ 190,000	
		2026-27	\$ 450,000		\$ 270,000		\$ 180,000	
08	Observation Well Maintenance	2022-23	\$ 200,000	\$ 96,691	\$ 120,000	\$ 60,645	\$ 80,000	\$ 36,046
		2023-24	\$ 200,000	\$ 128,120	\$ 120,000	\$ 83,278	\$ 80,000	\$ 44,842
		2024-25	\$ 200,000	\$ 270,144	\$ 120,000	\$ 160,735	\$ 80,000	\$ 109,408
		2025-26	\$ 185,000		\$ 111,000		\$ 74,000	
		2026-27	\$ 200,000		\$ 120,000		\$ 80,000	
09	Groundwater Data Collection	2022-23	\$ 200,000	\$ 179,600	\$ 120,000	\$ 112,646	\$ 80,000	\$ 66,955
		2023-24	\$ 180,000	\$ 146,416	\$ 108,000	\$ 95,170	\$ 72,000	\$ 51,245
		2024-25	\$ 180,000	\$ 227,686	\$ 108,000	\$ 135,473	\$ 72,000	\$ 92,213
		2025-26	\$ 180,000		\$ 108,000		\$ 72,000	
		2026-27	\$ 180,000		\$ 108,000		\$ 72,000	
10	Yard Maintenance	2022-23	\$ 50,000	\$ 71,863	\$ 30,000	\$ 45,073	\$ 20,000	\$ 26,790
		2023-24	\$ 75,000	\$ 48,829	\$ 55,000	\$ 31,739	\$ 20,000	\$ 17,090
		2024-25	\$ 80,000	\$ 29,922	\$ 57,500	\$ 17,804	\$ 22,500	\$ 12,119
		2025-26	\$ 80,000		\$ 57,500		\$ 22,500	
		2026-27	\$ 70,000		\$ 51,000		\$ 19,000	
11	Injection Well Redevelopment	2022-23	\$ 1,000,000	\$ 1,249,732	\$ 600,000	\$ 783,835	\$ 400,000	\$ 465,897
		2023-24	\$ 1,000,000	\$ 1,357,602	\$ 600,000	\$ 882,441	\$ 400,000	\$ 475,161
		2024-25	\$ 1,200,000	\$ 1,127,863	\$ 720,000	\$ 671,078	\$ 480,000	\$ 456,784
		2025-26	\$ 1,300,000		\$ 780,000		\$ 520,000	
		2026-27	\$ 1,300,000		\$ 780,000		\$ 520,000	
12	Processing Data and Report Preparation	2022-23	\$ 70,000	\$ 46,450	\$ 42,000	\$ 29,134	\$ 28,000	\$ 17,317
		2023-24	\$ 60,000	\$ 55,292	\$ 36,000	\$ 35,939	\$ 24,000	\$ 19,352
		2024-25	\$ 60,000	\$ 61,969	\$ 36,000	\$ 36,871	\$ 24,000	\$ 25,097
		2025-26	\$ 60,000		\$ 36,000		\$ 24,000	
		2026-27	\$ 70,000		\$ 42,000		\$ 28,000	
13	Recycled Water Program Oversight	2022-23	\$ 30,000	\$ 10,106	\$ 18,000	\$ 6,339	\$ 12,000	\$ 3,768
		2023-24	\$ 30,000	\$ 30,279	\$ 18,000	\$ 19,681	\$ 12,000	\$ 10,598
		2024-25	\$ 30,000	\$ 25,336	\$ 18,000	\$ 15,075	\$ 12,000	\$ 10,261
		2025-26	\$ 30,000		\$ 18,000		\$ 12,000	
		2026-27	\$ 30,000		\$ 18,000		\$ 12,000	
14	Projects and Studies	2022-23	\$ 65,000	\$ 1,389,643	\$ 39,000	\$ 1,364,537	\$ 26,000	\$ 25,105
		2023-24	\$ 65,000	\$ 651,587	\$ 39,000	\$ 651,587	\$ 26,000	\$ -
		2024-25	\$ -	\$ 48,027	\$ -	\$ 48,027	\$ -	\$ -
		2025-26	\$ -		\$ -		\$ -	
		2026-27	\$ -		\$ -		\$ -	
15	ABP Liability Insurance	2022-23	\$ 80,000	\$ 76,352	\$ 40,000	\$ 38,176	\$ 40,000	\$ 38,176
		2023-24	\$ 85,000	\$ 80,530	\$ 42,500	\$ 40,265	\$ 42,500	\$ 40,265
		2024-25	\$ 85,000	\$ 95,128	\$ 42,500	\$ 47,564	\$ 42,500	\$ 47,564
		2025-26	\$ 100,000		\$ 50,000		\$ 50,000	
		2026-27	\$ 140,000		\$ 70,000		\$ 70,000	
Total ABP Expenditure		2022-23	\$ 2,885,000	\$ 4,302,370	\$ 1,729,000	\$ 3,182,035	\$ 1,156,000	\$ 1,120,334
		2023-24	\$ 2,980,000	\$ 3,645,124	\$ 1,793,500	\$ 2,586,140	\$ 1,186,500	\$ 1,058,982
		2024-25	\$ 3,170,000	\$ 3,068,361	\$ 1,907,000	\$ 1,837,489	\$ 1,263,000	\$ 1,230,872
		2025-26	\$ 3,265,000		\$ 1,960,500		\$ 1,304,500	
		2026-27	\$ 3,320,000		\$ 1,989,000		\$ 1,337,000	
ABP Operations and Maintenance [Item 16-Item 15]		2022-23	\$ 2,805,000	\$ 4,226,018	\$ 1,689,000	\$ 3,143,859	\$ 1,116,000	\$ 1,082,158
		2023-24	\$ 2,895,000	\$ 3,564,594	\$ 1,751,000	\$ 2,545,875	\$ 1,144,000	\$ 1,018,717
		2024-25	\$ 3,085,000	\$ 2,973,233	\$ 1,864,500	\$ 1,789,925	\$ 1,220,500	\$ 1,183,308
		2025-26	\$ 3,165,000		\$ 1,910,500		\$ 1,254,500	
		2026-27	\$ 3,180,000		\$ 1,919,000		\$ 1,261,000	

Volume of Water (AC-FEET)	Fiscal Year	TOTAL		WRD (LACFCD PORTION)		OCWD	
		Budget	Actual	Budget	Actual	Budget	Actual
	2022-23	7,500	6,475	4,500	2,414	3,000	4,061
	2023-24	8,000	6,041	4,800	3,926	3,200	2,114
	2024-25	8,000	5,349	4,800	3,181	3,200	2,168
	2025-26	8,000		4,800		3,200	
	2026-27	8,000		4,800		3,200	

Color Legend
 Blue Text = No change to budget
 Green Text = Budget increase
 Red Text = Budget reduction

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: M. Patel/B. Smith

Budgeted: Yes

Budgeted Amount: \$1,000,000

Cost Estimate: \$1,000,000

Funding Source: R&R

Program/Line Item No.: R25052

General Counsel Approval: N/A

Engineers Report: N/A

CEQA Compliance: Cat. Ex.

**Subject: WF-2025-1: ASPHALT PAVEMENT REHABILITATION 2026
PUBLICATION OF NOTICE INVITING BIDS**

SUMMARY

The bid package, consisting of plans and technical specifications, for the Asphalt Pavement Rehabilitation 2026 Project is nearly complete. The project includes rehabilitating approximately 10 of the District's 35 acres of asphalt pavement.

RECOMMENDATION

Agendize for January 21 Board Meeting:

1. Authorize publication of Notice Inviting Bids for Contract No. WF-2025-1: Asphalt Rehabilitation 2026 project; and
2. Authorize filing of a Categorical Exemption for the Asphalt Rehabilitation 2026 project in compliance with the California Environmental Quality Act (CEQA) guidelines.

