MesaWater DISTRICT

Dedicated to Satisfying our Community's Water Needs

AGENDA
MESA WATER DISTRICT
BOARD OF DIRECTORS
Wednesday, April 8, 2026
1965 Placentia Avenue, Costa Mesa, CA 92627
4:30 p.m. Regular Board Meeting

CALL TO ORDER

PLEDGE OF ALLEGIANCE

PUBLIC COMMENTS

Items Not on the Agenda: Members of the public are invited to address the Board regarding items which are not appearing on the posted agenda. Each speaker shall be limited to three minutes. The Board will set aside 30 minutes for public comments for items not appearing on the posted agenda.

Items on the Agenda: Members of the public shall be permitted to comment on agenda items before action is taken, or after the Board has discussed the item. Each speaker shall be limited to three minutes. The Board will set aside 60 minutes for public comments for items appearing on the posted agenda.

ITEMS TO BE ADDED, REMOVED OR REORDERED ON THE AGENDA

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed as an Action Item, may be deliberated and may be subject to action by the Board.

CONSENT CALENDAR ITEMS:

Approve all matters under the Consent Calendar by one motion unless a Board member, staff or a member of the public requests a separate action.

1. Approve the minutes of the regular Board meeting of March 11, 2026.
2. Approve the minutes of the regular Board meeting of March 25, 2026.
3. Approve attendance considerations (additions, changes, deletions).
4. Board Schedule:
   - Conferences, Seminars and Meetings
   - Board Calendar
   - Upcoming Community Outreach Events

PRESENTATION AND DISCUSSION ITEMS:

5. LOCAL GROUNDWATER SUPPLY IMPROVEMENT PROJECT:

   Recommendation: Receive the presentation.

6. PENSION & OTHER POST-EMPLOYMENT BENEFITS TRUST UPDATE:

Recommendation: Receive the presentation.

ACTION ITEMS:

7. WATER SYSTEM MASTER PLAN AND 10-YEAR CAPITAL IMPROVEMENT PROGRAM:

Recommendation: Adopt the 2026 Water Systems Master Plan Update and 10-Year Capital Improvement Program Update.

8. CHANDLER & CRODDY WELLS AND PIPELINE PROJECT:

Recommendation:

a. Award a contract to All American Asphalt for $1,391,292 and a contingency of $139,129 for a total contract amount not to exceed $1,530,421 to provide Construction of the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract;

b. Award a contract to MCM Consulting, Inc. for $186,800 and a contingency of $18,680 for a total contract amount not to exceed $205,488 to provide Construction Management and Inspection Services of the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract; and

c. Amend the contract with Tetra Tech for an additional $26,680 for a total contract amount not to exceed $147,680 to provide Engineering Services During Construction for the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract.

9. HEATING, VENTILATION AND AIR CONDITIONING SERVICES:

Recommendation: Approve an amendment to extend the contract with ACCO Engineered Systems, Inc. for 2 years for a total authorized contract amount not to exceed $150,000 annually to provide Heating, Ventilation and Air Conditioning Services at Mesa Water District's Administration and Operations Buildings, Reliability Facility, Education Center, reservoirs and well sites, and authorize execution of the contract through the term ending March 31, 2028.

10. CUSTOMER INFORMATION SYSTEM SUPPORT SERVICES:

Recommendation: Approve a contract with The Northridge Group, Inc. for $102,600 to provide readiness support services to prepare the Customer Services' and Public Affairs' departments for the SpryCIS go-live, and authorize execution of the contract.

11. ELITE CUSTOMER SERVICE:

Recommendation: Approve a five-year contract with The Northridge Group, Inc. for $94,380 and a 10% contingency for an amount not to exceed $103,818 to conduct training and optimize the Elite Customer Service Program, and authorize execution of the contract.

12. EXTERNAL PARTNERSHIPS, MEMBERSHIPS AND SPONSORSHIPS POLICY:

Recommendation: Adopt Resolution No. 1611 Establishing an External Partnerships, Memberships and Sponsorships Policy.

13. EMPLOYEE RETIREMENT EVENTS:

Recommendation: Adopt Resolution No. 1612 Amending the Guidelines for Employee Retirement Events Superseding Resolution No. 1586.

REPORTS:

14. REPORT OF THE GENERAL MANAGER

15. DIRECTORS' REPORTS AND COMMENTS

INFORMATION ITEMS:

16. CLASSIFICATION AND COMPENSATION STUDY

17. DIRECTORS' REPORTS (AB 1234) PER CA GOVERNMENT CODE SECTION 53232.3 (D)

CLOSED SESSIONS:

18. CONFERENCE WITH GENERAL LEGAL COUNSEL – ANTICIPATED LITIGATION:
Pursuant to California Government Code Section 54956.9(d)(2) – significant exposure to litigation.
(One potential case; Claim #26-0699)

In compliance with California law and the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services in order to participate in the meeting, or if you need the agenda provided in an alternative format, please call the District Secretary at (949) 631-1205. Notification 48 hours prior to the meeting will enable Mesa Water District (Mesa Water®) to make reasonable arrangements to accommodate your requests.

Members of the public desiring to make verbal comments using a translator to present their comments into English shall be provided reasonable time accommodations that are consistent with California law.

Agenda materials that are public records, which have been distributed to a majority of the Mesa Water Board of Directors (Board), will be available for public inspection at the District Boardroom, 1965 Placentia Avenue, Costa Mesa, CA and on Mesa Water's website at ***www.MesaWater.org****. If materials are distributed to the Board less than 72 hours prior or during the meeting, the materials will be available at the time of the meeting.*

ADJOURN TO AN ADJOURNED BOARD MEETING SCHEDULED FOR WEDNESDAY, APRIL 29, 2026 AT 1:00 P.M.

Dedicated to
Satisfying our Community's
Water Needs

MINUTES OF THE BOARD OF DIRECTORS
MESA WATER DISTRICT
Wednesday, March 11, 2026
1965 Placentia Avenue, Costa Mesa, CA 92627
4:30 p.m. Regular Board Meeting

CALL TO ORDER The meeting of the Board of Directors was called to order at 4:35 p.m. by President DePasquale.

PLEDGE OF ALLEGIANCE Vice President Dewane led the Pledge of Allegiance.

Directors Present
Marice H. DePasquale, President
Shawn Dewane, Vice President
Fred R. Bockmiller, P.E., Director *(arrived at 4:36 p.m.)*
Jim Atkinson, Director
James R. Fisler, Director

Directors Absent
None

Staff Present
Paul E. Shoenberger, P.E., General Manager
Denise Khalifa, Chief Administrative Officer/District Secretary
Kurt Lind, Business Manager/Acting District Treasurer
Calvin Hsu, CPA, Chief Financial Officer
Andrew D. Wiesner, P.E., District Engineer
Stacy Taylor, Water Policy Manager
Juan Hernandez, Assistant Water Operations Manager
Nadia Boutros, Civil Engineer
Karyn Igar, Principal Engineer
Kaitlyn Norris, Public Affairs Supervisor
Rob Anslow, General Legal Counsel

Others Present
Ryan Gallagher, P.E., Project Manager, MKN & Associates
Riley Greenlee, CPA, Senior Manager Assurance & Advisory, Lance, Soll & Lunghard, LLP
Will O'Neill, Partner, Newmeyer & Dillion, LLP *(teleconference)*

PUBLIC COMMENTS

President DePasquale asked for public comments on items not on the agenda.

There was no public present and President DePasquale proceeded with the meeting.

ITEMS TO BE ADDED, REMOVED OR REORDERED ON THE AGENDA

General Manager Shoenberger recommended reordering the agenda to take Item 14 after Item 6. There were no objections.

Unapproved

CONSENT CALENDAR ITEMS:

1. Approve the minutes of the special Board meeting of February 9, 2026.
2. Approve the minutes of the regular Board meeting of February 11, 2026.
3. Approve attendance considerations (additions, changes, deletions).
4. Board Schedule:
   - Conferences, Seminars and Meetings
   - Board Calendar
   - Upcoming Community Outreach Events

MOTION

Motion by Vice President Dewane, second by Director Atkinson, to approve Items 1 – 4 of the Consent Calendar. Motion passed 5 - 0.

PRESENTATION AND DISCUSSION ITEMS:

5. INTERAGENCY WATER TRANSFERS:

District Engineer Wiesner provided an overview of the topic and introduced MKN & Associates Project Manager Ryan Gallagher who proceeded with a presentation that highlighted the following:

- Newport Beach Interagency Water Transfer
- Huntington Beach Water Transfer Study
- Available Well Capacity
- Huntington Beach Imported Water Demand
- Interconnection Opportunities
- Financial Analysis
- Study Conclusions
- Next Steps

Mr. Gallagher responded to questions from the Board and they thanked him for the presentation.

6. FISCAL YEAR 2025 AUDIT RESULTS AND ANNUAL FINANCIAL REPORT:

Chief Financial Officer Hsu provided an overview of the topic and introduced Lance, Soll & Lunghard Senior Manager of Assurance & Advisory Riley Greenlee who proceeded with a presentation that highlighted the following:

- Management's Responsibilities
- Auditors' Responsibilities
- Annual Financial Audit Sections:
  - Introductory Section
  - Financial Section
  - Statistical Section
- Audit Results

Unapproved

MOTION

Motion by Director Bockmiller, second by Vice President Dewane, to approve Mesa Water District's audited financial statements for the fiscal year ended June 30, 2025 and direct staff to finalize the Fiscal Year 2025 Annual Financial Report. Motion passed 5 – 0.

RECESS

President DePasquale declared a recess at 5:00 p.m.

The Board meeting reconvened at 5:05 p.m.

CLOSED SESSIONS:

President DePasquale announced the Board was going into Closed Session at 5:05 p.m.

ITEM 14 - CONFERENCE WITH SPECIAL LEGAL COUNSEL – EXISTING LITIGATION:
Pursuant to California Government Code Sections 54956.9(a) and 54957.1(a)(2) – based on existing facts and circumstances, the Board is meeting with Special Legal Counsel.
Number of Cases: 1

The Board returned to Open Session at 5:20 p.m.

Attorney Anslow announced the Board conducted one Closed Session with the General Manager, District Secretary, General Legal Counsel and Special Legal Counsel pursuant to California Government Code Sections 54956.9(a) and 54957.1(a)(2). The Board received information and provided direction to Special Legal Counsel; there was no further announcement.

PRESENTATION AND DISCUSSION ITEMS (CONT.):

7. GENERAL LEGAL COUNSEL SERVICES:

GM Shoenberger provided an overview of the topic, noting that it has been five years since the District last conducted a Request for Proposals for General Legal Counsel services.

Discussion ensued amongst the Board.

MOTION

Motion by Director Fisler, second by President DePasquale, to direct staff to conduct a thorough and complete Request for Proposal process and return to the Board with a strong recommendation for the most qualified firm to provide Mesa Water District with General Legal Counsel Services. Motion passed 5 – 0.

Unapproved

8. BOARD WORKSHOP PLANNING:

GM Shoenberger reviewed the proposed agenda topics for the April 29, 2026 Board workshop.

The Board offered staff additional topics to add to the workshop agenda.

ACTION ITEMS:

9. INFORMATION TECHNOLOGY SUPPORT SERVICES:

MOTION

Motion by Vice President Dewane, second by Director Fisler, to approve a contract with ClientFirst Consulting Group, LLC for $90,875 and a 10% contingency of $9,087 for a total authorized amount not to exceed $99,962 to provide support services related to the Information Technology Request for Proposals, and authorize execution of the contract. Motion passed 5 – 0.

RECESS

President DePasquale declared a recess at 5:53 p.m. to conduct the Mesa Water District Improvement Corporation Annual Meeting.

10. MESA WATER DISTRICT IMPROVEMENT CORPORATION ANNUAL MEETING:

The Board meeting reconvened at 5:56 p.m.

REPORTS:

11. REPORT OF THE GENERAL MANAGER:

GM Shoenberger introduced District Secretary Khalifa, who presented a report regarding the settlement of three claims that the District recently resolved.

The Board previously met in two Closed Sessions to discuss the high-volume water loss resulting in a claim submitted by Mr. John Patton in the amount of $21,590.87. Staff has since received communication from the customer's landlord's insurance company, which has issued a check covering the full claim amount. Staff has executed a Settlement Agreement within the authorized parameters. This matter is now resolved.

Further, the Board previously met in one Closed Session regarding the October 2025 mainline breaks that resulted in two claims from ratepayers, Ms. Mathilde Tromp and Mr. Donald Neal.

Ms. Khalifa reported that, consistent with direction previously provided by the Board of Directors in Closed Session on December 10, 2025, and with a 4 -1 vote with a motion by Director Bockmiller and a second by Director Atkinson, with Vice President Dewane

Unapproved

absent, staff has executed two settlement agreements within the authorized settlement parameters – one with Mathilde Tromp for the amount of $3,227.18 and one for Donald Neal for the amount of $6,840.00. A copy of both fully executed Settlement Agreements are on file with Mesa Water's District Secretary for public review upon request.

12. DIRECTORS' REPORTS AND COMMENTS

INFORMATION ITEMS:

13. DIRECTORS' REPORTS (AB 1234) PER CA GOVERNMENT CODE SECTION 53232.3 (D)

RECESS

President DePasquale declared a recess at 6:40 p.m.

The Board meeting reconvened at 6:43 p.m.

CLOSED SESSIONS:

14. CONFERENCE WITH SPECIAL LEGAL COUNSEL – EXISTING LITIGATION:
Pursuant to California Government Code Sections 54956.9(a) and 54957.1(a)(2) – based on existing facts and circumstances, the Board is meeting with Special Legal Counsel.
Number of Cases: 1

This item was taken earlier in the agenda.

President DePasquale announced the Board was going into Closed Session at 6:43 p.m.

15. CONFERENCE WITH GENERAL LEGAL COUNSEL – POTENTIAL LITIGATION:
Pursuant to California Government Code Sections 54956.9(d)(1) & (2) and 54954.5(b) – significant exposure to litigation.

The Board returned to Open Session at 6:54 p.m.

Attorney Anslow announced the Board conducted one Closed Session with the General Manager, District Secretary, District Engineer, Principal Engineer and General Legal Counsel pursuant to California Government Code Sections 54956.9(d)(1) & (2) and 54954.5(b). The Board gave direction to staff and there was no further announcement.

Unapproved

President DePasquale adjourned the meeting at 6:55 p.m. to a Regular Board Meeting scheduled for Wednesday, March 25, 2026 at 4:30 p.m.

Approved:

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Marice H. DePasquale, President

_____

Denise Khalifa, District Secretary

Recording Secretary: Sharon D. Brimer

Unapproved

Dedicated to Satisfying our Community's Water Needs

MINUTES OF THE BOARD OF DIRECTORS
MESA WATER DISTRICT
Wednesday, March 25, 2026
1965 Placentia Avenue, Costa Mesa, CA 92627
4:30 p.m. Regular Board Meeting

CALL TO ORDER The meeting of the Board of Directors was called to order at 4:30 p.m. by President DePasquale.

PLEDGE OF ALLEGIANCE Director Atkinson led the Pledge of Allegiance.

Directors Present
Marice H. DePasquale, President
Shawn Dewane, Vice President
Fred R. Bockmiller, P.E., Director
Jim Atkinson, Director
James R. Fisler, Director

Directors Absent
None

Staff Present
Paul E. Shoenberger, P.E., General Manager
Denise Khalifa, Chief Administrative Officer/District Secretary
Kurt Lind, Business Manager/Acting District Treasurer
Calvin Hsu, CPA, Chief Financial Officer
Stacy Taylor, Water Policy Manager
Juan Hernandez, Assistant Water Operations Manager
Nadia Boutros, Civil Engineer
Karyn Igar, Principal Engineer
Kaitlyn Norris, Public Affairs Supervisor
Rob Anslow, General Legal Counsel

Others Present
David Bolland, Water Policy Consultant, Dave Bolland and Associates
Brian Pesis, Principal, Management Consulting, Plante Moran

PUBLIC COMMENTS

President DePasquale asked for public comments on items not on the agenda.

Water Policy Manager Taylor introduced Dave Bolland and Associates Water Policy Consultant Dave Bolland who offered comments to the Mesa Water Board regarding the District's initiatives and stewardship efforts.

The Board thanked Mr. Bolland for his comments.

Unapproved

ITEMS TO BE ADDED, REMOVED OR REORDERED ON THE AGENDA

President DePasquale recommended reordering the agenda to take Item 10 before Item 9. There were no objections.