BACKGROUND/ANALYSIS

The District's properties include asphalt pavements on roadways, parking lots, and maintenance yards that total an area greater than 35 acres across more than a dozen different sites. The sites are located in the cities of Fountain Valley, Anaheim, Orange, Corona, and unincorporated Orange County areas. Some of the asphalt pavements are failing, while others are in various stages of disrepair. If proactively managed, asphalt pavements can have a long lifespan. Active maintenance of the surfaces reduces the lifecycle costs of asphalt pavements compared to replacements required after catastrophic failures. As part of its Replacement and Rehabilitation (R&R) program, the District sets aside funds each year for pavement maintenance.

In 2024, a Pavement Management Plan (PMP) was created that defines the Pavement Condition Index (PCI) for each section of asphalt, estimates the annual investment amounts that are required to maintain or improve the asphalt conditions, and recommends the sequence of work to be the most cost effective in the long-term. The PCI scale ranges from 0 to 100 and the weighted total PCI for District asphalts was found to be 74. Staff are following a multi-year plan to accomplish the recommendations

in the PMP. The work is not expected to be eligible for grant funding since the pavement areas are generally not open for public use.

In May 2025, the District entered into an agreement with Tait and Associates, Inc. (Tait) to design the first year's construction work. The scope of work for this year includes approximately 10 acres of asphalt pavement at the Fountain Valley campus (administration and GWRS treatment plant areas), the Green Acres Project's Santa Ana Reservoir, and recharge facility sites at Burris, Riverview, Five Coves, and Kraemer Basins. Tait is nearing completion of the bid package, and staff recommends authorization of publication of the Notice Inviting Bids for the Asphalt Pavement Rehabilitation 2026 project. Table 1 shows the anticipated schedule for the project.

Table 1: Project Schedule

Description	Date
Complete Design	January 2026
Advertise for Construction	February 2026
Award Construction Contract	March 2026
Construction Completion	October 2026

The project's construction costs are expected to exceed the budget of \$1,000,000 because industry labor and material costs have increased, additional scope has been included to address on-going pavement issues, and a portion of the city of Santa Ana's pavement is included. If the City agrees with bid prices for their portion of pavement rehabilitation, then they will reimburse OCWD for that expense; otherwise, the City pavement rehabilitation will be removed from the construction scope.

The project is consistent with the California Environmental Quality Act (CEQA) Categorical Exemption for existing facilities for the repair, maintenance, permitting, or minor alteration of existing facilities involving negligible or no expansion of existing or former use (Class 1). This is because the project consists of replacement or reconstruction of existing streets, sidewalks, gutters, bicycle and pedestrian trails, and similar facilities involving negligible or no expansion of capacity.

PRIOR RELEVANT BOARD ACTIONS

05/21/25, R25-5-74: Authorize issuance of Agreement to Tait and Associates, Inc. for an amount not to exceed \$100,000 for the 2025 Asphalt Pavement Rehabilitation Design.

03/19/2025, R25-3-34: Authorize issuance of a Request for Proposals for the 2025 Asphalt Pavement Rehabilitation Design.

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/A. Perry

Budgeted: Yes

Budgeted Amount: \$43,980

Cost Estimate: \$43,980

Funding Source: WIFIA; SWRCB

Program/Line Item No.: C19020

General Counsel Approval: Yes

Engineers Report: Completed

CEQA Compliance: Cat. Ex.

Subject: AUTHORIZE WORK ORDER TO PSOMAS FOR ARCHEOLOGICAL MONITORING AT SA-2023-1

SUMMARY

The conditions of approval for the SWRCB Principal Forgiveness Grant that is partially funding construction of the City of Santa Ana PFAS Water Treatment Plant Well Nos. 27 & 28 require the implementation of archeological construction monitoring during any activities that involve ground disturbance and/or excavation. Archeological monitoring was conducted in 2024 and 2025 for earlier phases of this work effort but additional new excavations require further monitoring of the remainder of the construction of the facilities.

RECOMMENDATION

Agendize for January 21 Board meeting:

1. Ratify Work Order No. 1 to PSOMAS in the amount of \$6,260 for Cultural Resources Monitoring Support Services; and
2. Authorize Issuance of a Work Order No. 1A to PSOMAS, in an amount not-to-exceed \$43,980, to continue archeological monitoring during new ground disturbance activities for the construction of City of Santa Ana PFAS Water Treatment Plant Well Nos. 27 & 28.

BACKGROUND/ANALYSIS

To restore the use of groundwater supplies impacted by PFAS contaminants, the Board awarded Contract SA-2023-1 to Caliagua Incorporated for the construction of PFAS treatment at Wells SA-27 and SA-28. The Wells SA-27 & SA-28 project received a SWRCB Principal Forgiveness Grant that will fund up to 50% of OCWD's project costs up to \$5M. The conditions of approval of this grant require the implementation of archeological monitoring during construction activities that require new ground disturbances.

In November 2024, the Board authorized a work order to Environmental Science Associates to conduct archeological monitoring for the earlier phases of the project. PSOMAS has been approved as an on-call environmental consultant and has demonstrated expertise in archeological reporting, including the preparation of studies

for projects in Prado Basin. An additional work order to PSOMAS under their on-call agreement was authorized within the General Manager's authority to perform some additional archeological monitoring during excavation. The budget for those work efforts has been exhausted and additional monitoring is still required to complete the project in accordance with Grant requirements. OCWD is soliciting a proposal from the consulting firm PSOMAS for the remaining archeological monitoring.

Staff recommends authorizing the issuance of a work order with PSOMAS, in the amount of \$43,980, to continue archeological monitoring for the remainder of new ground disturbance activities at the City of Santa Ana PFAS Water Treatment Plant Well Nos. 27 & 28. Staff proposes adjusting funds budgeted for Contingency for the Work Orders to PSOMAS. The proposed project budget is shown in Table 1, below:

Table 1: City of Santa Ana PFAS Water Treatment Plant Wells No. 27 & 28 Budget Summary

Description	Budget	Proposed Expenditure
Design and Construction Management		
Design-Work Order 3 Wells 27 & 28 (Stantec)	\$870,332	\$870,332
Work Order 3A (CM Services)	\$517,968	\$517,968
Design and CM Subtotal	\$1,388,300	\$1,388,300
Construction		
Contract SA-2023-1	\$12,327,491	\$12,327,491
Treatment Vessels (Aqueous Vets)	\$1,087,020	\$1,087,020
IX Resin	\$850,000	\$850,000
Permits and Advertisement Costs	\$50,000	\$50,000
Staff Expenses	\$50,000	\$50,000
Archeological Monitoring		
ESA – Work Order 1	\$38,760	\$38,760
<i>PSOMAS – Work Order 1</i>	<i>\$0</i>	<i>\$6,260</i>
<i>PSOMAS – Work Order 1a</i>	<i>\$0</i>	<i>\$43,980</i>
Construction Subtotal	\$14,403,271	\$14,463,271
<i>Project Contingency (5% of Contract Amount)</i>	<i>\$577,615</i>	<i>\$527,375</i>
Total Project Budget	\$16,369,186	\$16,369,186
City of Santa Ana Contribution Appx.	\$4,282,150	\$4,282,150
Total Cost to OCWD	\$12,087,036	\$12,087,036

PRIOR RELEVANT BOARD ACTIONS

07/02/2025, R25-7-106: Authorize On-Call Environmental Service Agreements with Environmental Science Associates, PSOMAS, Helix Environmental Planning, Chamber Group and Rincon.

11/20/24, R24-11-143: Authorize Work Order No. 12 to Agreement 1135 with Environmental Science Associates ESA, in the amount of \$38,760 to conduct archeological monitoring for portions of the construction of City of Santa Ana PFAS Water Treatment Plant Well Nos. 27 & 28.

06/19/2024, R24-6-63: Award Contract SA-2023-1 City of Santa Ana PFAS Water Treatment Plant Wells No. 27 & 28 to Caliagua Incorporated.