CONSENT CALENDAR ITEMS:

1. Approve minutes of the regular Board meeting of February 25, 2026.
2. Receive and file the Developer Project Status Report.
3. Receive and file the Mesa Water and Other Agency Projects Status Report.
4. Receive and file the Water Quality Call Report.
5. Receive and file the Accounts Paid Listing.
6. Receive and file the Monthly Financial Reports.
7. Receive and file the Outreach Update.
8. a. Amend the Maintenance Agreement with Emissions Compliance Controls Company for an additional $150,000 per year for Fiscal Years 2026 and 2027 for a total contract amount not to exceed $200,000 per year to provide an overhaul of Reservoir 2 Engine 2, and authorize execution of the amendment;
   b. Amend the Professional Services Agreement with Black & Veatch Corporation for an additional $948,800 for a total contract amount not to exceed $1,501,159 to continue to provide Construction Management and Inspection Services for the Reservoirs 1 & 2 Upgrades Project and the Reservoir 2 Pump Station Recovery, and authorize execution of the amendment;
   c. Amend the Professional Services Agreement with Hazen and Sawyer, Inc. for an additional $29,515 for a total contract amount not to exceed $254,635 to provide plans and specifications for the contractor to rebuild the failed motive water line, and authorize execution of the amendment; and
   d. Authorize the General Manager to execute additional contracts and change orders in the aggregate of $500,000 for the Reservoir 2 Pump Station Recovery efforts.

MOTION

Motion by Vice President Dewane, second by Director Bockmiller, to approve Items 1 - 8 of the Consent Calendar. Motion passed 5 – 0.

PRESENTATION AND DISCUSSION ITEMS:

ITEM 10 - CUSTOMER INFORMATION SYSTEM:

Business Manager Lind provided an overview of the topic and introduced Public Affairs Supervisor Norris who proceeded with a presentation that highlighted the following:

- SpryCIS Overview
- Key Customer Changes
- Major Customer Benefits
- Strategic Plan Alignment
- Customer Outreach Plan
- Expected Outcomes and Next Steps

Mr. Lind and Ms. Norris responded to questions from the Board and they thanked them for the presentation.

Unapproved

9. ATTENDANCE AT INDUSTRY EVENTS:

GM Shoenberger provided a brief overview of the topic.

President DePasquale stated that the purpose of this item is to establish clear guidance for the Board and Mesa Water staff attending industry events.

Discussion ensued amongst the Board and they gave direction to staff.

10. CUSTOMER INFORMATION SYSTEM:

Item taken earlier in the agenda.

ACTION ITEMS:

11. NICE CXONE SCREEN POP ENHANCEMENT:

MOTION

Motion by Director Bockmiller, second by Vice President Dewane, to approve a contract with T2 Tech for $22,305 to provide technical implementation services for the integration between SpryPoint CIS and the NICE Cxone phone system to enable automated screen pops of customer account information during inbound calls, and authorize execution of the contract. Motion passed 5 – 0.

12. CUSTOMER SERVICES CALL ENHANCEMENT:

MOTION

Motion by Vice President Dewane, second by Director Bockmiller, to approve a contract with T2 Tech for $10,583 to provide technical implementation services for the integration between Anna AI and the NICE CXone phone system to enhance customer experience capabilities and ensure secure and efficient operations, and authorize execution of the contract. Motion passed 5 - 0.

13. CHANDLER & CRODDY WELLS AND PIPELINE PROJECT:

MOTION

Motion by Vice President Dewane, second by Director Bockmiller, to approve a contract amendment with Butier Engineering, Inc. for an amount not to exceed $55,000 to provide additional Construction Management and Inspection Services for the Chandler & Croddy Wells and Pipeline Project, and extend the allowed annual authorizations for an additional year, and authorize execution of the contract. Motion passed 5 – 0.

14. SENATE BILL 852:

GM Shoenberger introduced District Secretary Khalifa who provided an overview of the topic.

Unapproved

Discussion ensued amongst the Board.

The Board gave direction to staff to:

- Direct Mesa Water District's Filing Officer (District Secretary) to coordinate with the Chief Financial Officer to annually e-file his Statement of Economic Interests with the Fair Political Practices Commission; and
- As it relates to Senate Bill 852, approve Option 3 – Maintain the Current Filing Structure for the Board of Directors to continue e-filing with the Orange County Board of Supervisors until additional guidance or regulatory clarification is provided.

15. FISCAL YEAR 2027 WORK PLAN UPDATES:

MOTION

Motion by Vice President Dewane, second by President DePasquale, to approve a contract with LA Consulting, Inc. for $20,440 and a 10% contingency of $2,044 for a total authorized contract amount not to exceed $22,484 to facilitate Mesa Water District's Fiscal Year 2027 Work Plan Updates and perform Work Data Quality Control Services, and authorize execution of the contract. Motion passed 5 - 0.

REPORTS:

16. REPORT OF THE GENERAL MANAGER:
    - February Key Indicators Report

17. DIRECTORS' REPORTS AND COMMENTS

INFORMATION ITEMS:

18. FEDERAL ADVOCACY UPDATE

19. STATE ADVOCACY UPDATE

20. ORANGE COUNTY ADVOCACY UPDATE

Unapproved

President DePasquale adjourned the meeting at 5:55 p.m. to a Regular Board Meeting scheduled for Wednesday, April 8, 2026 at 4:30 p.m.

Approved:

_____

Marice H. DePasquale, President

_____

Denise Khalifa, District Secretary

Recording Secretary: Sharon D. Brimer

Unapproved

MesaWater DISTRICT

Dedicated to Satisfying our Community's Water Needs

MEMORANDUM

TO: Board of Directors

FROM: Denise Khalifa, Chief Administrative Officer

DATE: April 8, 2026

SUBJECT: Attendance at Conferences, Seminars, Meetings and Events

RECOMMENDATION

Approve attendance considerations (additions, changes, deletions).

STRATEGIC PLAN

Goal #1: Provide an abundant, local, reliable and safe water supply.
Goal #2: Perpetually renew and improve our infrastructure.
Goal #3: Be financially responsible and transparent.
Goal #4: Increase public awareness of Mesa Water.
Goal #5: Attract, develop and retain skilled employees.
Goal #6: Provide excellent customer service.
Goal #7: Actively participate in regional and statewide water issues.
Goal #8: Practice continual business improvement.

PRIOR BOARD ACTION/DISCUSSION

At its October 23, 2024 meeting, the Board of Directors (Board) adopted Ordinance No. 36 Director Compensation and Expense Reimbursement which authorizes attendance at conferences, seminars, meetings and events.

At its June 11, 2025 meeting, the Board approved the Fiscal Year 2026 attendance at conferences, seminars, meetings and events, with modifications.

At its July 23, 2025 meeting, the Board approved attendance at conferences, seminars, meetings and events for eight additional organizations.

DISCUSSION

During the discussion of this item, if any, the Board may choose to delete any item from the list and/or may choose to add additional conferences, seminars, meetings or events for approval, subject to available budget or additional appropriation.

FINANCIAL IMPACT

None.

ATTACHMENTS

None.

2026 CONFERENCES, SEMINARS AND MEETINGS:

April 6 - 9, 2026	
AWWA CA-NV Water Conference of the West	
San Diego, CA	
April 7 - 8, 2026	
CSDA Legislative Days	
Sacramento, CA	
May 5 - 7, 2026	
ACWA JPIA Spring Conference	*Atkinson, Bockmiller, DePasquale*
Sacramento, CA	
May 6, 2026	
Orange County Youth Sports Foundation Sportsperson of the Year Event	
Irvine, CA	
May 18 - 19, 2026	
Law of the Colorado River Conference	*Atkinson*
Santa Fe, New Mexico	
June 1 - 19, 2026	
Harvard Senior Executives in State and Local Government	
Cambridge, MA	
June 21 - 24, 2026	
AWWA ACE26 Conference	*Atkinson*
Washington D.C.	
August 19 -20, 2026	
11th Annual CA Water Data Summit	
Los Angeles, CA	
August 19 - 21, 2026	
Urban Water Institute Annual Conference	*Atkinson, DePasquale*
San Diego, CA	
August 24 - 26, 2026	
WateReuse California Annual Conference	
San Francisco, CA	
August 24 - 27, 2026	
CSDA Annual Conference	
Palm Desert, CA	
September 25, 2026	
OC Water Summit	
Costa Mesa, CA	
September 26 - 30, 2026	
Water Environment Federation's Technical Exhibition and Conference (WEFTEC)	
Chicago, IL	

April 2026

April 2026

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May 2026

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Mar 29	30	31	Apr 1 8:30am Jt. MWDOC/MWD Workshop (IN 5:30pm OCWD Board Meeting (IN PERSON	2 Pay Period Ends 12:00pm OCWD Communications/Legislative Committee (IN PERSON &	3 7:30am WACO Meeting (Virtual)	4
5	6 AWWA CA-NV Water Conference of the West (San Diego, CA) 8:30am MWDOC Planning and Operations Committee Meeting	7 7:30am ISDOC Executive 8:00am OCBC 1:30pm Executive 6:00pm Costa Mesa City	8 8:15am Canceled - 8:30am MWDOC Admin 12:00pm OCWD Water 4:30pm Board Meeting	9 12:00pm OCWD Admin & Finance Committee (IN PERSON & VIRTUAL)	10	11 10:00am Imaginology Event (OC Fair & Event Center, 88 Fair Drive, Costa Mesa)
12	13 5:00pm IRWD Board Meeting (In Person and Virtual) 5:00pm OCWD GWRS Steering Committee	14	15 29th Annual Children's Water Education Festival (Oak Cany 8:00am MWDOC Board Meeting (IN PERSON 9:00am 2026 Children's 5:30pm OCWD Board	16 Pay Period Ends 8:30am R/S from 4/23 - MWDOC Executive 9:00am 2026 Children's	17	18 10:00am City of Costa Mesa Earth Day Festival (Costa Mesa City Hall (77 Fair Dr, Costa Mesa, CA
19	20	21 7:30am WACO Planning Committee Meeting (VIRTUAL) 6:00pm Costa Mesa City Council Meeting (In	22 Payday 8:30am Jt. MWDOC/OCWD Planning Meeting (In Person & Virtual)	23	24 8:00am City/Districts Liaison Committee Meeting (Newport Mesa Unified School District 2985 Bear	25
26	27 5:00pm IRWD Board Meeting (In Person and Virtual)	28	29 1:00pm Board Workshop (Boardroom)	30 Pay Period Ends 11:30am ISDOC Quarterly Meeting (MWDOC/OCWD Boardroom)	May 1	2

May 2026

May 2026

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June 2026

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SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
Apr 26	27	28	29	30	May 1 7:30am WACO Meeting (Virtual)	2
3	4 8:30am MWDOC Planning and Operations Committee Meeting	5 ACWA JPIA Spring Conference (Sacramento, CA) 6:00pm Costa Mesa City Council Meeting (In Person & Virtual)	6 8:30am Jt. 5:00pm Orange County 5:30pm OCWD Board	7 12:00pm OCWD Communications/Legislative Committee	8	9
10	11 12:00pm Executive Committee Meeting 5:00pm IRWD Board Meeting (In Person	12 7:30am ISDOC Executive Committee Meeting (Virtual)	13 8:15am LAFCO Meeting 8:30am MWDOC Admin 12:00pm OCWD Water 4:30pm Board Meeting	14 Pay Period Ends 12:00pm OCWD Admin & Finance Committee (IN PERSON &	15	16 10:30am Mesa Water Education Center Open House (Mesa Water Education
17	18 Law of Colorado River Conference (Santa Fe, New Mexico)	19 7:30am WACO Planning Committee Meeting 6:00pm Costa Mesa City	20 Payday 8:30am MWDOC Board Meeting (IN PERSON 5:30pm OCWD Board	21	22	23
24	25 District Holiday 5:00pm IRWD Board Meeting (In Person and Virtual)	26	27 4:30pm Board Meeting (Boardroom)	28 Pay Period Ends 8:30am MWDOC Executive Committee (IN PERSON &	29 5:30pm Institute for Conservation Research and Education (ICRE)	30
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June 2026

June 2026

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July 2026

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26	27	28	29	30	31	

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
May 31	Jun 1 Harvard Senior Executives in State and Local 8:30am MWDOC Planning and	2 7:30am ISDOC Executive Committee Meeting (Virtual) 6:00pm Costa Mesa City Council Meeting (In	3 Payday 8:30am Jt. 12:00pm Executive 4:30pm Board Meeting 5:30pm OCWD Board	4 12:00pm OCWD Communications/Legislative Committee (IN PERSON & VIRTUAL)	5 7:30am WACO Meeting (Virtual)	6
7	8 5:00pm IRWD Board Meeting (In Person and Virtual)	9 8:00am OCBC Infrastructure Committee Meeting (350 Commerce, Suite 140 Irvine, CA 92602)	10 8:15am LAFCO Meeting 8:30am MWDOC Admin 12:00pm OCWD Water 4:30pm Board Meeting 4:30pm Board Meeting	11 Pay Period Ends 12:00pm OCWD Admin & Finance Committee (IN PERSON & VIRTUAL)	12	13
14	15	16 7:30am WACO Planning Committee Meeting (VIRTUAL) 6:00pm Costa Mesa City Council Meeting (In	17 Payday 8:30am MWDOC Board Meeting (IN PERSON 4:30pm Board Meeting 5:30pm OCWD Board	18	19	20
21	22 AWWA ACE 26 Conference (Washington D.C.) 5:00pm IRWD Board Meeting (In Person and Virtual)	23	24 8:30am Jt. MWDOC/OCWD 4:30pm Board Meeting (Boardroom)	25 Pay Period Ends 8:30am MWDOC Executive Committee (IN PERSON & VIRTUAL)	26 5:00pm 80th Annual Costa Mesa Newport Harbor Lions Club Fish Fry and Carnival (Lions Park (570 W	27 11:00am 80th Annual Costa Mesa Newport Harbor Lions Club Fish Fry and Carnival (Lions Park (570 W
28	29	30	Jul 1	2	3	4

UPCOMING COMMUNITY OUTREACH EVENTS

Event	Date & Time	Location
OC Fair's Imaginology	Saturday, April 11, 2026 10:00 a.m. – 4:00 p.m.	OC Fairgrounds 88 Fair Drive Costa Mesa, CA 92626
Children's Water Education Festival	Wednesday & Thursday, April 15 – 16, 2026 9:00 a.m. – 2:00 p.m.	Oak Canyon Park 5305 Santiago Canyon Road Silverado, CA 92676
Earth Day Festival	Saturday, April 18, 2026 10:00 a.m. – 2:00 p.m.	Costa Mesa City Hall 77 Fair Drive Costa Mesa, CA 92626
Community Chat with Vice President Dewane	Monday, April 27, 2026 5:30 p.m. – 7:00 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626
Community Chat with Director Atkinson	Tuesday, May 12, 2026 5:30 p.m. – 7:00 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626

Mesa Water Education Center Open House	Saturday, May 16, 2026 10:30 a.m. – 4:00 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626
Community Chat with Director Fisler	Monday, May 18, 2026 5:30 p.m. – 7:00 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626
Institute for Conservation Research & Education Student Poster Symposium	Friday, May 29, 2026 5:30 p.m. – 7:30 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626
Community Chat with Director Bockmiller	Tuesday, June 2, 2026 5:30 p.m. – 7:00 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626
Community Chat with President DePasquale	Wednesday, June 17, 2026 5:30 p.m. – 7:00 p.m.	Mesa Water Education Center 1350 Gisler Avenue Costa Mesa, CA 92626
Lions Club Fish Fry	Friday, June 26, 2026 5:00 p.m. – 10:00 p.m. Saturday & Sunday June 27 - 28, 2026 11:00 a.m. – 10:00 p.m.	Lions Park 570 W. 18th Street Costa Mesa, CA 92627

MEMORANDUM

Dedicated to Satisfying our Community's Water Needs

TO: Board of Directors
FROM: Karyn Igar, P.E., Principal Engineer
DATE: April 8, 2026
SUBJECT: Local Groundwater Supply Improvement Project

RECOMMENDATION

Receive the presentation.

STRATEGIC PLAN

Goal #1: Provide an abundant, local, reliable and safe water supply.
Goal #2: Perpetually renew and improve our infrastructure.
Goal #3: Be financially responsible and transparent.
Goal #7: Actively participate in regional and statewide water issues.

PRIOR BOARD ACTION/DISCUSSION

At its January 25, 2023 meeting, the Board of Directors (Board) authorized staff to commit $250,000 from Mesa Water District (Mesa Water®) for a U.S. Bureau of Reclamation (USBR) WaterSmart Water grant for a feasibility study regarding brackish groundwater desalination and to offer to partner with Orange County Water District (OCWD) and neighboring cities.

At its May 22, 2024 meeting, the Board awarded a contract to Black & Veatch Corporation (Black & Veatch) for $524,085 and a contingency of $52,409 for an amount not to exceed $576,494 for the Local groundwater Supply Improvement Project (Local SIP), in partnership with OCWD, the City of Huntington Beach and the City of Newport Beach.

At its August 13, 2025 meeting, the Board approved a contract amendment with Black & Veatch for $5,612 for a total authorized contract amount not to exceed $582,105 to engage Clean Energy Capital to develop financial modeling and funding strategy support for the Local SIP.

BACKGROUND

In October 2025, Mesa Water submitted the USBR WaterSMART Title XVI Feasibility Study for the Local SIP, which evaluated the development of a brackish groundwater desalination facility to improve local and regional water supply reliability. Black & Veatch has addressed final comments received from USBR on the Feasibility Study and Mesa Water submitted the final Feasibility Study to USBR in March 2026. The final Feasibility Study, included in Attachment A, concluded that the Local SIP is feasible and would pay back between 18 and 25 years when compared to the no project alternative.

DISCUSSION

Mesa Water staff collaborated with Black & Veatch to develop a presentation appropriate for Boards and Councils of the project teaming partners -- OCWD, the City of Huntington Beach and

the City of Newport Beach -- and other stakeholders. The presentation introduces the Local SIP and why it is needed, confirms its feasibility, highlights the benefits of the project, and suggests actions that the partners should take.

Key Benefits

The Key Benefits highlighted in the presentation are as follows:

- New Local Water Supply: Provides approximately 6,000 acre-feet per year of new, locally controlled potable water supply.
- Reduced Reliance on Imported Water: Decreases dependence on imported supplies, improving long-term water supply reliability.
- Improved Groundwater Basin Health: Supports seawater intrusion management and improves groundwater quality in the Talbert Basin.
- Climate Resilience: Creates a weather-resilient supply that is less vulnerable to hydrologic variability.
- Regional and Economic Benefits: Helps close a projected regional supply gap and supports economic stability across the service area.
- Cost-Effective Solution: Identified as a cost-competitive approach where lifecycle benefits exceed lifecycle costs.

Call to Action

The project partners are invited to commit $40,000 each to fund the next steps of the project (Phase II), which is focused on advancing the project toward implementation.

Next Steps

The key next steps to the Local SIP will be discussed as part of the Board's April 29, 2026 workshop. The next steps recommended in the Feasibility Study and the presentation are as follows:

- Evaluating subsidence and groundwater management considerations to support sustainable basin operations;
- Refining project design and cost assumptions based on updated technical analyses and coordination with ongoing groundwater modeling efforts;
- Advancing funding strategy and grant positioning to pursue state and federal funding opportunities; and
- Continuing coordination with partner agencies and regulatory stakeholders to support regional alignment and project development.

FINANCIAL IMPACT

In Fiscal Year 2026, $200,000 is budgeted for the Local SIP; $117,630 has been spent to date.

ATTACHMENTS

Attachment A: Local SIP Feasibility Study

FINAL

LOCAL GROUNDWATER SUPPLY IMPROVEMENT PROJECT (LOCAL SIP)

WaterSMART: Title XVI Feasibility Study

BLACK & VEATCH PROJECT NO. 420122

PREPARED FOR

Mesa Water District

6 MARCH 2026

BLACK & VEATCH

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ACRONYMS AND ABBREVIATIONS LIST

BEA	Basin Equity Assessment
BGEPA	Bald and Golden Eagle Protection Act
BPP	Basin Production Percentage
CaCO3	Calcium Carbonate
CCRO	Closed-Circuit Reverse Osmosis
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFGC	California Fish and Game Commission
CHRIS	California Historical Resource Information System
CRA	Colorado River Aqueduct
CRHR	California Register of Historic Resources
CWA	Clean Waters Act
DAC	Disadvantage Communities
DWR	Department of Water Resources
ESA	Endangered Species Act
FTEs	Full Time Employees
GRF	Groundwater Recovery Facility
GWMP	Groundwater Management Plan
GWRS	Groundwater Replenishment System
Huntington Beach	City of Huntington Beach
IPaC	Information for Planning and Consultation
kWH	Kilowatt-hour
Local SiP	Local Groundwater Supply Improvement Project
LRP	Local Resources Program
MBTA	Migratory Bird Treaty Act
MCLs	Maximum Containment Levels
Mesa Water	Mesa Water District
MG	Million Gallons
mg/L	Milligrams per Liter
MWD	Metropolitan Water District of Southern California
MWDOC	Municipal Water District of Orange County
MWRF	Mesa Water Reliability Facility
NEPA	National Environmental Policy Act
Newport Beach	City of Newport Beach
NHPA	National Historic Preservation Act

NPDES	National Pollutant Discharge Elimination System
NPPA	California Native Plant Protection Act
NPV	Net Present Value
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
OC Basin	Orange County Groundwater Basin
OC San	Orange County Sanitation District
OCWD	Orange County Water District
OPCC	Opinion of Probable Construction Cost
OPEX	Operational Expenses
PEC	Policy and Environmental Compliance
ppm	Parts Per Million
RA	Replenishment Assessment
RM D&S	Reclamation Manual Directive and Standards
RWQCBs	Regional Water Quality Control Boards
SCWD	South Coast Water District
SDWA	Safe Water Drinking Act
SGMA	Sustainable Groundwater Management Act
SHPO	State Historic Preservation Office
SWP	State Water Project
SWRCB	State Water Resources Control Board
T&E	Threatened and Endangered
Talbert Barrier	Talbert Seawater Intrusion Barrier
TDS	Total Dissolved Solids
Title XVI	WaterSMART Title XVI Water Reclamation and Reuse Program
USBR	United States Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
WDRs	Waste Discharge Requirements
WOTUS	Waters of the United States

Executive Summary

The feasibility study for the Local Groundwater Supply Improvement Project (Local SiP), prepared by Mesa Water District (Mesa Water), is submitted for the US Bureau of Reclamation's (USBR) WaterSMART Title XVI Water Reclamation and Reuse Program (Title XVI) for a brackish groundwater desalination facility. Mesa Water is submitting this feasibility study in conjunction with the project stakeholders of Orange County Water District (OCWD), City of Huntington Beach (Huntington Beach), and City of Newport Beach (Newport Beach) to address regional water supply issues.

To ease Reclamation's review, the document layout aligns with WTR 11-01, Section 5 Requirements, for a Title XVI Feasibility Study Report. Not all required sections are relevant to the proposed Local SiP. However, these sections are included in the document to confirm that they were considered but were inapplicable.

Introduction

The proposed Local SiP will provide a regional benefit to all project stakeholders. Mesa Water, Huntington Beach, and Newport Beach all work together with OCWD and the Municipal Water District of Orange County (MWDOC) to ensure a safe and reliable water supply to the community.

Mesa Water is an independent special district that provides water service to 110,000 customers in a service area that includes Costa Mesa, a portion of Newport Beach, and John Wayne Airport. Currently, Mesa Water provides 100% locally sourced drinking water to its service area. The water provided is a blend of groundwater from the Orange County Groundwater Basin (OC Basin) Principal Aquifer System and a Deep Aquifer System that are both managed by OCWD. The Deep Aquifer System contains amber-colored groundwater which is treated at the Mesa Water Reliability Facility (MWRF). The MWRF can serve up to 50% of the community's water demands if needed.

In emergency situations, Mesa Water purchases imported water from the State Water Project (SWP) and the Colorado River Authority (CRA) from the Metropolitan Water District of Southern California (MWD) through MWDOC. Both Huntington Beach and Newport Beach currently source approximately 15% of their drinking water from imported water.

There are several challenges driving the need for the Local SiP. First, north-central Orange County currently lacks a diverse range of influent water resources. Additionally, the coastal community surrounding the Local SiP study area is impacted by the extreme drought conditions that have significantly reduced the availability of imported water supplies from the SWP and the CRA. California's Water Supply Strategy: Adapting to a Hotter, Drier Future, adopted by the Newsom Administration in 2022, anticipates the loss of 10% of the state's water supply due to changing weather patterns by 2040. The uncertainty around the future availability of imported water supplies and the approaching reduction of California's contractual rights to the Colorado River water, make it essential that Orange County continues to protect its economy, public health, and safety by developing new, locally controlled potable water supplies.

In addition, brackish groundwater from seawater intrusion further strain the water supply. The Local SiP study area covers a variety of shallow, principal, and deep aquifers of the OC Basin. However, some of the regions have total dissolved solids (TDS) concentrations exceeding 2,000 milligrams per liter (mg/L). The high TDS levels present challenges for potable water use, although current conditions indicate that saline water in Talbert Gap is largely being maintained seaward of the existing Talbert Barrier and is not an active threat to inland production wells. A local SiP project would create an extraction trough that pulls

some of the injection water at the Talbert Barrier seaward, inducing additional capture of brackish and seawater intrusion that would otherwise be slowly flushing toward the ocean. In this way the project does not create an entirely new supply, but instead provides a managed opportunity to recover and treat high-TDS groundwater seaward of the barrier—supplementing local sources, offsetting imported water, and potentially increasing the long-term effectiveness of the Talbert Barrier.

Goals and Objectives

Mesa Water and the project stakeholders established the following goals and objectives to guide the development of the Local SiP:

1. Add 5 to 8 million gallons per day (MGD) of potable water supply
2. Reduce reliance on imported water
3. Improve the region's ability to withstand droughts and changing weather patterns
4. Protect the groundwater basin from further seawater intrusion
5. Provide the most cost-effective alternative with the highest beneficial use of brackish groundwater

Alternatives Analysis

The following three alternatives were developed for evaluation in this feasibility study:

5.35 MGD Brackish Groundwater Treatment Facility

The first alternative consists of a 5.35 MGD brackish groundwater treatment facility. A total of five groundwater wells located evenly along the seaward portion of the Talbert Gap would pump 8.0 MGD of brackish groundwater to a new treatment facility. The brackish groundwater desalination facility would include a reverse osmosis (RO) feed tank, cartridge filters, 2-pass RO system, post-treatment including carbon dioxide and hydrated lime, disinfection, and a finished water pump station. The 5.35 MGD of finished water will be treated to drinking water standards and tied into an existing distribution line to serve Mesa Water, Newport Beach, and Huntington Beach customers. Brine concentrate from the RO system will be conveyed to Orange County Sanitation District's (OC San's) Interplant Trunkline to ultimately be discharged through their ocean outfall system.

2.65 MGD Brackish Groundwater Treatment Facility

The second alternative is a 2.65 MGD brackish groundwater treatment facility. Similar to the first alternative, there would be five groundwater wells spread evenly along the seaward portion of the Talbert Gap to pump brackish groundwater to a new treatment facility. However, only 4.0 MGD would be pumped from the groundwater basin. This alternative was considered because according to the current groundwater model, pumping 4.0 MGD from the Talbert Gap does not pose a concern for land subsidence in the area. As discussed in Section 10.1, the groundwater model needs further recalibration to determine a more accurate limit of groundwater pumping.

The treatment process flow diagram would be the same as the first alternative, but with fewer pieces of equipment to reflect the reduced treated water flow capacity. This alternative would produce 2.65 MGD of finished water treated to drinking water standards and tied into an existing distribution line to serve Mesa Water, Newport Beach, and Huntington Beach customers. Brine concentrate from the RO system will be conveyed to OC San's Interplant Trunkline to ultimately be discharged through their ocean outfall system.

No Project Alternative

The No Project Alternative would consist of Mesa Water, Huntington Beach, and Newport Beach continuing to rely on imported water from the SWP and CRA. There would be no further diversification of the region's water supply portfolio. Given the severe drought conditions caused by changing weather patterns in the study area, continuing with the current water management strategies of imported water reliance presents an increased risk to water supply. In addition to reliability risks, there are significant economic risks as reflected by historical and projected annual imported water price increases. For example, MWDOC is anticipating a 11.5% imported water rate increase from 2027 to 2028. Per project stakeholder input and MWDOC inflation rate projections, a treated imported water inflation rate of 9.0% was used for the first 10 years and 7.2% for the remaining 20 years of the alternatives cost analysis. Due to these risks for the study area, this alternative does not meet Mesa Water's objectives of providing sustainable water supply to its customers.

The cost comparison between the three alternatives described above is shown in Table ES-1.

Table ES-1 Alternatives 30-Year Net Present Value Cost Comparison

Cost Component	5.35 MGD Brackish Groundwater Treatment Facility [1]	2.65 MGD Brackish Groundwater Treatment Facility [1]	Import 5.35 MGD of Treated Water (No Project Alternative) [1, 2]
Total Construction Costs	$276.9 M	$193.3 M	-
Total Project Cost [4]	$317.5 M	$223.4 M	-
Total Project Cost less 20% Grant	$254.0 M	$178.7 M	-
OPEX Costs (Year 2025) [5]	$8.870 M	$4.771 M	$9.625 M
30-Year Net Present Value (NPV)	$448.5 M	$284.4 M	$490.6 M
Annual Project Yield (AFY)	5,993	2,996	5,993
Lifetime Project Yield (AF)	179,800	89,890	179,800
First Year Unit Cost per AF (2025)	$2,671	$3,459	$1,606
Unit Cost per AF [3]	**$2,495**	**$3,163**	**$2,728**

1. The interest rate, discount rate, inflation rate, and other cost assumptions are described in Section 4.4.
2. A treated water cost baseline (2025) of $1,528 was used with a 9.0% treated imported water inflation rate for the first 10 years followed by 7.2% for the remaining 20 years.
3. Unit cost per AF is in 2025 dollars over the next 30 years.
4. Project costs include total construction costs, site procurement, and consultant's design fee as described in Section 4.3.10.
5. OPEX costs are defined in Section 4.3.11 and Appendix B.

Comparing the 5.35 MGD Brackish Groundwater Treatment Facility Alternative with the No Project Alternative, the break-even point in cumulative present value may occur anywhere between year 18 and year 25 of the 30-year analysis as shown in Figure ES-1.

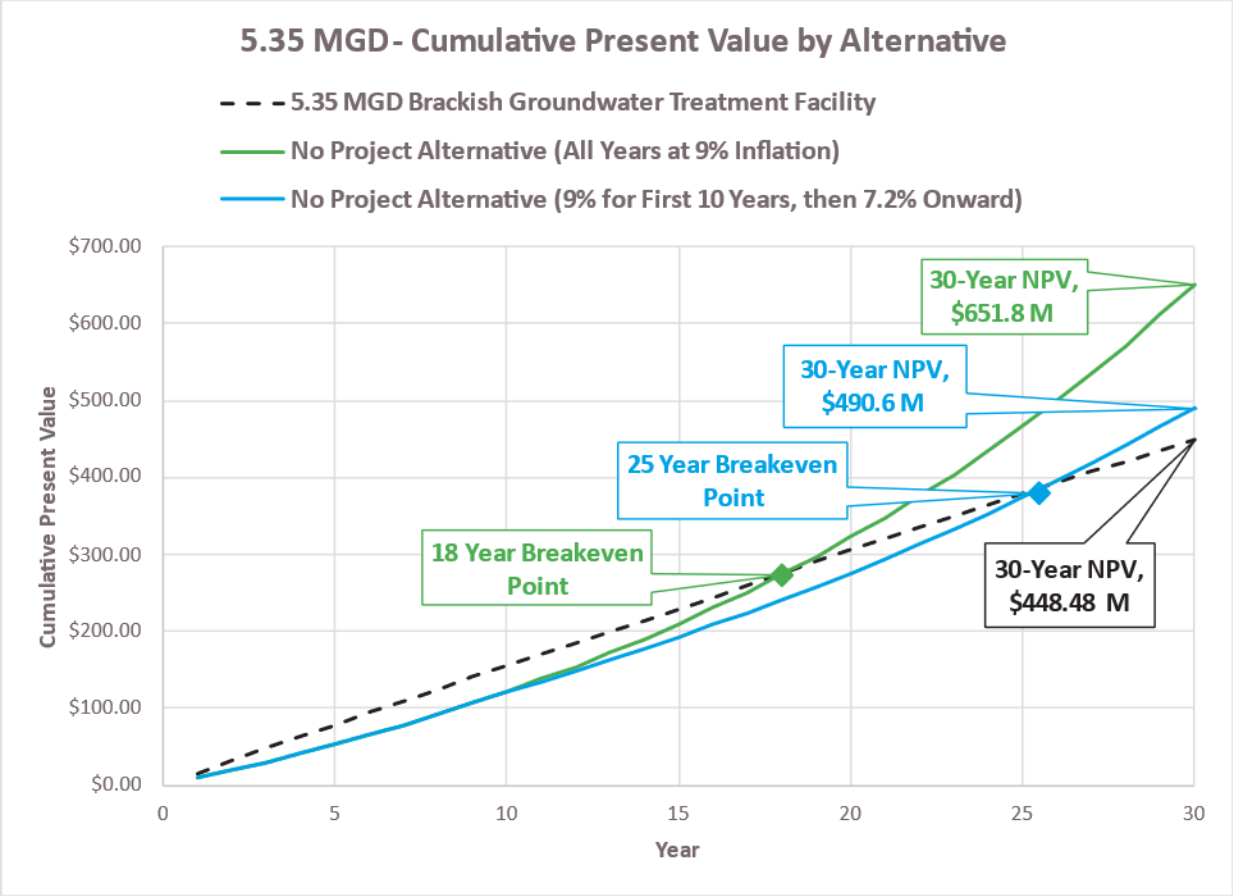


Figure ES-1 **Net Present Value Break-even Point**

Proposed Project

The Local SiP proposed project is the 5.35 MGD Brackish Groundwater Treatment Facility, based on both quantitative and qualitative assessments. Not only does this alternative have the lowest unit cost per AF, but it also meets all of Mesa Water's project goals. The finished water produced would offset imported water to the region and provide a new, locally controlled, and sustainable water supply to project stakeholders. By strategically spacing the groundwater wells along the coastal portion of the Talbert Gap, seaward of the existing Talbert Barrier Injection wells, pumping from this area could intercept intruding seawater and reduce chloride concentration from the protected inland basin. This approach also could enhance barrier performance by increasing seaward hydraulic gradients. Finally, the 5.35 MGD Brackish Water Treatment Facility is the most cost-effective alternative over a 30-year life cycle and has the highest beneficial use of local brackish groundwater.