12/15/2021, R21-12-177: Approve the Engineer's Report for the City of Santa Ana Wells SA-27, SA-28, SA-31, and SA-40 PFAS Water Treatment Plant Project and determine the project feasible, necessary and beneficial to the lands of the District; Authorize the General Manager to execute the Agreement Regarding Temporary Right of Entry between the District and the Redwoods Homeowners Association.

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

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

Budgeted: No

Proposed Budget: \$288,827

Cost Estimate: \$288,827

Funding Source: R&R

Program/Line Item No.: R22011

General Counsel Approval: Yes

Engineers Report: N/A

CEQA Compliance: N/A

Subject: AUTHORIZE CHANGE ORDER TO MURRAY COMPANY FOR REVERSE OSMOSIS CLEAN-IN-PLACE PIPE REPLACEMENT

SUMMARY

OCWD awarded Murray Company a contract for the Reverse Osmosis (RO) Clean-In-Place (CIP) Valve Relocation Project, Contract GWRS-2025-1, in May 2025. Murray is currently completing the work associated with this contract, and other damage to the RO CIP Piping has been found that requires emergency repairs. Staff recommends authorizing a change order to OCWD's contract with Murray Company in the amount of \$288,827 and increasing the total project budget to \$788,827.

RECOMMENDATION

Agendize for January 21 Board meeting:

1. Authorize Change Order No. 1 to Murray Company for Reverse Osmosis Clean-in-Place Pipe Replacements in the amount of \$288,827; and
2. Increase the Reverse Osmosis CIP Valve Relocation Project budget to \$788,827.

BACKGROUND/ANALYSIS

During construction of the GWRS a Clean-in-Place (CIP) system was installed to clean the Reverse Osmosis (RO) membranes without having to remove them from their housings. The CIP system runs throughout the RO Building and consists of hundreds of feet of PVC piping and multiple valves that feed cleaning solution to the RO units. Staff examined the system and determined that several of the valves needed to be relocated so they could be safely operated from the ground floor of the RO building, instead of having to enter the basement and navigate around several large pipes to access the valves directly. The Board awarded a contract to Murray Company in May of 2025 to relocate these valves and replace the piping in the old valve locations with new stainless steel pipe using a portion of the R&R funds previously budgeted for RO CIP piping replacements. The Contract involves removing sections of existing PVC CIP pipe; relocating CIP valves to new locations; and furnishing, custom fabricating, and electro-polishing new stainless steel pipe and fittings to replace the sections of pipe where the valves were originally located.

In addition, staff had already realized that some of the original PVC piping for the CIP system was starting to fail and had previously budgeted a project to replace the failing piping with stainless steel piping that has a much longer lifespan. Staff intends to continue replacing small sections of the PVC RO CIP pipe with new stainless steel in small sections, until all the PVC CIP pipe is replaced, using funds budgeted in the R&R budget. However, recently several areas of the PVC CIP system have failed at “elbow” and “T” fittings due to the high stresses placed on the pipe in these locations, making this replacement much more urgent to maintain employee safety.

These photos show a section of 12-inch diameter CIP pipe that has “blown-out”



Staff requested a quote from Murray Company to replace strategic fittings and sections of pipe that are most likely to fail due to age and location. Murray provided a quote for replacing these PVC pipes and fittings with stainless steel pipe, equivalent to the work that they are currently performing with the valve relocation project. Murray Company’s current contract was competitively bid, and they were the lowest bidder. Their current proposal does not include additional costs for mobilization since they are currently onsite performing work on the RO CIP system and is otherwise similar in magnitude to their competitively bid prices.

Due to the potential for further damage to the CIP system due to the age of the PVC pipe, Staff recommends authorizing issuance of Change Order No. 1 to Murray Company to complete additional RO CIP Pipe Replacements in the amount of \$288,827 and increasing the project budget for this portion of the replacements to \$719,712.

The CIP Valve Relocation Project was added to the currently budgeted CIP PVC Piping System Replacement Project. The new project budget for the valve relocation portion of the project is summarized in Table 1, below:

Table 1: RO CIP Valve Relocation Budget Summary

Description	Approved Budget	Proposed Expenditure
Design		
Black and Veatch	\$49,150	\$49,150
Design Subtotal	\$49,150	\$49,150
Construction		
Contract GWRS-2025-1	\$340,885	\$340,885
<i>CCO No. 1 – Additional CIP Pipe Replacement</i>		\$288,827
Permits and Advertisement Costs	\$50,000	\$50,000
Staff Expenses	\$40,000	\$40,000
Construction Subtotal	\$430,885	\$719,712
Project Contingency	\$19,965	\$19,965
Total Project Budget	\$500,000	\$788,827

PRIOR RELEVANT BOARD ACTIONS

05/21/25, R25-5-77: Approve Agreement to Murray Company for the Reverse Osmosis Clean-in-Place (CIP) Valve Relocation Project, Contract GWRS-2025-1

11/14/24, R24-11-145: Authorizing Publication of Notice Inviting Bids for Contract No. GWRS-2024-1, Reverse Osmosis CIP Valve Relocation Project

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/L. Esguerra

Budgeted: Partially

Budgeted Amount: \$30,000,000

Cost Estimate: \$31,474,850

Funding Source: CIP

Program/Line Item No.: C24008

General Counsel Approval: Yes

Engineers Report: Completed

CEQA Compliance: Cat. Ex.

Subject: AWARD CONTRACT NO. SA-2025-1 CITY OF SANTA ANA PFAS TREATMENT AT JOHN GARTHE RESERVOIR TO KINGMAN CONSTRUCTION, INC. AND BUDGET INCREASE

SUMMARY

A total of seven construction bids were received on December 11, 2025 for the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project, Contract No. SA-2025-1 (the "Project"). Based on a review of bids received, staff recommends awarding a contract to Kingman Construction, Inc. as the responsible bidder submitting the lowest responsive bid, in the amount of \$23,587,500. Staff also recommends increasing the project budget by \$1,474,850.

Attachments: Affidavit of Publication for Notice Inviting Bids for Contract SA-2025-1 and Presentation.

RECOMMENDATION

Agendize for January 21 Board Meeting:

1. Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SA-2025-1 City of Santa Ana PFAS Treatment at John Garthe Reservoir Project;
2. Ratify issuance of Addenda 1 through 8;
3. Accept bid and authorize award of Contract SA-2025-1 to the lowest responsive and responsible bidder, Kingman Construction, Inc., in the amount of \$23,587,500; and
4. Increase project budget by \$1,474,850 for a total project budget in the amount of \$31,474,850

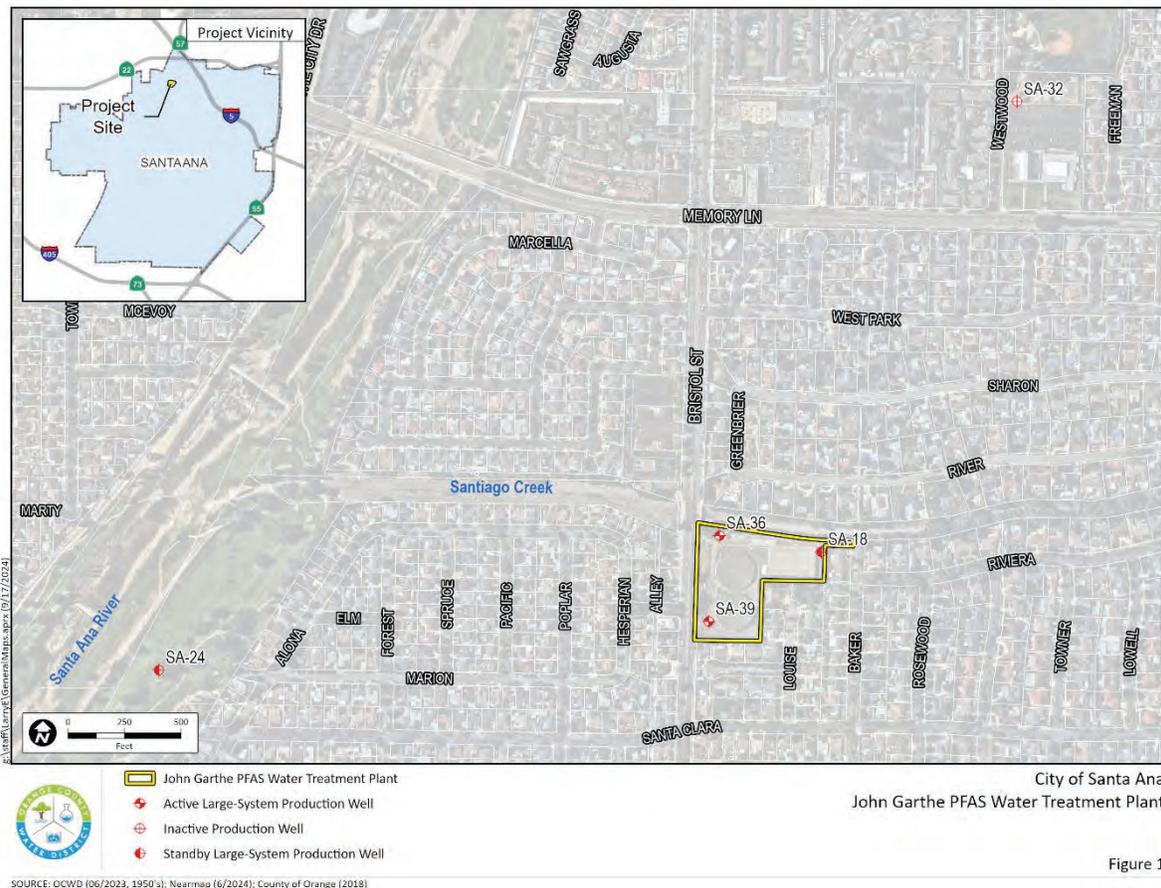
BACKGROUND/ANALYSIS

In anticipation of the US Environmental Protection Agency issuing National Primary Drinking Water Regulation for PFAS, the City of Santa Ana (City) prepared conceptual layouts for PFAS treatment systems for five City wells: 18, 24, 32, 36, and 39. In November 2023, the City of Santa Ana contracted design to Tetra Tech for the installation of six ion exchange vessel systems for the treatment of five wells at a

centralized PFAS treatment plant located at the City's John Garthe Reservoir, shown in Figure 1. Due to site constraints at the reservoir site IX, treatment with a capacity of 9,600 gallons per minute has been selected.

The City completed design and requested the project be "OCWD-Built" and be reimbursed for design costs per the District's PFAS program. As written in the PFAS Agreement, Producers may include additional work beyond the PFAS Treatment and Producers will reimburse the District for the extra cost. The design includes rehabilitation or replacement work that is identified as betterments to the existing facilities, including additional improvements to the City's existing on-site wells and existing hydrogenator. Staff estimated the City's contribution based on the construction bid submitted by Kingman Construction, Inc. and estimates a cost share of 80% District to 20% City for Construction, Engineering Construction Support and Construction Management and Inspection Services. The final cost share will be confirmed after the additional improvements are completed and the actual construction costs are determined.

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 systems, site piping, well modifications to 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 appurtenances. This project will provide treatment for five City of Santa Ana Wells – 18, 24, 32, 26, and 39.

The bid advertisement period for Contract No. SA-2025-1 commenced September 30, 2025, and spanned 91 calendar days. Eight Addenda were issued during the bid advertisement period. Addendum No. 1 was issued on October 17, 2025, to provide a revised bid schedule and responses to potential bidder's questions. Addendum No. 2 was issued on October 21, 2025, to extend the question period and revise the bid date. Addendum No. 3 was issued on October 29, 2025, to provide revised specifications, revised plans, and responses to potential bidder's questions. Addendum No. 4 was issued on November 5, 2025 to provide revised specifications, revised plans, and responses to potential bidder's questions. Addendum No. 5 was issued on November 12, 2025 to provide responses to potential bidder's questions. Addendum No. 6 was issued on November 13, 2025 to revise the bid date. Addendum No. 7 was issued on November 20, 2025 to provide responses to potential bidder's questions. Addendum No. 8 was issued on December 3, 2025 to revise the bid date and provide responses to potential bidder's questions.

Seven construction bids were received on December 11, 2025. A summary of the bids is shown below in Table 1.

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

Contractor	Bid Price
Kingman Construction, Inc.	\$ 23,587,500
Pacific Hydrotech Corp.	\$ 24,907,700
Covenant Technical Solutions, Inc.	\$ 25,815,000
GSE Construction Company Inc.	\$ 27,152,900
Caliagua, Inc.	\$ 28,295,600
Innovative Construction Solutions	\$ 28,332,000
ARB, Inc.	\$ 46,377,819

Staff reviewed the bid of Kingman Construction, Inc., checked references, reviewed good faith efforts submitted with their bid, and confirmed that its contractor's license is current, active, and in good standing with the State of California. Staff recommends awarding the construction contract to Kingman Construction, Inc. as the lowest responsive bidder in the amount of \$23,587,500 and increasing project budget by \$1,474,850 for a total project budget in the amount of \$31,474,850. The project budget for the City of Santa Ana PFAS Treatment at John Garthe Reservoir Project, Contract SA-2025-1, is summarized in Table 2.

**Table 2: City of Santa Ana PFAS Treatment at John Garthe Reservoir
Budget Summary**

Description	Budget
Design, Construction Management, Permitting	
Design (City of Santa Ana)	\$ 1,582,500
Engineering Construction Support (Tetra Tech)	\$ 746,000
Construction Management and Inspection (Butier)	\$ 2,107,243
Staff Expenses	\$ 100,000
Design, Construction Management, Permitting Sub-Total	\$ 4,535,743
Construction	
Contract SA-2025-1 (Kingman)	\$ 23,587,500
Bid Advertisement and Permitting	\$ 50,000
IX Resin	\$ 2,122,232
Construction Sub-Total	\$ 25,759,732
Project Contingency (5% of Contract Amount)	\$ 1,179,375
Total Project Budget	\$ 31,474,850
City of Santa Ana Estimated Contribution	\$ 4,573,436
Total Cost to OCWD	\$ 26,901,414

The expected project schedule is shown in Table 3.

**Table 3: 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 – Sep 2025
DDW Permitting	Nov 2023 – Jul 2028
Construction Contract SA-2025-1	Mar 2026 – Jul 2028

PRIOR RELEVANT BOARD ACTIONS

10/15/25, R25-10-179 –Authorizing Agreement to Butier Engineering Inc. for Construction Management and Inspection Services for SA-2025-1 City of Santa Ana PFAS Treatment at John Garthe Reservoir Project

6/18/25, R25-6-2 –Authorizing Publication of Notice Inviting Bids for Contract No. SA-2025-1 and Authorizing Issuance of a Request for Proposals for Construction Management Services

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

THE ORANGE COUNTY
REGISTER

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

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

<i>Account Number:</i>	5179533
<i>Ad Order Number:</i>	0011757577
<i>Customer's Reference/PO Number:</i>	
<i>Publication:</i>	The Orange County Register
<i>Publication Dates:</i>	09/30/2025
<i>Total Amount:</i>	\$807.33
<i>Payment Amount:</i>	\$0.00
<i>Amount Due:</i>	\$807.33
<i>Notice ID:</i>	oOaPNep5yU3YnT6Az2Wf
<i>Invoice Text:</i>	

0011757577

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**

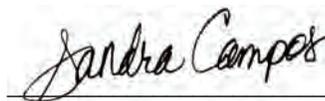
I am a citizen of the United States and a resident of the County aforesaid; I am over the age of eighteen years, and not party to or interested in the above-entitled matter. I am the principal clerk of the printer of The Orange County Register, a newspaper of general circulation, printed and published 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:

09/30/2025

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

Dated at Irvine, California

On this 30th day of September, 2025.