Conclusions

The Local SiP aligns with Mesa Water's goals and objectives to provide a reliable, local water supply source to offset imported water usage in the region. While many project components have been analyzed

for preparation of this feasibility study including groundwater modeling, preliminary site investigations, a preliminary treatment plan, and conveyance routing; risks and challenges still exist as project refinement and implementation occurs. Project areas that will be further developed throughout the detailed design phase include groundwater model refinement, site selection, brine discharge coordination with OC San, California Environmental Quality Act (CEQA) permitting, National Pollutant Discharge Elimination System (NPDES) permitting, and securing funding with project stakeholders. Mesa Water is committed to constructing and operating the Local SiP throughout its life to maximize the beneficial use of harnessing local brackish groundwater supplies.

1.0 Introduction

1.1 Non-Federal Project Sponsors

Identification of the non-Federal project sponsor(s).

The feasibility study for the Local Supply Improvement Project (Local SiP), prepared by Mesa Water District (Mesa Water), the primary non-Federal project sponsor, is submitted for Reclamation's response to the requirements of the WaterSMART Title XVI Water Reclamation and Reuse Program (Title XVI). Mesa Water is submitting the feasibility study on behalf of the following non-Federal project sponsors: Orange County Water District (OCWD), City of Huntington Beach, and City of Newport Beach. Refer to Figure 1-1 for each non-Federal project sponsor's service area.

1.1.1 Mesa Water District

In 1960, Mesa Water, formerly Costa Mesa County Water District, began operations by acquiring the assets and obligations of consolidating the city of Costa Mesa's Water Department, Fairview County Water District, Newport Mesa Irrigation District, and Newport Mesa County Water District.

Mesa Water now serves approximately 110,000 residents and covers around 11,500 acres. The service area includes Costa Mesa, parts of Newport Beach, and the John Wayne Airport. Groundwater is Mesa Water's primary water source. Mesa Water pumps the Orange County Groundwater Basin (OC Basin) via nine wells to provide 100% locally sourced drinking water to its service area. Water from the Santa Ana River, OCWD's Ground Water Replenishment System (GWRS), and imported water from the Metropolitan Water District of Southern California (MWD) are used to replenish the basin. Groundwater from the Mesa Water Reliability Facility (MWRF) is also used to serve the community's water needs and sources deeper aquifer groundwater which receives treatment for color removal. The facility has a capacity of 8.6 MGD and can provide up to 50% of water demand if needed.

1.1.2 Orange County Water District

Orange County Water District (OCWD) was established in 1933 to manage and replenish the groundwater basin. OCWD serves over 2.5 million people across nearly 350 square miles in Orange County, California. To provide a reliable high-quality water supply, OCWD utilizes a wide range of water management practices. OCWD operates the Groundwater Replenishment System (GWRS), one of the world's largest purification systems for indirect potable reuse. Through research and monitoring programs, OCWD strives to maintain and improve groundwater quality. OCWD collaborates with local, state, federal, and private sectors to improve water reliability.

1.1.3 City of Huntington Beach

The City of Huntington Beach (Huntington Beach) water infrastructure consists of wells, reservoirs, treatment facilities, and over 400 miles of pipelines. The water is sourced from a combination of local groundwater and imported water from MWD. Huntington Beach serves 200,000 residents and covers around 17,000 acres. Huntington Beach promotes water conservation and sustainability through various programs, incentives, and public education. Huntington Beach currently sources approximately 15% of their drinking water from imported water.

1.1.4 City of Newport Beach

The City of Newport Beach (Newport Beach) manages a variety of wells, pipelines, reservoirs, and treatment facilities to provide water to approximately 87,000 residents over 24,000 acres. Newport Beach sources its water from a combination of local groundwater and imported water from MWD. Newport Beach's water department emphasizes the importance of water sustainability through conservation initiatives, public outreach, and use of advanced water management technologies. Newport Beach currently sources approximately 15% of their drinking water from imported water.

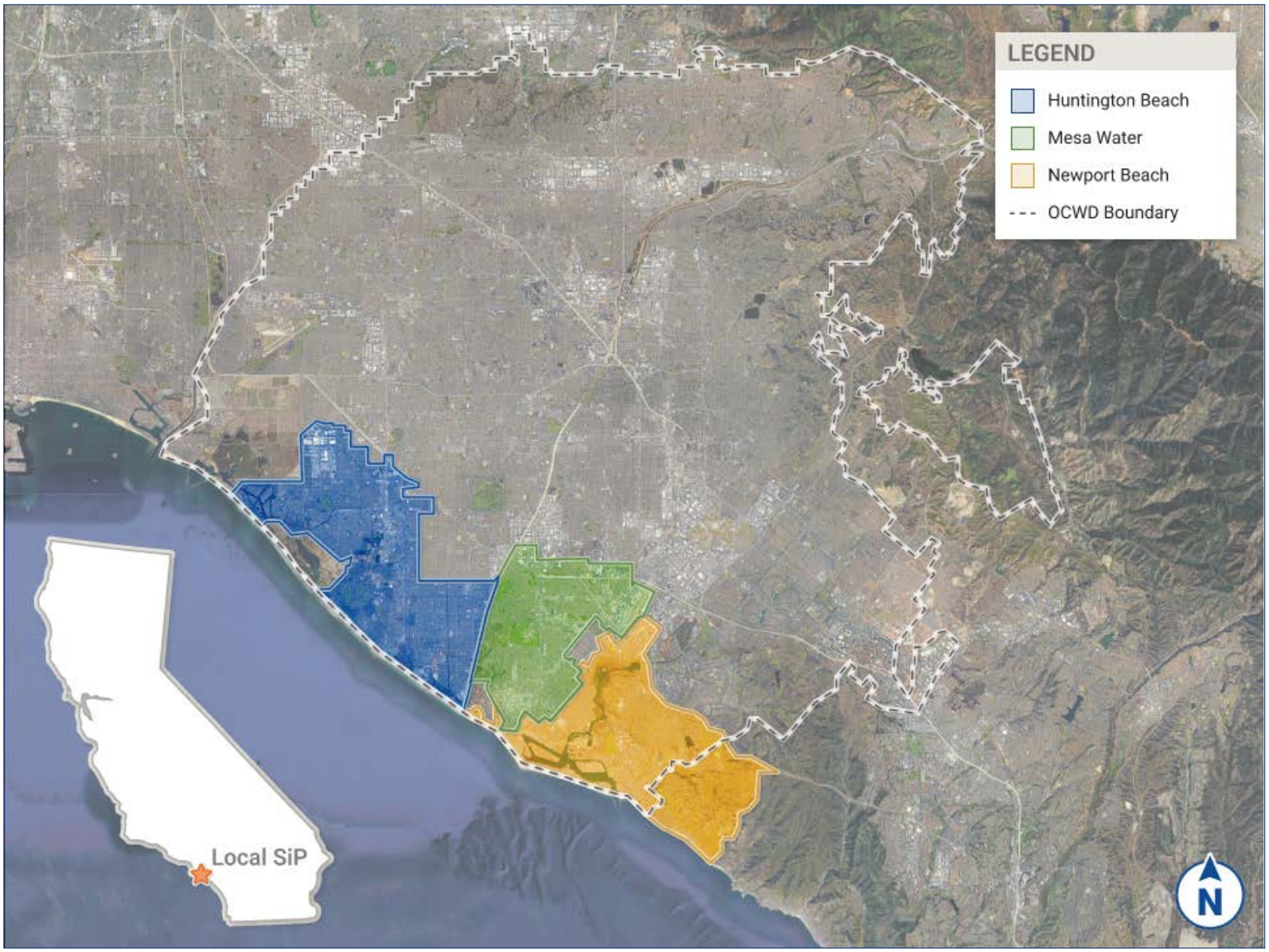


Figure 1-1 **Non-Federal Project Sponsors' Service Areas**

1.2 Description of Study Area

Description of the study area and area/project map.

The study area identified for the Local SiP is in north-central Orange County, California. The area is highly susceptible to the impacts of changing weather patterns and drought periods. Integrated finished water distribution infrastructure, dense urban populations with consistent demand and groundwater basin replenishment, via OCWD's GWRS, makes the study area well-suited to develop supplemental local water supplies that provide benefit across project stakeholders.

As shown in Figure 1-2, the study area is within OCWD, Mesa Water, Huntington Beach, and Newport Beach service areas. The terrain is diverse, consisting of a mixture of coastal plains, rolling hills, and flat plains. Land surface elevations range from approximately 0 to 100 feet above sea level. The identified area has a Mediterranean climate with mild winters and dry summers. Temperatures typically range between 45 to 85 degrees Fahrenheit (°F) year-round. The area is surrounded by many bodies of water including the Santa Ana River, Talbert Channel, Upper Newport Bay, Huntington Beach Wetlands, and the Pacific Ocean.

Mesa Water serves approximately 110,000 residents and additional tourists. The community consists of a mix of residential, commercial, and recreational environments. The area hosts many cultural and community events including the highly attended Orange County Fair. The South Coast Plaza is a large shopping center in the area that local and out-of-town shoppers visit. The area has a strong economy and various employment opportunities such as healthcare and other professional services. Costa Mesa is experiencing a growing population, residential and commercial development, economic development, and upgrades to public infrastructure. As the area continues to grow, increasing the use of sustainable water sources is crucial to meet future demands.

Currently, Mesa Water's sole source of water is groundwater from the OC Basin. The OC Basin is in the north-central portion of Orange County, extending from the Pacific coast to the Santa Ana Mountains. The OC basin provides 100% of Mesa Water's demand. Approximately 85% comes from the Principal Aquifer System, which does not require treatment, and the remaining 15% is drawn from the Deep Aquifer System which receives nanofiltration treatment at the MWRF to remove organics and color. Additionally, Mesa Water has the ability to purchase imported water from MWD as a backup water source. Huntington Beach and Newport Beach both rely on imported water to meet approximately 15% of their respective service areas' demands.

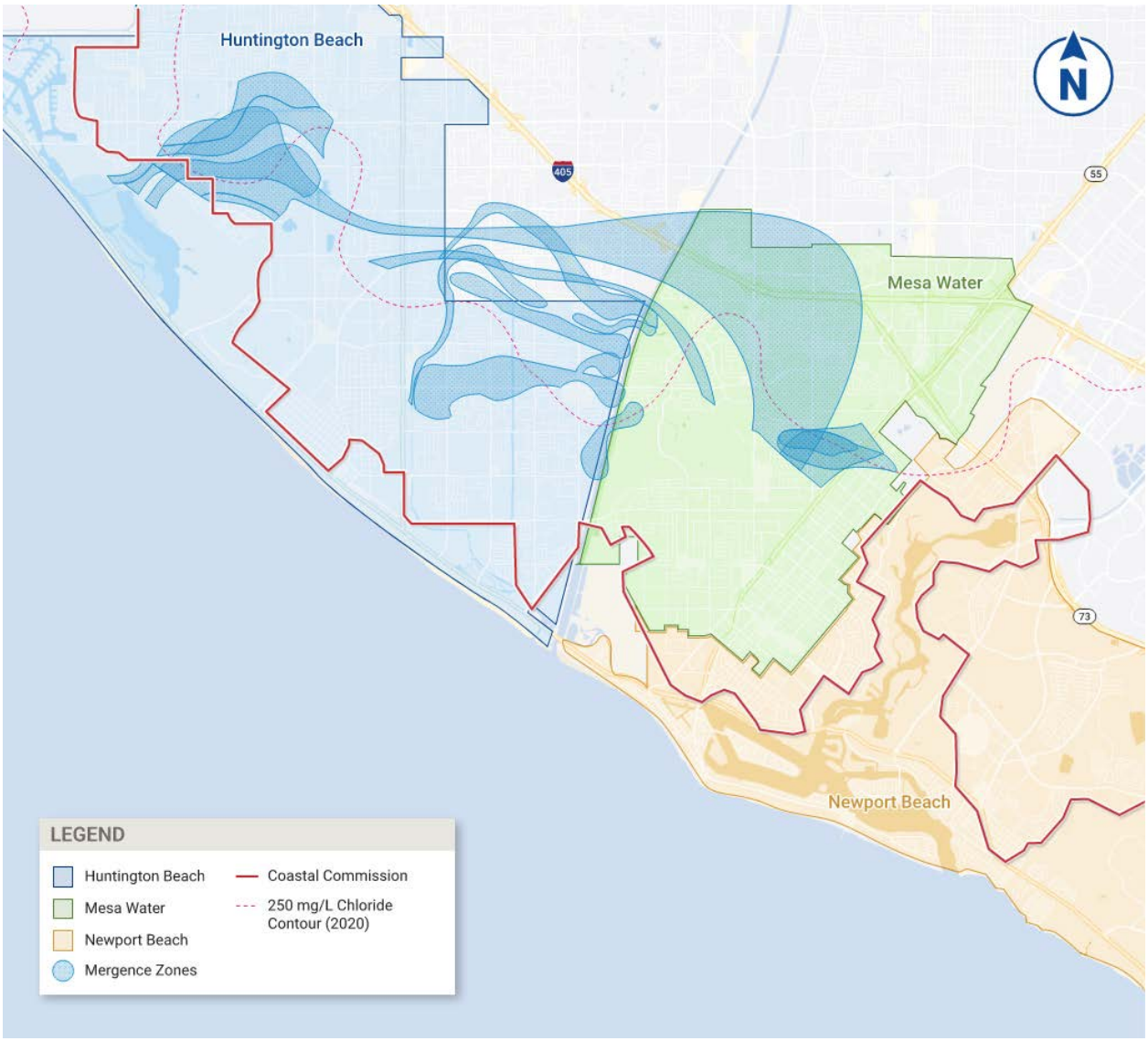


Figure 1-2 **Local Groundwater Supply Improvement Study Area**

1.3 Definition of Study Area

Definition of the study area in terms of both the site-specific project area where the reclaimed water supply will be needed and developed, and any reclaimed water distribution systems.

The Local SiP study area includes Huntington Beach, Costa Mesa, and Newport Beach, specifically areas west of the 405 Freeway and inland of the Coastal Commission Zone. Additionally, a portion of Fountain Valley was evaluated as a potential location for the proposed treatment facility. Water resources within this area include a combination of imported water supplied through MWDOC and local groundwater managed by OCWD. The area is supported by key water infrastructure including GWRS along with drinking water and brine distribution networks.

1.3.1 Imported Water Through MWDOC

Mesa Water, Newport Beach, and Huntington Beach have access to imported water from the MWD through MWDOC. MWD imports water from the State Water Project (SWP) and the Colorado River Aqueduct (CRA) and distributes it to its 26 member agencies across Southern California, including MWDOC. Refer to Figure 1-3 for map of the MWD member agencies.