 Signature

NOTICE INVITING BIDS
 CITY OF SANTA ANA PFAS TREATMENT AT JOHN GARTHE RESERVOIR
 CONTRACT NO. SA-2025-1

PLEASE TAKE NOTICE that sealed bids will be received at the office of the Contracts Administrator of the Orange County Water District (District), 18700 Ward Street, Fountain Valley, CA 92708 (mailing address: P.O. Box 8300, Fountain Valley, CA 92728-8300), until **2:00 P.M. local time on Thursday, November 13th, 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 City of Santa Ana PFAS Treatment System at John Garthe Reservoir project includes construction of a twelve ion exchange pressure vessels, three pre-treatment cartridge filter vessels, and on-site sodium hypochlorite generation system with chemical storage for the removal of PFAS and disinfection of raw water produced from City Wells 18, 32, 36 and 39. The project includes sand separator installation for Well 32; well pump and motor upgrades and piping replacements for Wells 18, 36 and 39; replacement of the existing hydro-generator; piping improvements; construction of a new Well 39 electrical building and Well 18 well building; electrical and control improvements; programming; site improvements; and landscaping.

MANDATORY CONFERENCE. A mandatory pre-bid conference will be held virtually on **Monday, October 13, 2025, at 2:00 P.M. PT** via Zoom service. **Link to meeting:** <https://oewd.zoom.us/j/7829448534> **Meeting ID Number:** 878-2641-5534. A mandatory project site walk will be held at the project site, 2401 N Bristol Street, Santa Ana, CA 92705, on **Tuesday, October 14, 2025, at 9:00 A.M. PT.** All potential bidders, contractors and other interested parties are required to attend both the pre-bid conference and site walk conducted by the District and Engineer.

PROJECT ADMINISTRATION. All questions regarding the Bid must be submitted in writing before the deadline due date of **Monday, October 20, 2025, at 5:00 P.M. 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 OOWD:

ORANGE COUNTY WATER DISTRICT 18700 Ward Street Fountain Valley, CA 92708.	Mailing Address: Attention: P.O. Box 8300 Fountain Valley, CA 92728-8300	Launimo Esqueria P.E., Project Manager Telephone: (714) 378-3300 Email: esqueriam@oowd.com
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COMPLETION OF WORK AND LIQUIDATED DAMAGES. All Work must be completed within **Eight Hundred and Forty (840)** consecutive calendar days from the date of the Notice to Proceed issued by the District. In addition, the Contractor mutually agrees to substantially complete project milestones established in the Special Provisions Section 100.E within the stipulated calendar days from Notice to Proceed. Failure to complete the Work, including project milestones, 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 and/or Special Provisions Section 100.E.

OBTAINING CONTRACT DOCUMENTS. Plans and specifications and all contract documents must be purchased through HB Digital at www.hbdigital.com/ocwd. 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/DIR/Div9/NewsDeterminations.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.

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
 By: 
 John C. Kennedy, General Manager

Dated: September 30, 2025

**The Orange County Register
 Published: 9/30/25**

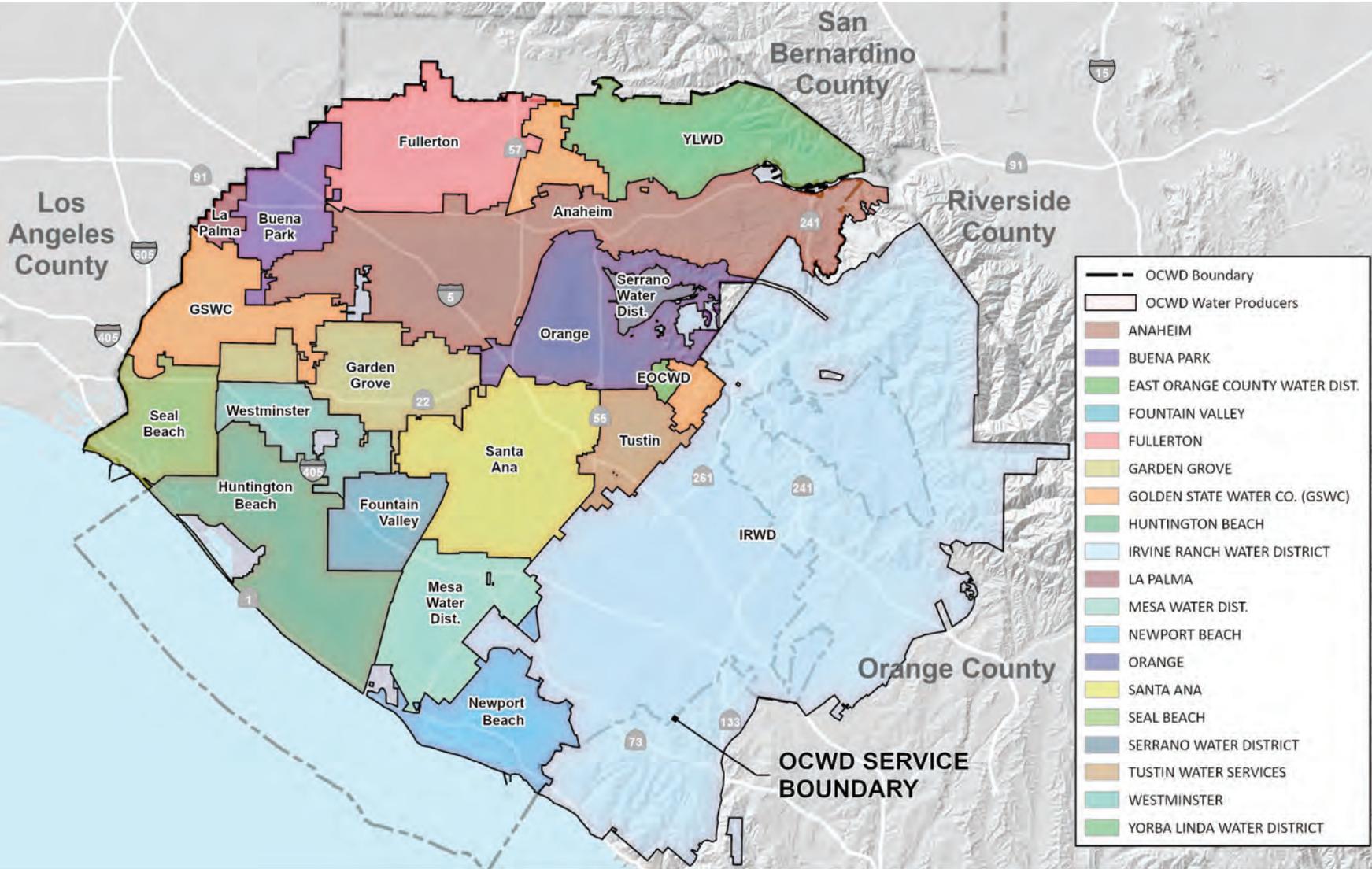


City of Santa Ana PFAS Treatment at John Garthe Reservoir Award Contract SA-2025-1

Ryan Bouley, P.E.
Director of Engineering

Water Issues Committee Meeting
January 14, 2026





- OCWD Boundary
- OCWD Water Producers
- ANAHEIM
- BUENA PARK
- EAST ORANGE COUNTY WATER DIST.
- FOUNTAIN VALLEY
- FULLERTON
- GARDEN GROVE
- GOLDEN STATE WATER CO. (GSWC)
- HUNTINGTON BEACH
- IRVINE RANCH WATER DISTRICT
- LA PALMA
- MESA WATER DIST.
- NEWPORT BEACH
- ORANGE
- SANTA ANA
- SEAL BEACH
- SERRANO WATER DISTRICT
- TUSTIN WATER SERVICES
- WESTMINSTER
- YORBA LINDA WATER DISTRICT