The SWP collects water from the Feather River in Northern California, channels it through Lake Oroville, and conveys it through the Sacramento-San Joaquin Delta. From there, it enters the California Aqueduct for delivery to Southern California. MWD manages and maintains a large system of reservoirs, treatment plants, pipelines, and service connections to distribute water across its service area.

Across all project stakeholders, MWD imported water is an essential source to meet service demands and as back up during droughts and emergencies. As population driven demand continues to increase over time, there is an immediate need to identify new water supply sources for the region to further strengthen the local water sources as a sustainable supplement to imported water.

1.3.2 Local Groundwater Supplies

The project stakeholders rely primarily on the OC Basin (California Department of Water Resources Designated Basin 8-1; DWR, 2003), a large coastal aquifer system managed by OCWD. The OC Basin serves as the principal water source for over 75% of north and central Orange County's water supply and is replenished through a combination of natural recharge and managed recharge using Santa Ana River flows, imported water, and advanced-treated indirect potable reuse water from OCWD's Groundwater Replenishment System (GWRS; OCWD, 2017).

The OC Basin is subdivided into three hydraulically connected aquifer systems as shown on Figure 1-4:

- The Shallow Aquifer System, generally used for non-potable or small-scale industrial use.
- The Principal Aquifer System, the primary source of groundwater production and supplies the project stakeholders' clear wells.
- The Deep Aquifer System, locally contains amber-colored groundwater that requires treatment for potable supply; therefore is used more selectively and supplies the MWRF.

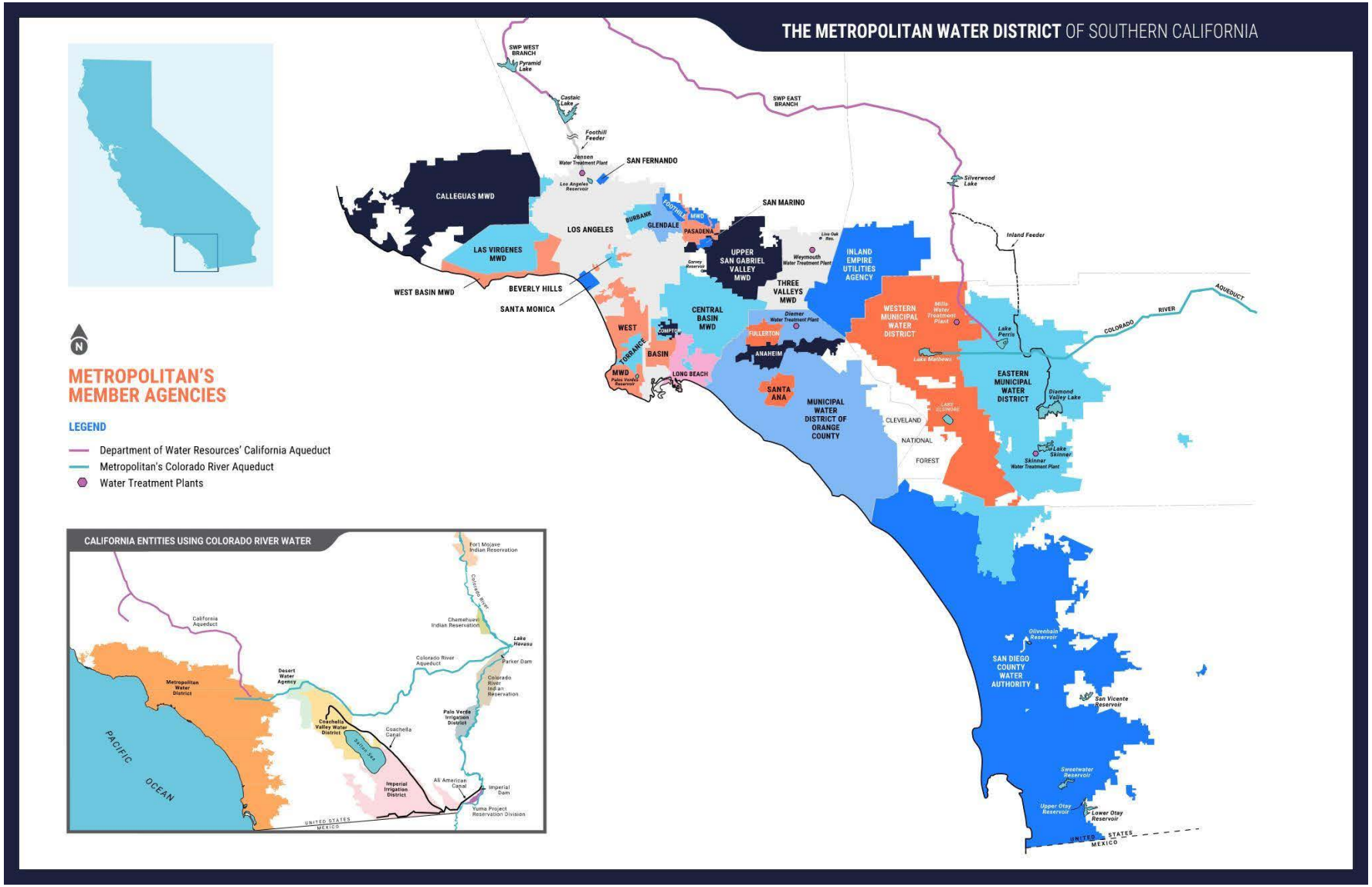
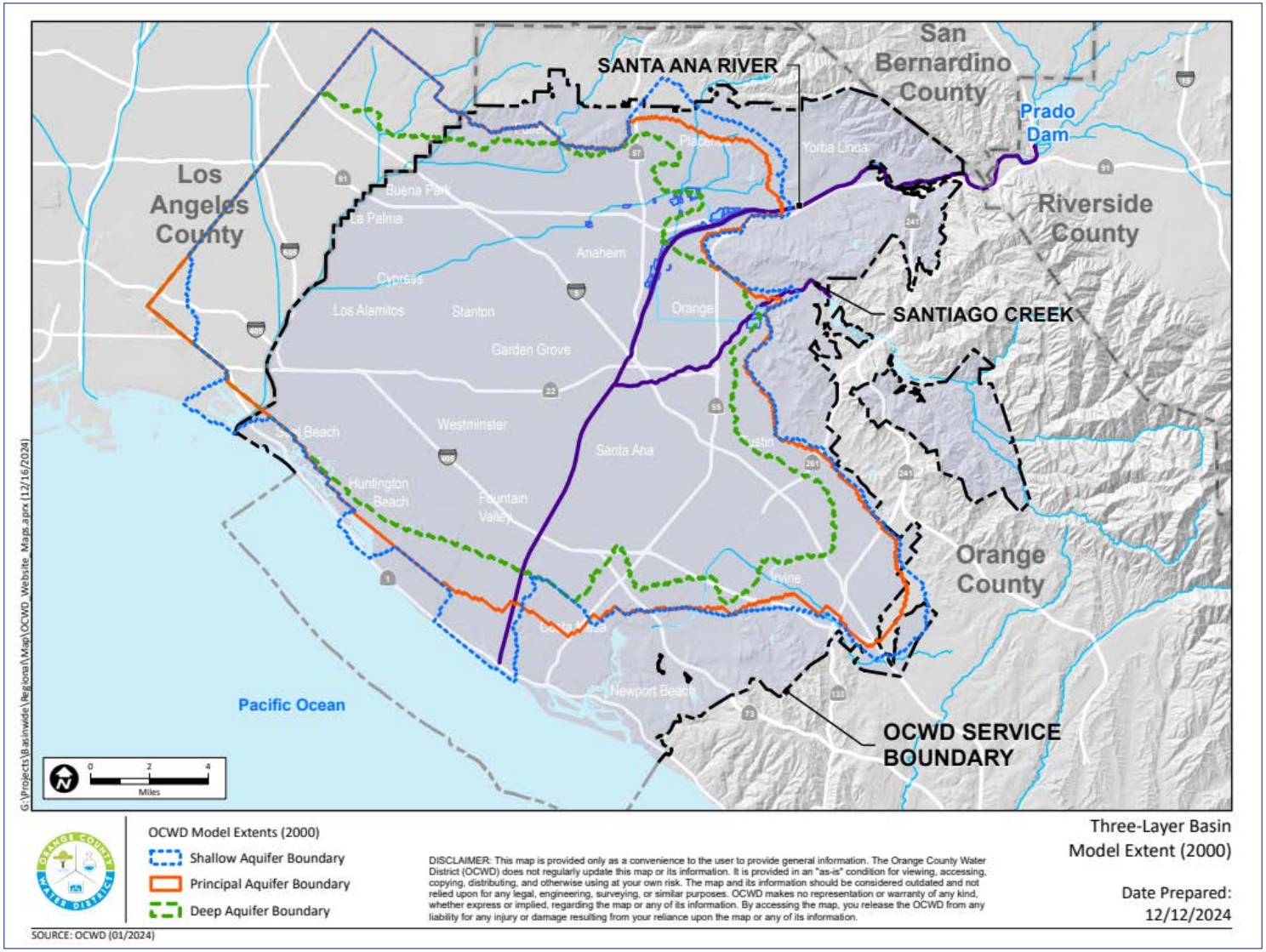


Figure 1-3 **MWD Member Agencies Map**



Source: OCWD Service Boundary and Groundwater Basin Boundary

Figure 1-4 Orange County, California Groundwater Basin Map

Mesa Water operates nine active groundwater wells within the OC Basin's Pressure Area, where aquifers are confined and well-protected from surface contamination. Seven wells produce high-quality "clear" water that is disinfected and delivered directly into the system. Two "amber" wells extract deeper groundwater that is treated at the MWRF before entering distribution (Arcadis, 2021). Refer to Figure 1-5.

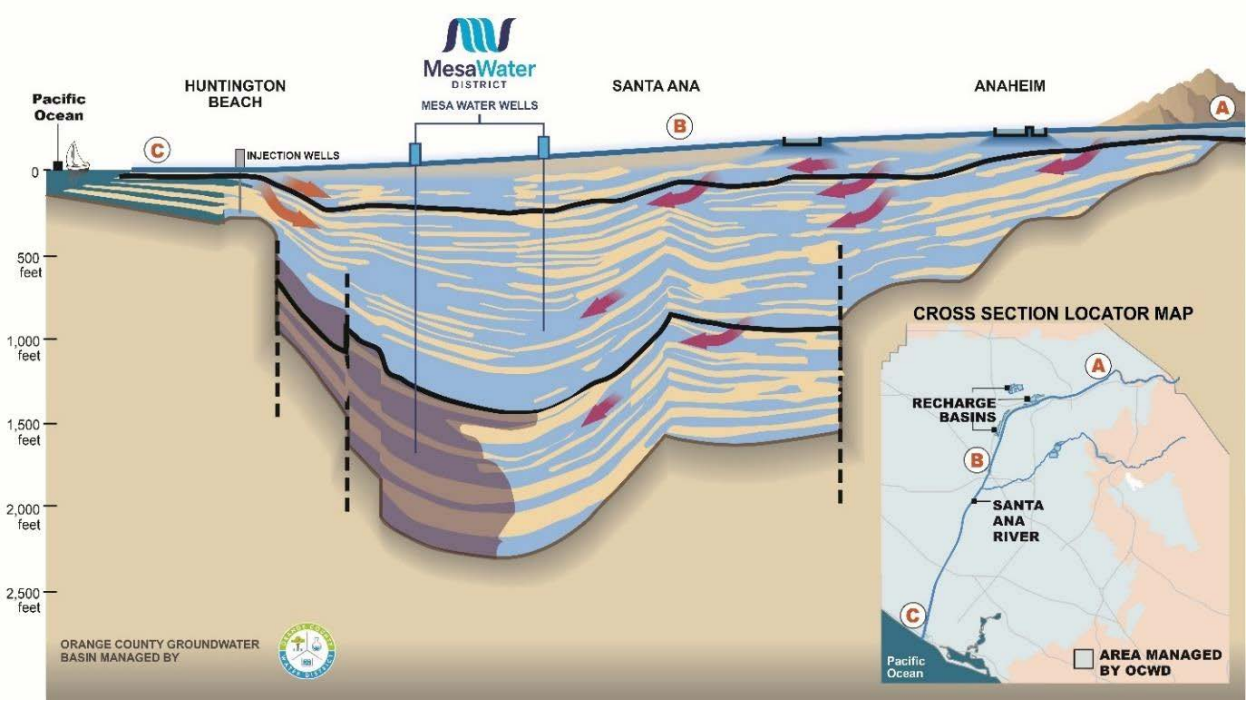


Figure 1-5 Mesa Water Within the OC Basin

1.3.3 Drinking Water Distribution System

The study area is a highly developed region with a mix of commercial, industrial, and residential land uses. The region is sustained by a mix of local groundwater and imported water through MWDOC. Three main MWDOC connections to the distribution system are within the study area. OC-09, OC-35, and OC-44 serve as the primary sources of imported water to this area. The agencies served by the three connections and pipelines are summarized in Table 1-1 and their distribution line locations are displayed in Figure 1-6. These pipelines play a vital role in delivering potable drinking water to the densely populated area.

Table 1-1 MWDOC Distribution Lines in the Study Area

Distribution Line	Served Agencies
OC-09	Huntington Beach; other retail water agencies in central and western Orange County
OC-35	Huntington Beach, Fullerton, Placentia, Brea, and LaHabra
OC-44	Huntington Beach and Mesa Water

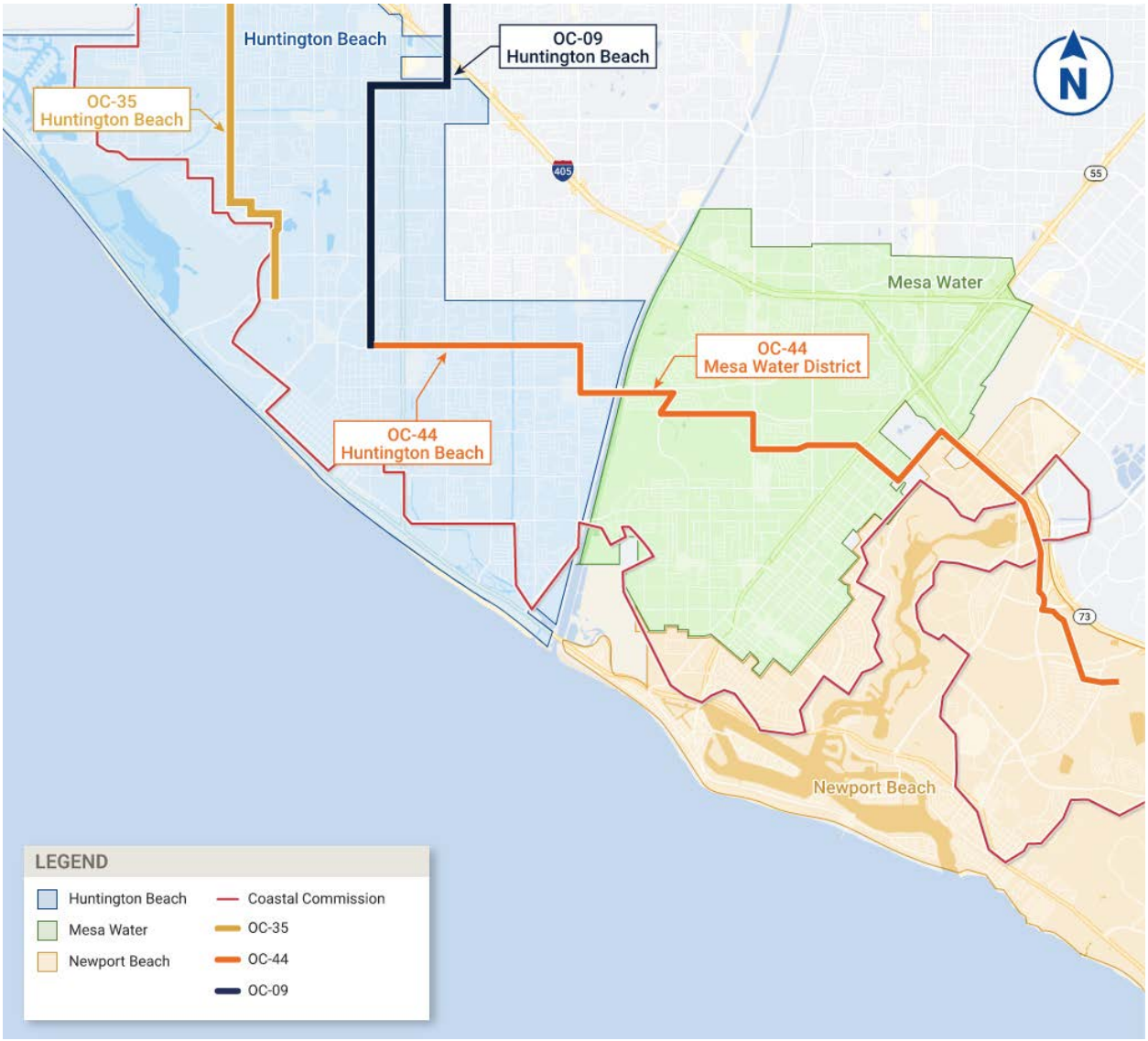


Figure 1-6 **MWD Distribution Lines in the Study Area**

1.3.4 Brine Disposal System

Within the study area, there are multiple brine disposal lines that are primarily managed through ocean discharge systems. In addition to the dedicated brine lines, there is an extensive sewer collection system which was considered for brine management. Figure 1-7 identifies the brine lines evaluated within the study area. The following subsections summarize the assessment of each brine disposal option and selection.

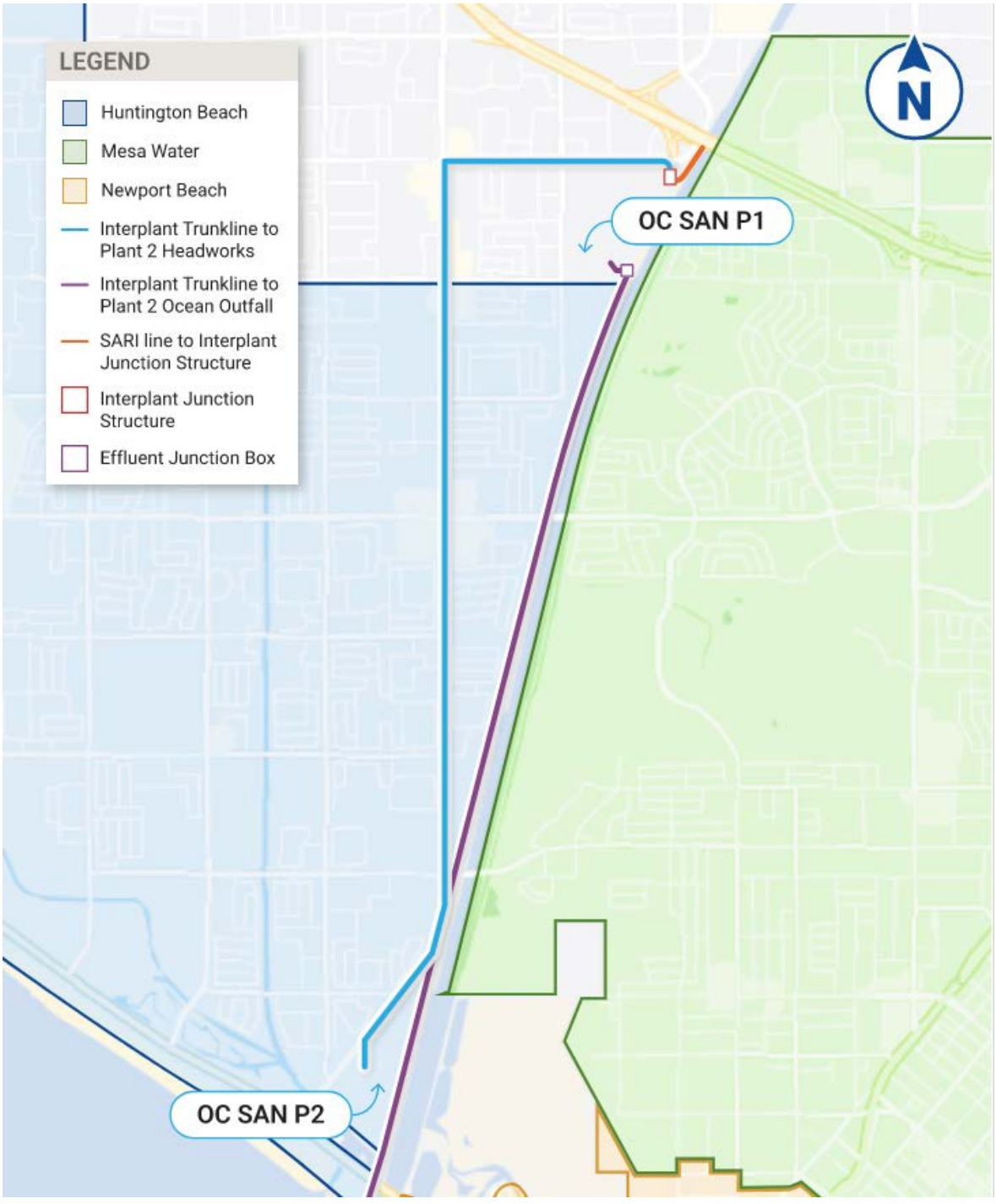


Figure 1-7 **Brine Lines Within the Study Area**

1.3.4.1 Orange County Sanitation District Interplant Trunkline

The Orange County Sanitation District (OC San) 78" Interplant trunkline is a critical part of the wastewater infrastructure in the area. The trunkline transports non-reclaimable waste streams and brine from various sources from OC San Plant 1 to Plant 2 for further treatment and discharge through the OC San Ocean Outfall system. The primary waste stream from the USBR proposed project will be groundwater desalted brine, as such it will be relatively low in organics but higher in salinity than typical wastewater primary influent. Because OC San Plant 2 does not include a desalination step, and due to the relatively small flows compared to the primary influent flow, impact to Plant 2 treatment processes are assumed to be minimal. Use of the Interplant Trunkline is assumed for this project and would send project brine for treatment at Plant 2 prior to disposal.

1.3.4.2 OC San Effluent Junction Box at Plant 1

Another brine disposal infrastructure option in the immediate project area is the Effluent Junction Box at OC San Plant 1. Currently reverse osmosis (RO) brine from GWRS is sent to the Effluent Junction Box for flow management, and subsequently the flows are conveyed directly to the OC San Ocean Outfall System, thereby bypassing additional treatment at Plant 2. The OC San Ocean Outfall system extends over 5 miles offshore and uses a diffuser system to minimize environmental impact. Utilization of the Effluent Junction Box is not assumed for this project but would provide mutual benefits across project stakeholders. Because the waste stream from the USBR proposed project would be groundwater desalted brine, the quality is anticipated to be of a higher quality than GWRS indirect potable reuse brine and therefore should not require additional treatment at OC San Plant 2 prior to ocean discharge. Utilization of this line should be considered during future project phases and will require further coordination with OC San prior to selection.

1.3.4.3 Sewer System Discharge

The primary waste stream from the USBR proposed project will be groundwater desalted brine. Within the region there are multiple examples of similar projects discharging groundwater desalted brine directly to the sewer collection system. However, because the project area provides immediate access to dedicated brine lines, sewer collection system discharge is not required. Additionally, if sewer collection discharge were utilized, the groundwater desalted brine could increase the salinity of GWRS influent by ten to fifteen percent and risk increasing energy consumption at GWRS. Due to the availability of dedicated brine lines, and potential impacts to GWRS influent salinity, sewer collection system discharge is not recommended for the proposed project.

1.3.5 OCWD Basin Replenishment

OCWD actively replenishes the OC Basin using multiple sources: Santa Ana River, GWRS, and purchased imported water when needed during periods of drought. At the Talbert Barrier, up to 30 MGD (with an average of 15 MGD) of advanced treated indirect potable reuse water from GWRS is injected to maintain water levels in the Talbert Aquifer at protective elevation to restrict the inland migration of saltwater intrusion. A significant portion of the water injected at the Talbert barrier serves to replenish the basin as well.

OCWD manages the basin sustainably through a financial incentive structure based on the Basin Production Percentage (BPP), which sets the portion of a retailer's demand that can be met by groundwater at a specific Replenishment Assessment (RA) rate. Pumping above the BPP incurs an additional Basin Equity Assessment (BEA), aligning producer behavior with basin sustainability goals and ensuring adequate funding for recharge and basin management operations. Mesa Water's production of

amber water is exempt from OCWD's BEA, due to the MWRF basin water quality benefit of utilizing lower-quality water while protecting the broader aquifer (OCWD, 2017).

2.0 Statement of Problems and Needs

Describe key water resource management problems and needs for which a water reclamation, recycling or desalination project will provide a solution, including the following information. All projections shall be reasonable and applicable for a minimum of 20 years.

2.1 Description of Problem and Need for Project

Description of the problem and need for a water reclamation, recycling, or desalination project.

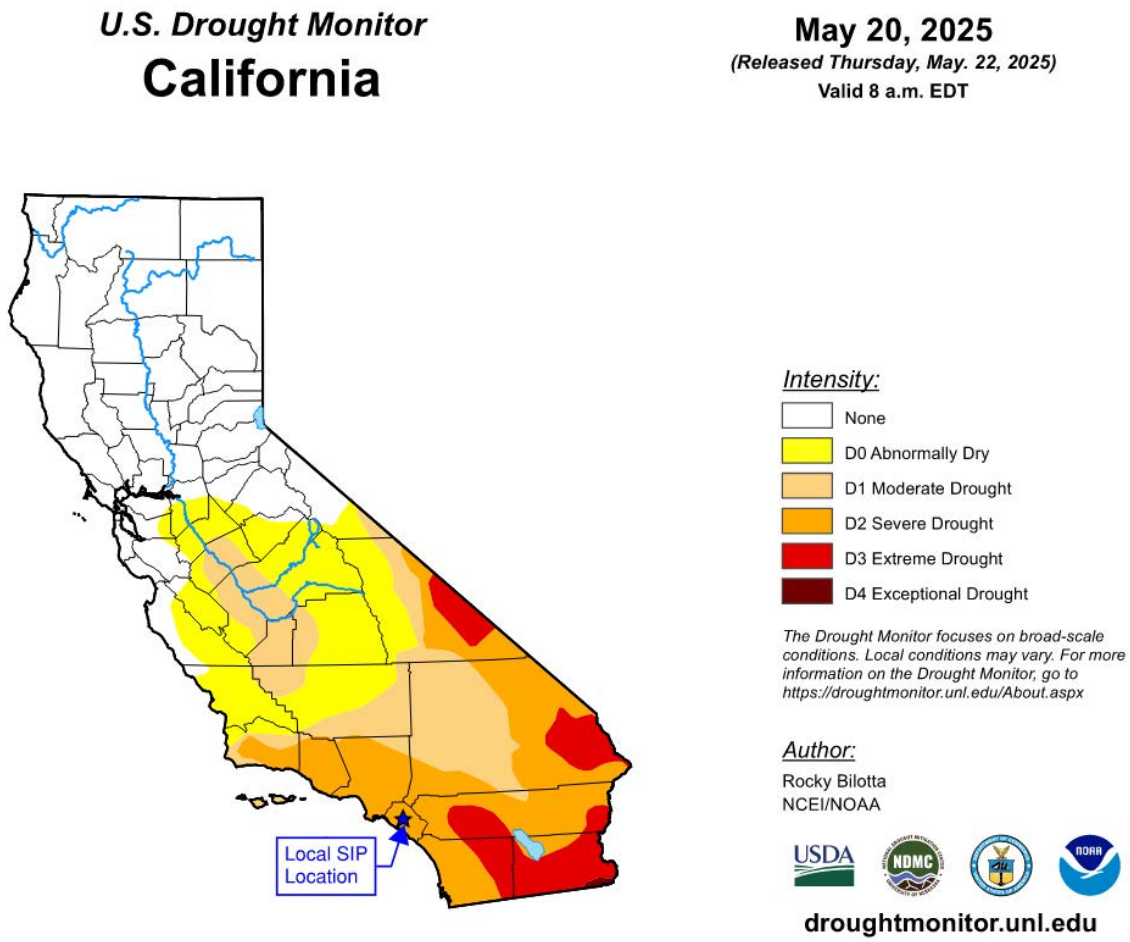
The need for the Local SiP stems from multiple factors including:

- The demand for new water supplies for the region to support the project stakeholders' Urban Water Management Plan (UWMP) reliability objectives
- Risks to imported water supplies and supporting SB 606/AB 1668 Long Term Water Use Efficiency and Drought Resilience mandates
- Seawater intrusion impacting the OC Basin groundwater quality
- Increasing population size in the project area
- Supporting compliance with California's Title 22 drinking water standards by ensuring treated groundwater consistently meets potable water quality requirements

2.1.1 Imported Water Supply Risk

North-central Orange County currently lacks a diverse range of influent water resources. The coastal community surrounding the Local SiP study area is impacted by the extreme drought conditions as shown on Figure 2-1 and Figure 2-2 that displays the drought status in the Orange County area over the last 5 years. The ongoing drought in California has significantly impacted the availability of imported water supplies from the SWP and the CRA. While Mesa Water uses imported water as a backup source; Huntington Beach and Newport Beach use imported water to meet approximately 15% of their annual water demand. The uncertainty around the future availability of the SWP supplies and the approaching reduction of California's contractual rights to the Colorado River water, make it essential that Orange County continues to protect its economy, public health, and safety by developing new, locally sourced, sustainable potable water supplies.

California's Water Supply Strategy: Adapting to a Hotter, Drier Future, adopted by the Newsom Administration in 2022, anticipates the loss of 10% of the state's water supply due to changing weather patterns within the next 15 years. It includes specific targets for expanded brackish water desalination by 28,000 AF by 2030 and 84,000 AF by 2040. The Department of Water Resources and State Water Resources Control Board have started identifying sites for future brackish groundwater supplies. This recent state regulation further supports the need to fully explore the engineering and environmental feasibility, costs, regulatory permitting, and institutional requirements associated with developing new water supplies via the Local SiP.