OCWD Service Area

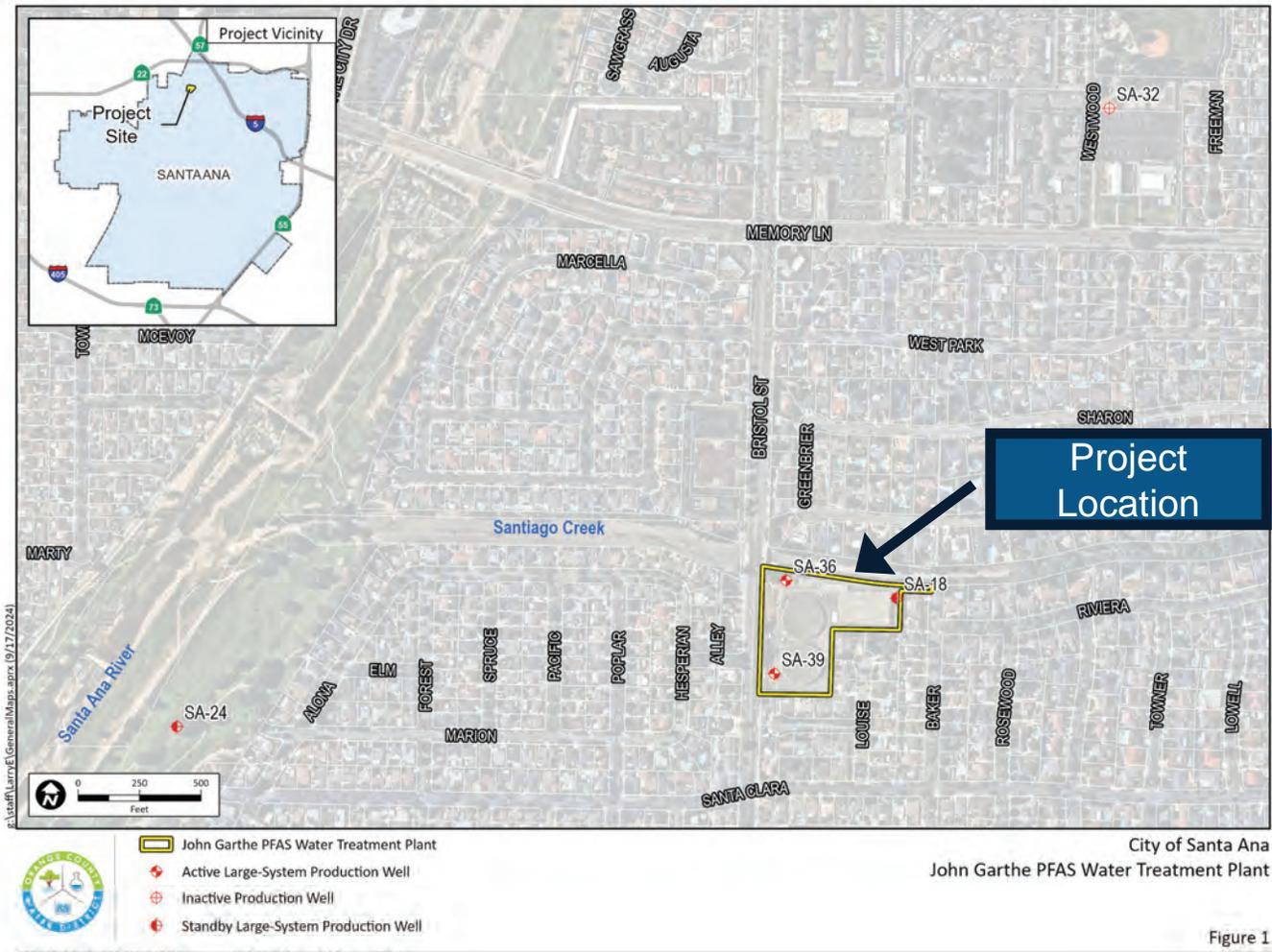
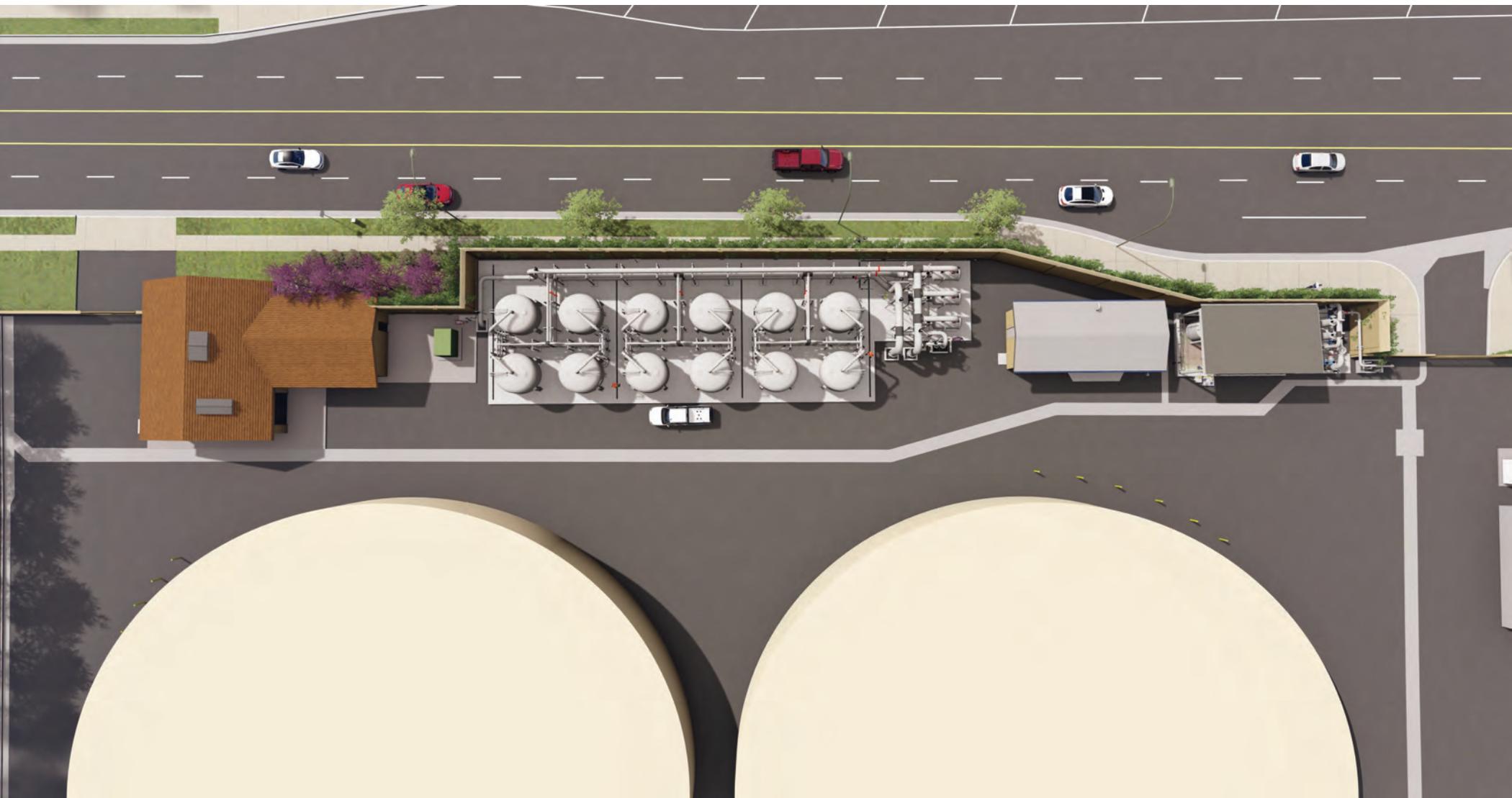