Source: U.S. Drought Monitor

Figure 2-1 Drought Status Map

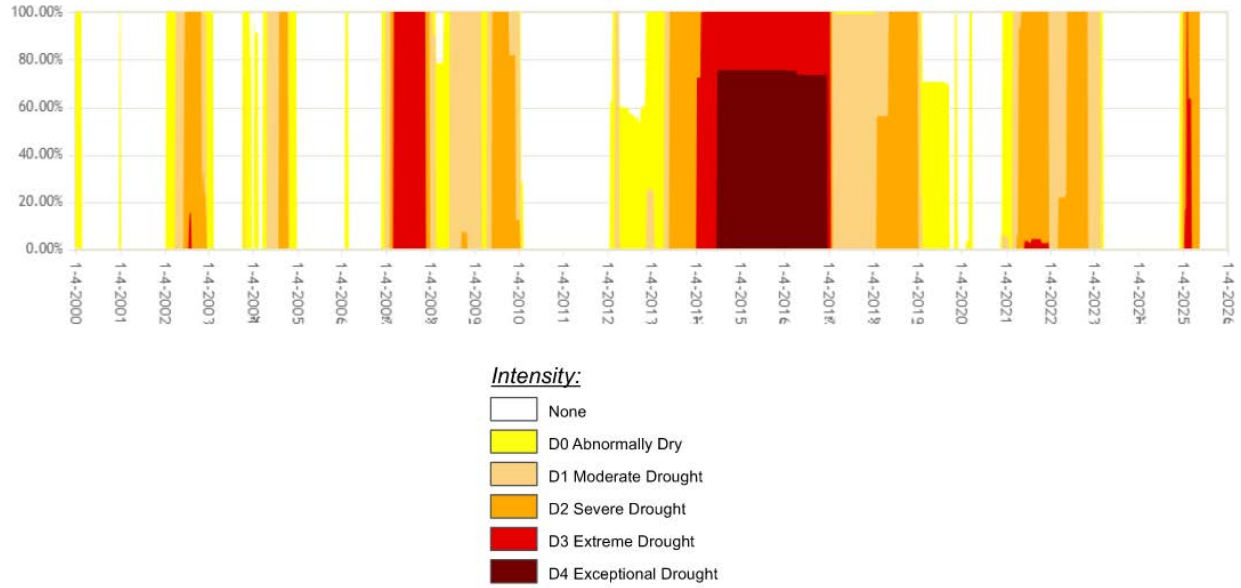


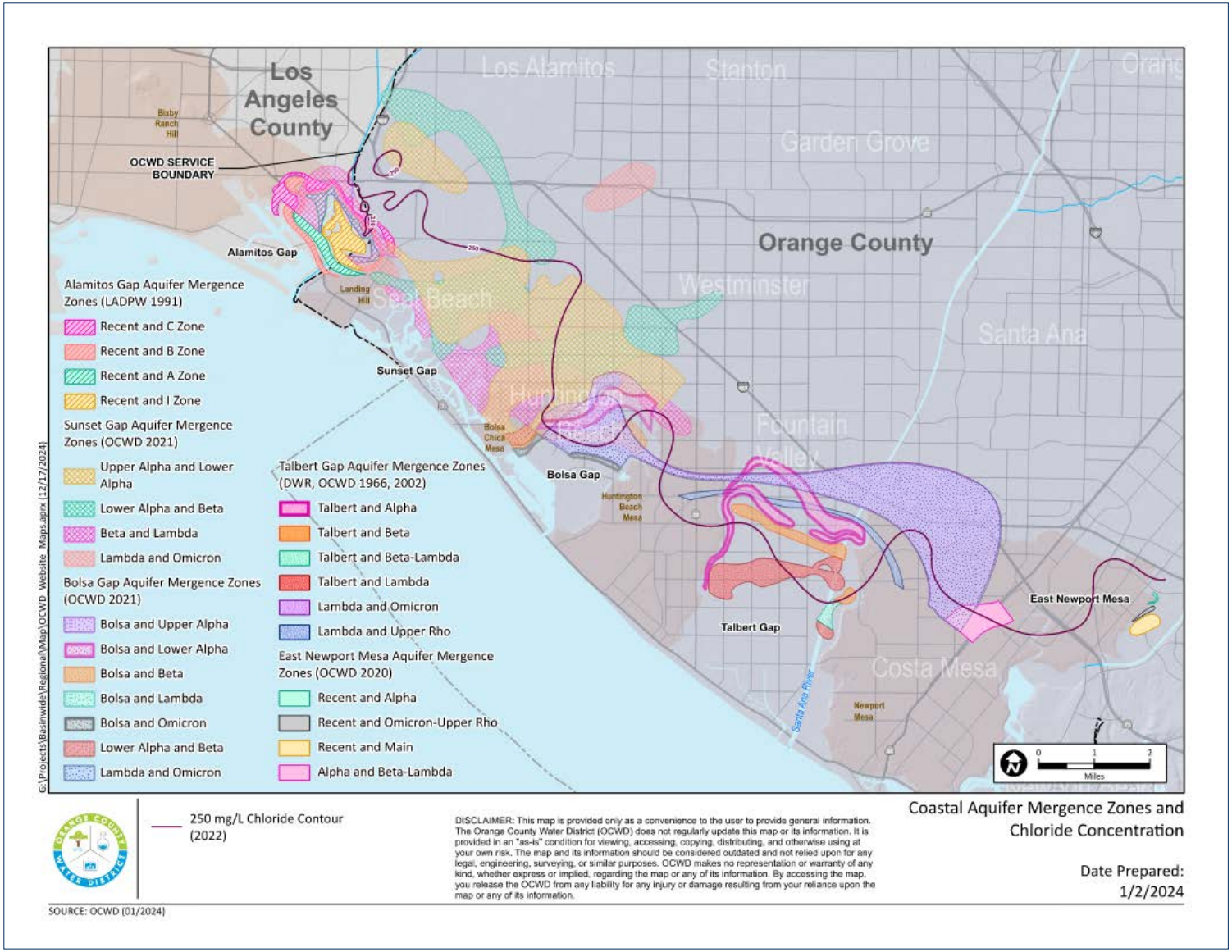
Figure 2-2 Orange County Drought Status 2000-2025

2.1.2 OC Basin Seawater Intrusion

Seawater intrusion poses a significant challenge to the OC Groundwater Basin, particularly in the coastal areas. T-he 250 mg/L chloride contour line (Figure 2-3) serves as a key indicator of the inland-most leading edge of intrusion. By strategically placing the Local SiP wells seaward of the chloride contour, an extraction trough is created that captures high TDS water and pulls the leading-edge seaward, providing additional protection to critical freshwater supplies and municipal wells. This approach supplements the long-term effectiveness of the Talbert Barrier and protects the high-quality water in the Principal Aquifer which is used for over 90% of the basin's groundwater pumping. Furthermore, future sea level rise may increase the threat of seawater intrusion, and the Local SiP, working in combination with the Talbert Barrier, would be able to provide a reliable defense. This is especially important for Newport Beach, which relies on the Shallow aquifer for its municipal water supply.

Prior to implementation of the GWRS, multiple groundwater wells were abandoned within the study area due to seawater intrusion. Two such wells controlled by Newport Beach were located at the Southeast corner of Adams and Brookhurst, and a second at the southeast corner of Bushard and Hamilton. Similarly, Laguna Beach was forced to abandon a groundwater well in the study area that was previously located at the southwest corner of Garfield and Magnolia. Based on discussions with the project stakeholders, there were additional abandoned groundwater wells due to seawater intrusion, however a complete catalog was not available at the time of the writing of this feasibility study.

Based on the available groundwater modeling it is estimated that the Local SiP would improve the groundwater quality at these previously abandoned locations. However, pumping groundwater from these locations would have to be closely coordinated under the larger groundwater basin management plan.

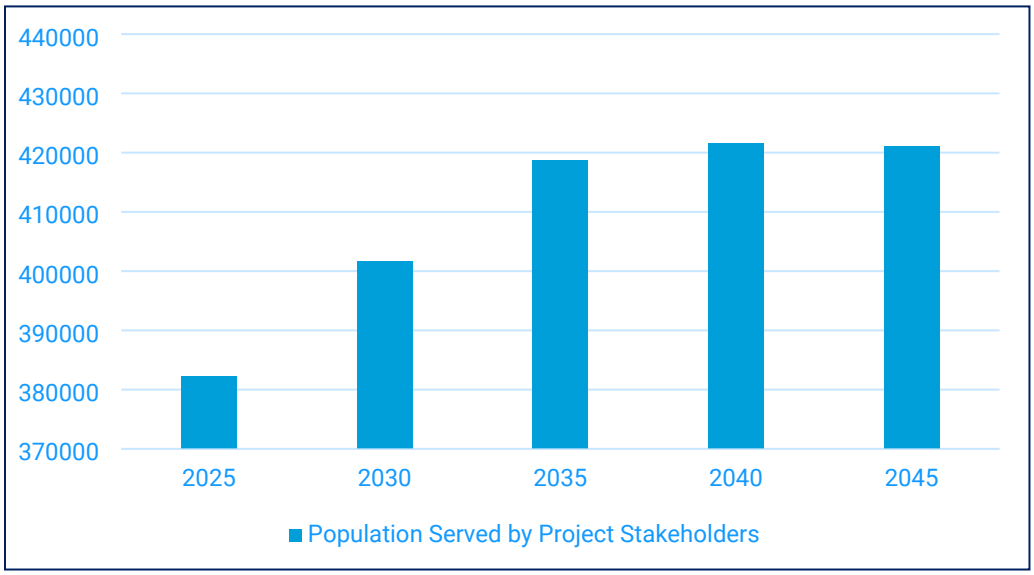


Source: Coastal Aquifer Mergence Zones and Chloride Concentration

Figure 2-3 OCWD Coastal Aquifer Mergence Zones and Chloride Concentration Map

2.1.3 Increasing Population Growth and Demand

Across all project stakeholders, ongoing support for economic development is needed by servicing a continually growing Orange County population. From 2020 to 2045, the project stakeholders' retail population is projected to increase 12.04%, as shown on Figure 2-4. Even though Mesa Water and the project stakeholders have already implemented proactive demand management practices as shown in Table 2-1, there is a further need to diversify the water portfolio to reduce their vulnerability to external factors.



Source: (2020 Mesa Water UWMP, 2020 Huntington Beach UWMP, and 2020 Newport Beach UWMP)

Figure 2-4 **Population Served by Project Stakeholders Growth Projection**

Table 2-1 **Current Demand Management Practices**

Demand Management Practices	Description
Rebates and Incentives	Project Stakeholders offer rebates for residential and commercial customers to save water and money on high efficiency appliances and devices. Many of the rebates and incentives are provided through MWDOC.
Water Conservation Requirements	Project Stakeholders enforce permanent water conservation requirements that prohibit runoff and place limits on water usage and irrigation hours.
Water-Wise House Call	A Mesa Water employee visits customer's home to check irrigation, explain water meter, and offer watering tips and rebate information. Huntington Beach and Newport Beach participate in the MWDOC's Water Wise House Call Program for efficiency assessments.
Educational Resources	The Urban Water Management Plan and Water Shortage Contingency Plan guide long term conservation and emergency preparedness.
Mesa Water Education Center	A facility dedicated to teaching the community about water science, conservation, and local water systems.

With the increasing demand and the push to diversify the local water supplies under California's Water Supply Strategy, it is essential for the Local SiP to establish a new water supply source via a brackish groundwater desalination treatment facility. This approach will ensure a more reliable and sustainable water source for the Orange County coastal community and will help address the area's current needs and projected demands.

2.2 Description of Current and Projected Water Supplies

Description of current and projected water supplies, including water rights, and potential sources of additional water other than the proposed water reclamation, recycling or desalination project, and plans for new facilities other than the proposed project, if any.

The sole sources of water for Mesa Water, Huntington Beach, and Newport Beach include groundwater from the OC Basin, imported water from the SWP and CRA, and minor portions of recycled water. The groundwater is replenished with highly purified indirect potable reuse water from GWRS. All imported water supplies are managed by MWDOC, while the OC Basin is managed by OCWD.

According to the supply projections in the project stakeholders 2020 Urban Water Management Plans, water demands are expected to be met through 2045 only if imported water continues to be available. However, there is an expected 10% reduction in total supply expected due to changing weather patterns by 2040. Table 2-2 presents the projected supplies and the anticipated 10% reduction in supplies starting in 2040 for Mesa Water, Huntington Beach, and Newport Beach.

Table 2-2 Projected Supplies

Supply Type	2025	2030	2035	2040	2045
Groundwater	50,968	53,159	54,118	54,424	54,735
Imported Water	6,109	6,203	6,197	6,185	6,173
Recycled Water	1,642	1,642	1,642	1,642	1,642
Total Supplies (AFY)	58,719	61,004	61,957	62,251	62,550
Total Supplies After Anticipated 10% Reduction by 2040 (AFY)	-	-	-	*56,026*	*56,295*
Sources: *Supply and demand projections based on the Mesa Water, Huntington Beach, and Newport Beach 2020 UWMPs, (Arcadis, 2021).* *WaterSMART: Water Recycling and Desalination Planning Grant Application – Local Groundwater Supply Improvement Project*					

2.3 Description of Current and Projected Water Demands

Description of current and projected water demands, including a description of the current and projected water supply and demand imbalances.

Although projections in the 2020 Urban Water Management Plan indicate water demands will be met through the year 2045, the anticipated reduction of imported water warrants a need for an increase in local water supply. Huntington Beach and Newport Beach both currently source approximately 15% of their water from imported water. In 2020, approximately 11,925 AFY of imported water supplied the needs of Huntington Beach and Newport Beach. Due to the population increase described in Section 2.1, water

demands for Mesa Water, Newport Beach, and Huntington Beach are projected to increase by nearly 4,500 AFY through 2045. With imported water supplies at risk, meeting these future water demands is a significant challenge. Table 2-3 shows the actual supply and demand volumes from fiscal year (FY) 2019-2020.

Table 2-3 FY 2019-2020 Supply and Demand Volumes

	Water Supply	Volume (AF)	Water Demand	Volume (AF)
Mesa Water	Groundwater (not desalinated)	16,118	Residential	9,817
	Purchased or Imported Water	0	Commercial, Industrial, Institutional/Governmental, Landscape, and other	5,457
	Recycled Water	959	Loses	844
		Total: 17,077		**Total: 16,118**
Huntington Beach	Groundwater (not desalinated)	18,296	Residential	18,206
	Purchased or Imported Water	7,670	Commercial, Industrial, Institutional/Governmental, and Landscape	6,122
	Recycled Water	0	Loses	1,638
		Total: 25,966		**Total: 25,966**
Newport Beach	Groundwater (not desalinated)	10,237	Residential	8,532
	Purchased or Imported Water	4,255	Commercial, Institutional/Governmental, Landscape, and other	5,357
	Recycled Water	513	Loses	603
		Total: 15,005		**Total: 14,492**

Sources:
Supplies from the Mesa Water, Huntington Beach, and Newport Beach 2020 UWMPs, (Arcadis, 2021).

In April 2019, Governor Gavin Newsom issued the Executive Order N-10-19 which directs several state agencies to develop a comprehensive Water Resilience Portfolio. The portfolio prioritizes key actions to secure California's water future. The Water Resilience Portfolio laid the groundwork for the 2022 Water Supply Strategy. Due to less snowfall, more evaporation, and greater water consumption by dry vegetation and soils (Department of Water Resources (DWR), 2022), existing water supplies are expected to be reduced by 10% by 2040. By the year 2045, an estimate of 6,255 AFY supply reduction is expected for Mesa Water, Huntington Beach, and Newport Beach. With the 10% reduction for all supply sources by 2040, there is projected to be an imbalance of supply and demand for the area, as shown in Figure 2-5. The analysis for this report did not assume a gradual reduction from 2020-2040 to reach the 10% decrease, and instead assumes the full 10% supply reduction would be applied beginning in 2040.

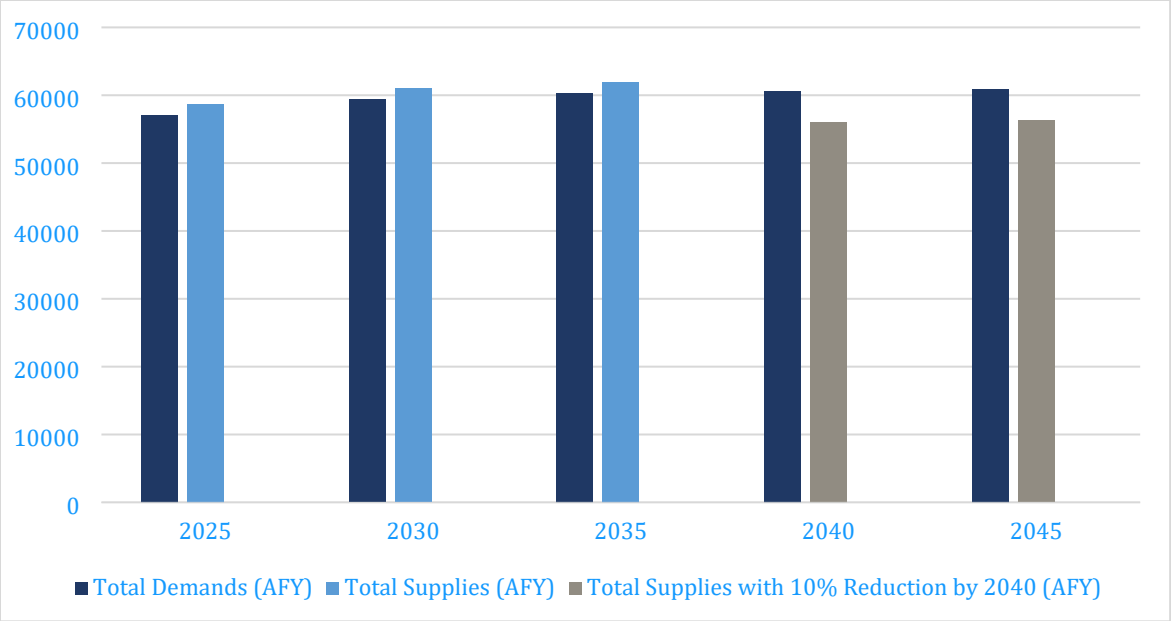


Figure 2-5 Projected Supply and Demand

The difference between the total demands and total existing supplies with the 10% reduction beginning in 2040 is shown in Figure 2-6. The Local SiP will help mitigate this projected supply gap by providing a new supplemental local water source. As described in later sections of this feasibility study, the Local SiP is designed to produce 5,993 AFY of potable drinking water. By 2045, the Local SiP will offset imported water supply by 95% (262 AFY).