Figure 1

PFAS Treatment at John Garthe Reservoir



PFAS Treatment at John Garthe Reservoir



PFAS Treatment at John Garthe Reservoir



PFAS Treatment at John Garthe Reservoir



PFAS Treatment at John Garthe Reservoir

Construction Bids

Contractor	Bid Price
Kingman Construction, Inc.	\$ 23,587,500
Pacific Hydrotech Corp.	\$ 24,907,700
Covenant Technical Solutions, Inc	\$ 25,815,000
GSE Construction Company Inc.	\$ 27,152,900
Caliagua, Inc	\$ 28,295,600
Innovative Construction Solutions	\$ 28,332,000
ARB, Inc.	\$ 46,377,819

Construction Bids

- Contract documents advertised September 30, 2025
- Eight addendums were issued during the bid advertisement period
 - Addendum No. 1 was issued on October 17, 2025 (revised bid schedule and contractor Q&A)
 - Addendum No. 2 was issued on October 21, 2025 (extend question period and bid date)
 - Addendum No. 3 was issued on October 29, 2025 (revised specifications, plans, and contractor Q&A)
 - Addendum No. 4 was issued on November 5, 2025 (revised specifications, plans, and contractor Q&A)
 - Addendum No. 5 was issued on November 12, 2025 (contractor Q&A)
 - Addendum No. 6 was issued on November 13, 2025 (revise bid date)
 - Addendum No. 7 was issued on November 20, 2025 (contractor Q&A)
 - Addendum No. 8 was issued on December 3, 2025 (revise bid date and contractor Q&A)
- Seven construction bids were received on December 11, 2025. Longer bid period to accommodate City of Santa Ana's Hydro-Generator Breau of Reclamation Grant
- Staff recommends awarding the construction contract to Kingman Construction, Inc. as the lowest responsive bidder.

Project Budget

Description	Budget
Design, Construction Management, Permitting	
Design (City of Santa Ana)	\$ 1,582,500
Engineering Construction Support (Tetra Tech)	\$ 746,000
Construction Management and Inspection (Butier)	\$ 2,107,243
Staff Expenses	<u>\$ 100,000</u>
Design, Construction Management, Permitting Sub-Total	\$ 4,535,743
Construction	
Contract SA-2025-1 (Kingman)	\$ 23,587,500
Bid Advertisement and Permitting	\$ 50,000
IX Resin	<u>\$ 2,122,232</u>
Construction Sub-Total	\$ 25,759,732
Project Contingency (5% of Contract Amount)	<u>\$ 1,179,375</u>
Total Project Budget	\$ 31,474,850
City of Santa Ana Estimated Contribution	<u>\$ 4,573,436</u>
Total Cost to OCWD	\$ 26,901,414

Project Schedule

Task	Start	Completion
Design	November 2023	September 2025
Permitting	November 2023	July 2028
Authorize NIB/Construction Bid	June 2025	December 2025
Construction	March 2026	July 2028

Staff Recommendations

- Receive and file Affidavit of Publication of Notice Inviting Bids for Contract No. SA-2025-1 City of Santa Ana PFAS Treatment at John Garthe Reservoir Project
- Ratify issuance of Addenda 1 through 8
- Accept bid and authorize award of Contract SA-2025-1 to the lowest responsive and responsible bidder, Kingman Construction, Inc., in the amount of \$23,587,500; and
- Increase project budget by \$1,474,850 for a total project budget in the amount of \$31,474,850

Questions?





PFAS Treatment at John Garthe Reservoir



PFAS Treatment at John Garthe Reservoir

AGENDA ITEM SUBMITTAL

Meeting Date: January 14, 2026

To: Water Issues Committee
Board of Directors

From: John Kennedy

Staff Contact: R. Bouley/L. Esguerra

Budgeted: Yes

Budgeted Amount: \$59,827

Cost Estimate: \$59,827

Funding Source: R&R Fund

Program/Line Item No.: R22028

General Counsel Approval: N/A

Engineers/Feasibility Report: NA

CEQA Compliance: Cat. Ex.

**Subject: BOND BASIN SLOPE REPAIR AUTHORIZE AMENDMENT NO. 3 TO
ENGEIO, INC**

SUMMARY

Construction of the Bond Basin Slope Repair Project, Contract SB-2025-1 is progressing. ENGEIO, Inc. (ENGEIO) is providing engineering construction support services and over the course of construction has provided additional services due to the work expanding beyond the original project limits requiring additional compensation. Additionally, Staff requested a proposal for revised design drawings to accommodate construction during the rainy season and upcoming dry season. Staff recommends authorizing Amendment No. 3 with ENGEIO for engineering construction support services in the amount of \$59,827.

Attachments: ENGEIO, Inc. proposal for additional engineering construction support services and Presentation

RECOMMENDATION

Agendize for January 21 Board meeting: Authorize Amendment No. 3 to Agreement 1555 with ENGEIO, Inc. for a not-to-exceed amount of \$59,827.

DISCUSSION

Bond Basin is part of the Santiago Basins recharge system and the slope repair project is located in southeasterly corner of the basin. An existing City of Orange storm drain failed causing significant erosion to the area. Due to the complicated history of ownership and maintenance of the storm drain, the City and District have agreed to share the cost to repair the slope and relocate the storm drain inlet to the Basin. Emergency repair work to construct a soil nail wall with rip rap was completed in January 2023 (See Figure 1) and construction of the permanent slope repair and storm drain pipeline relocation began in July 2025. The Contractor, ICS, has completed construction of the of the slope repair and is in the process of completing installation of the relocated storm drain pipe as shown on Figure 2. The concrete swale construction that continues into the Basin has started, but recent rains have filled the Basin and this work will have to be put on hold until the Basin drains.

Figure 1 – Soil Nail Wall at corner of Bond Basin



Figure 2 – Corner of Bond Basin December 2025



ENGEO completed design of the permanent slope repair and is currently providing engineering construction support. Over the course of construction, ENGEO has performed additional services requiring additional compensation. These additional services include: evaluation of soil conditions for construction of the relocated keyway for the proposed slope repair, evaluation and geotechnical recommendations for additional slope repair outside of the original project limits along the east face of the Bond Basin, evaluation of on-site fill material for use as engineered fill, evaluation of existing soil conditions prior to placement of fill, and review of as-built conditions for the storm drain swale anchor block and grade beam to accommodate as-built conditions.

Early season rains resulted in rising water levels within the basin, and construction of the proposed concrete swale and plunge pool was suspended. This suspension will continue until the basin is emptied. Staff anticipates this could happen sometime during

the summer, but this timing is subject to delay with further rain. Staff requested ENGEO to provide a proposal for additional engineering services for interim site plan recommendations when work is suspended during the rainy season and revised concrete swale design to protect the existing slope conditions following draining of the basin during the next dry season.

ENGEO has been highly responsive to Staff's requests throughout construction of the Bond Basin Slope Repair Project. Staff recommends authorizing Amendment No. 3 to Agreement 1555 with ENGEO, Inc. in an amount not-to-exceed \$59,826.80 using funds available in the project contingency, as summarized in Table 1, below:

Table 1: SB-2025-1 Bond Basin Slope Repair Project Budget Summary

Description	Current Budget	Proposed Budget
Design and Construction Management		
Design Agreement 1555 – (ENGEO)	\$46,800	\$46,800
Amendment 1	\$42,500	\$42,500
Amendment 2	\$59,800	\$59,800
<i>Amendment 3</i>	-	\$59,827
Construction Management and Inspection – (Butier)	\$321,124	\$321,124
Amendment 1	\$85,478	\$85,478
Design and CM&I Subtotal	\$555,702	\$615,529
Construction		
Contract SB-2025-1 (ICS)	\$3,199,190	\$3,199,190
Permits and Advertisement Costs	\$20,000	\$20,000
Construction Subtotal	\$3,219,190	\$3,219,190
<i>Project Contingency (2% of Contract Amount)</i>	\$74,522	\$14,695
Total Project Budget	\$3,849,414	\$3,849,414
City of Orange Contribution	\$1,924,707	\$1,924,707
Total Cost to OCWD	\$1,924,707	\$1,924,707

PRIOR RELEVANT BOARD ACTIONS

11/19/25, R25-11-197: Authorizing Amendment to Agreement with Butier Engineering Inc for Construction Management and Inspection Services

5/21/25, R25-5-68: Approving Agreement with Butier Engineering INC for Construction Management and Inspection Services for SB-2025-1 Bond Basin Slope Repair and Budget Increase.

4/16/25, R25-4-58: Reject bid protest and award contract to Innovative Construction Solutions, authorize Amendment No. 2 to Engeo and establish project budget.

3/19/25, R25-3-36: Authorize issuance of RFP for Construction Management and Inspection Services for Contract SB-2025-1, Bond Basin Slope Repair Project.

2/19/25, R25-2-15: Authorize filing of a Categorical Exemption in compliance of CEQA and authorize publication of Notice Inviting Bids for Contract SB-2025-1, Bond Basin Slope Repair Project.

3/20/24, R24-3-17: Authorize issuance of an Amendment to Agreement No. 1555 with ENGEO for final design services of Bond Basin slope repair and storm drain realignment for an amount not to exceed \$42,500.

10/18/23, R23-10-140: Authorize issuance of a Professional Services Agreement to ENGEO for design services for the permanent Bond Basin slope repair and storm drain extension for an amount not to exceed \$46,800.

11/16/22, R22-11-153: Ratify the emergency slope repair contract for Bond Basin in an amount of \$992,000 to Access Limited Construction and ratify an amendment issued to ENGEO Incorporated for testing, construction inspection and reporting for \$76,400.

10/5/22, R22-10-141: Authorized the General Manager to negotiate and execute a 50/50 cost share agreement with the city of Orange.



320 Goddard Way, Suite 100
Irvine, CA 92618
(949) 526-3479 | info@engeo.com

REQUEST FOR CHANGE ORDER

TO: Mr. Laurence Esguerra
Orange County Water District
18700 Ward Street
Fountain Valley, CA 92708

DATE: December 31, 2025

ENGE O Project-Phase No.: 21055.000.002-003
ENGE O Contact: Craig Wright

PROJECT NAME: Bond Basin Storm Drain Repair
ORIGINAL CONTRACT NO.: Agreement No. 1517
ORIGINAL CONTRACT DATE: October 13, 2022

Additional Scope of Services:

Exceeded the assumed 40 hours of project management and consultation by responding to contractor design requests. Attended additional construction and site meetings above the originally assumed 10 meetings. Responded to 8 additional Requests for Information (RFIs) above the originally assumed 10 responses. Engineering support services for revised keyway layout, additional keyway, and additional slope grading for scour area north of storm drain. Evaluated Block 1 construction, shotcrete substitution for Block 1 concrete, and revised plans for temporary rip rap below Block 1. Evaluated on-site material for use as engineered fill. Prepared as-builts with revised pipe alignment. Revised plans for supplemental survey data provided by the contractor. Visited the site to review as-built conditions of the compression pad, grade beam, and headwall to accommodate the as-built conditions.

We also anticipate requiring additional site visits to observe subgrade of remaining concrete blocks, channel alignment, access road, and plunge pool once the contractor remobilizes. Issuing revised drawings to construct the remainder of the swale per plan or alternatives if additional scour is observed. Final grading plan to restore contractor's disturbed area and access road to elevations acceptable by the Engineer and District.

Additional Fees:

Additional Services to Date	\$16,376.80
Additional site visits to observe subgrade for remaining construction elements (up to 10 visits).....	\$10,000
Three additional site visits to observe stressing tie-back anchors (up to 18 hours).....	\$5,000
Additional weekly construction meetings (up to 10 1-hour Teams meetings)	\$3,450
Field team meeting and interim condition grading recommendations	\$3,000
Issue revised swale drawing and/or alternatives	\$12,000
Final as-built grading plan to include restoring disturbed area	\$10,000
TOTAL	\$59,826.80

If you agree with the scope of services and fees outlined in this request, please forward a change order to the above-referenced original contract as authorization for us to proceed. All other terms and conditions of the original contract shall remain in effect.

ENGE O INCORPORATED

BY: 
PRINTED NAME: Josef J. Tootle
TITLE: Principal
DATE: December 31, 2025

csw/jjt/cb



Bond Basin Slope Repair Authorize Amendment No. 3 to ENGEO, Inc and Construction Update

Ryan Bouley, P.E.
Director of Engineering

Water Issues Committee Meeting
January 14, 2026



Bond Basin Slope Repair Project

- Bond Basin is part of the Santiago Basins Recharge System
- Existing 60-inch City storm drain enters the southeast corner of Bond Basin
 - In 2019 the City performed emergency repair of storm drain on District property
 - During the initial repair, visible sections of CSP and swale leading into the basin had deteriorated and failed causing erosion of the slope
 - Staff performed routine inspections of CSP and swale documented continued erosion of the slope
- City and District to share cost of repair
 - Board approved entering an agreement with the City on October 4, 2022 to equally share costs for the temporary and permanent repair of the slope and relocation of the storm drain.



Project Location

Temporary Slope Repair

- District performed an emergency repair of the erosion caused by the failed storm drain
- Soil nail wall consisting of reinforced concrete and tie backs was constructed to stabilize the top of slope
- Rip rap was placed below the existing City storm drain into the basin to mitigate additional erosion to slope
- Construction Completed in January 2024



Permanent Slope Repair

- Final Design completed in February 2025
 - Design included relocation of the existing storm drain and new swale into the basin
- Construction began in June 2025
 - Construction required basin water surface elevation to be below 200 feet
- Slope Repair
 - Over 15,000 cubic yards of on-site soil was used for repair
 - Soil placed in 2.5-foot lifts and tested for relative compaction
 - Slope reinforced with geotextile fabric every 2.5 vertical feet
 - Slope repair completed in October



July 22, 2025

August 5, 2025



ORANGE COUNTY WATER DISTRICT

September 3, 2025



ORANGE COUNTY WATER DISTRICT

November 12, 2025



ORANGE COUNTY WATER DISTRICT

Storm Drain Relocation

■ Storm Drain Relocation

- Approximately 300 feet of 60-inch RCP and three manholes Concrete headwall to transition from RCP to concrete swale
- Headwall supported by three CIDH piles
- Completion Late January 2026

■ Basin Inlet Structure

- 14 foot wide by 100 feet long concrete swale
- Swale anchored to slope by four concrete anchor blocks with tiebacks
- Rip rap plunge pool at the bottom of swale for energy dissipation
- To Date one of four concrete anchor blocks with tiebacks constructed
- Remaining construction postponed due to water level in basin.



CIDH Pile Installation

Tie-Back Installation



Anchor Block Construction



Northeast

33.79907, -117.80673

Nov 12, 2025 at 2:11:01PM PST

ORANGE COUNTY WATER DISTRICT

Storm Drain Construction



ORANGE COUNTY WATER DISTRICT

December 22, 2025



ORANGE COUNTY WATER DISTRICT

Early Season Rain

- Rain Events

- October 14 – 15
- November 14 – 21
- December 24 – January 4

- Storm Drain Mitigation Measures

- Two 6-inch temporary pumps installed on District property. Pump manned 24 hours/day during rain by Contractor
- Stormwater BMPs (fiber rolls, plastic sheeting, temporary berm) installed and maintain by Contractor
- Temporary traffic control devices and signage provided by City at intersection of Bond Ave. and Hewes St.



Pump Installation

BMP Installation



Recommendation

Authorize Amendment No. 3 to Agreement 1555 with ENGEO, Inc. for a not-to-exceed amount of \$59,827

Questions?