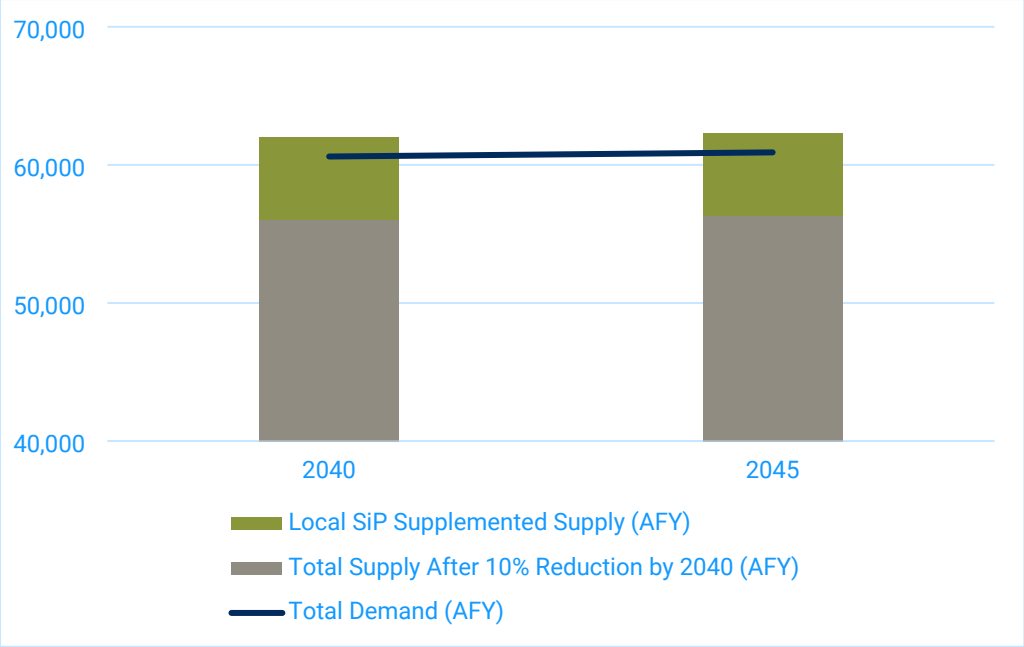


Figure 2-6 Supply and Demand with Local SiP Supplemented Supply (AFY)

2.4 Description of Water Quality Concerns

Description of any water quality concerns for the current and projected water supply.

Mesa Water's 2024 Water Quality Report confirms that there are currently no water quality concerns within their drinking water distribution system. The water meets or surpasses all state and federal drinking water standards. Although there are no current concerns with the existing drinking water quality, the Local SiP will enhance the OC Basin source water quality of the Shallow and possibly the Principal Aquifer Systems by drawing the chloride concentrations further away from the existing production wells. As the intrusion front in Talbert Gap continues to move seaward, enhancing the seawater intrusion barrier will sustain and stabilize this trend by limiting inland encroachment. This will be achieved by strengthening the seawater intrusion barrier, which will help prevent seawater from moving inland and shift the intrusion front back toward the coast. In terms of effluent water, brine or waste discharge for the watershed is historically treated at OC San's facilities. The Local SiP is not expected to have an impact on wastewater effluent water quality since it is a small percentage of the overall influent flow at the OC San Plant 2 wastewater treatment plant. The project's main objective is to increase the local water supplies, diversify the water portfolio and improve the OC Basin groundwater quality by enhancing the seawater intrusion barrier. Distribution system finished water quality issues are not anticipated.

2.4.1 Seawater Intrusion

Seawater intrusion is a long-recognized water quality concern in coastal Orange County, particularly in the Talbert Gap. Though actively managed by OCWD's injection barriers, future conditions such as increased accumulated overdraft in the basin, sea level rise, or increased pumping could reintroduce risks. A proposed brackish groundwater supply project must carefully evaluate its influence on local aquifer hydraulic gradients, as it could either exacerbate intrusion if improperly managed or help intercept intruding seawater if strategically located.

Importantly, the Local SiP also presents an opportunity to utilize currently underused brackish storage zones near the saltwater-freshwater interface—providing both a new water supply and enhancing seawater intrusion prevention. To evaluate these potential outcomes, groundwater flow and transport modeling has been utilized to simulate the effects of proposed extraction scenarios on both hydraulic gradients and chloride migration patterns. These simulations are being used to inform well siting, production rates, and management strategies to minimize seawater intrusion risks while maximizing beneficial capture of brackish water.

3.0 Water Reclamation, Recycling or Desalination Opportunities

Address the opportunities for water reclamation, recycling and desalination in the study area, and identify the sources of water that could be reclaimed or desalinated, including the following information.

3.1 Description of All Uses for Groundwater

Description of all uses for reclaimed or desalinated water, or categories of potential uses, including, but not limited to, environmental restoration, fish and wildlife, groundwater recharge, municipal, domestic, industrial, agricultural, power generation, and recreation. Identify any associated water quality, and associated treatment requirements.

All groundwater extracted and conveyed in the Local SiP will be used for municipal use only. The water will be provided to existing potable water customers served by Mesa Water, Huntington Beach, Newport Beach, and OCWD. Brine produced during treatment will be conveyed to the OC San Interplant Trunkline and ultimately discharged to the OC San Ocean Outfall. Product Water is anticipated to tie into distribution line OC-44 which will directly serve the communities of Huntington Beach, Newport Beach, and Mesa Water.

The water treated and distributed through the proposed facilities will adhere to California's maximum containment levels (MCLs). It will also match the local historical distribution system water quality stability parameters. The key constituents presented in Table 3-1 are from Mesa Water's 2024 Water Quality Report, Huntington Beach's Annual Water Quality Report Reporting Year 2024, and Newport Beach's Annual Water Quality Report Reporting Year 2024. The Local SiP is designed to connect to the OC-44 distribution pipeline which serves Mesa Water, Newport Beach, and Huntington Beach. Therefore, the finished water must meet the water quality standards and regulatory requirements of both agencies. Feed water bromide concentration is also considered in the treatment design due to its potential to form brominated disinfection byproducts (DBPs) during chlorination.

Table 3-1 Key Constituents

Constituent	MCL	SDWA Secondary MCL	Mesa Water Average	Newport Beach Average	Huntington Beach Average	Local SiP Targets
TDS (ppm)	1000	500	319	357	309	<500
Chloride (ppm)	500	250	56	41	44	<250
Boron (ppm)[1]	5	1	0.20	0.16	0.02	<0.5
Bromide (ppm)	Not Regulated	Not Regulated	Not Regulated	Not Regulated	Not Regulated	<0.1
pH (pH unit)	Not Regulated	6.5 – 8.5	8.2	8	8.1	8.0 - 8.5
Calcium (ppm)	Not Regulated	Not Regulated	33	63	50	>25
Alkalinity (ppm as CaCO3)	Not Regulated	Not Regulated	143	141	146	>60
Hardness (ppm as CaCO3)	Not Regulated	Not Regulated	109	225	170	-

1) EPA non-enforceable lifetime health advisory

3.2 Description of Water Market

Description of the water market available to utilize reclaimed, recycled or desalinated water, including:

3.2.1 Existing and Potential Users

(i) Identification of existing and potential users, expected use, peak use, on-site conversion costs if necessary, desire to use reclaimed, recycled or desalinated water, including letters of intent if available.

The Local SiP is planned to tie-in to the OC-44 distribution line which currently serves customers in Huntington Beach, Mesa Water, and Newport Beach through interties. Additionally, OC-44 serves as a backup supply for the Talbert Barrier during GWRS shutdowns for maintaining a pressurized barrier pipeline. Existing users of OC-44 are expected to remain users following the construction of the proposed project. Peak water use is anticipated during the summer months. The Local SiP will provide a locally produced water supply to meet future demands in the area and reduce reliance on increasingly uncertain imported water sources.

3.2.2 Consultation With Potential Customers

(ii) Description of any consultation with potential reclaimed, recycled or desalinated water customers. Letters of intent must be included, if applicable.

Because groundwater is the source water for the Local SiP and potable water is the produced water, it is anticipated the public perception of the Local SiP will be positive. Mesa Water regularly engages in public outreach and education programs related to water conservation and water use efficiency efforts, as well as general water resource information. Current public outreach efforts are aimed at increasing consumer

awareness for conservation, efficient water use, and investing in water reliability projects that are in the best interest of the region.

Opportunities for the public to learn about the Local SiP will include multiple public meetings where the feasibility study will be slated for discussion, information, presentation, and possible action. The meetings will take place at Mesa Water, Huntington Beach, Newport Beach, and OCWD. Other public outreach about the project will include newsletter articles, press releases, social media postings, and website postings by Mesa Water.

3.2.3 Market Assessment Procedures

(iii) Description of the market assessment procedures used.

The project stakeholders' 2020 Urban Water Management Plans were used to assess the water market demand and provide projection of current and future water supplies and demands as discussed in Sections 2.2 and 2.3. The 2020 UWMPs use historical consumption data, population, and regional growth estimates to predict future demands. Despite Mesa Water's strong local supply, the 2020 UWMP acknowledges a potential supply and demand gap during emergency or peak conditions. The OC-44 pipeline serves as the project stakeholder's connection to imported water from MWDOC.

The OC-44 pipeline is a turnout from East Orange County Feeder No. 2, which originates near Irvine and extends southwest toward Costa Mesa and Huntington Beach. Huntington Beach and Mesa Water jointly own the pipeline. The OC-44 pipeline allows imported water from MWDOC to be delivered directly into the Huntington Beach distribution system. The OC-44 pipeline is also connected to Mesa Water's system, but Mesa Water does not use the imported water under normal operating conditions. The connection serves as an emergency or supplemental supply source if local groundwater supplies are unavailable or insufficient.

With the increasing demands projected in the Mesa Water 2020 UWMP, maintaining access to reliable supplemental supplies is important. The Local SiP will provide 5.35 MGD of treated water to the OC-44 pipeline. Diversifying the supply delivered to the OC-44 pipeline will decrease regional reliance on imported water and ensure that project stakeholders can continue to meet growing market demands while preserving the reliability of their systems.

3.3 Considerations Which May Prevent Project Implementation

Discussion of considerations (for example: physical, converting systems for reused water, or public acceptance) which will prevent implementing a water reclamation, recycling or desalination project. Identify methods or community incentives to stimulate reclaimed, recycled or desalinated water demand, and methods to eliminate obstacles which will inhibit the use of reclaimed, recycled or desalinated water, including pricing.

While many project components have been analyzed for preparation of this feasibility study including groundwater modeling, preliminary site investigations, a preliminary treatment plan, and conveyance routing; risks and challenges still exist as project refinement and implementation occurs. One physical challenge of implementing the Local SiP includes selection of the project site and further optimizing the various conveyance alignments.

As mentioned in Subsection 1.3.3, the study area is highly developed with minimal parcels zoned for industrial use. A more detailed site investigation will need to occur to identify and procure not only the trea

tment site, but also the five groundwater well locations. To minimize conveyance costs, it is recommended that Mesa Water procures a treatment site:

1. Near the groundwater well locations
2. In proximity to OC San's Interplant Trunkline for brine discharge

By doing so, this will alleviate construction costs of installing large diameter pipes on busy roads within the dense urban study area and further support the Local SiP costs to be comparable to imported water costs.

As stated in Subsection 3.2.2, it is anticipated that public perception of the Local SiP will be positive and would not require customer incentives. It is important to consider options that can reduce project cost (such as site optimization noted above), to reduce the barrier for public acceptance by keeping the project cost low.

3.4 Agencies with Jurisdiction

Identify all water and wastewater agencies in service area

The non-Federal sponsors for the Local SiP include Mesa Water, OCWD, Huntington Beach, and Newport Beach, which all are water and wastewater agencies operating within the service area. These sponsors actively participated in the development of this feasibility study and are informed of the Local SiP components. While OC San is not a sponsor of the project, it holds authority of the brine disposal. Other agencies, such as the City of Fountain Valley Water Division and MWDOC, may also have jurisdiction depending on the final location of the treatment facility. Refer to Table 3-2 for an overview of the different agencies and the services they provide.

Table 3-2 Agencies with Potential Jurisdiction

Agency	Serves	Water	Wastewater
Mesa Water District	Costa Mesa/Newport Beach	Yes	No
Orange County Water District	Orange County	Yes	Treats recycled water
Huntington Beach Utilities	Huntington Beach	Yes	Yes
Newport Beach Utilities	Newport Beach	Yes	Yes
Orange County Sanitation District	Orange County	No	Yes
City of Fountain Valley Water Division	Fountain Valley	Yes	No
Municipal Water District of OC	Orange County	Yes	No

3.5 Potential Brackish Groundwater Sources to be Desalinated

Description of potential sources of water to be reclaimed, recycled or desalinated, including impaired surface and groundwaters.

Potential groundwater sources were considered within the project stakeholders' jurisdictions. The evaluation of potential groundwater sources included regions where aquifers were known to contain brackish water and organized into four sub-areas: Talbert Gap, Bolsa Gap, Huntington Beach Mesa, and

Newport Beach Mesa (Figure 3-1). Each area was reviewed for hydrogeologic suitability, potential yield, and water quality characteristics, as well as regional management and sustainability considerations.

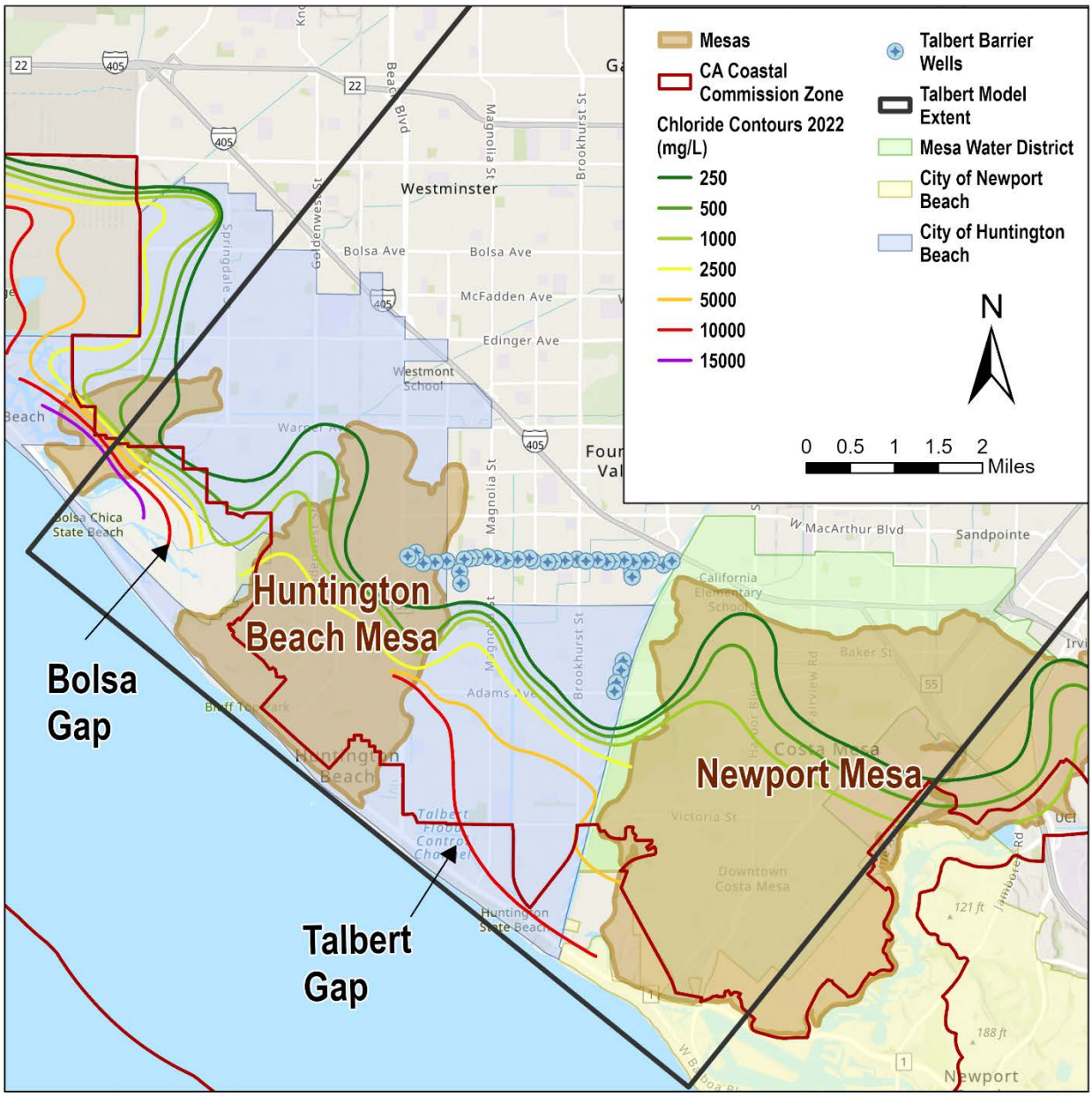


Figure 3-1 Overview of Potential Brackish Production Areas

3.5.1 Talbert Gap

The Talbert Gap is a coastal lowland located between the uplifted Huntington Beach Mesa and Newport Beach Mesa, characterized by an ancient erosional channel filled with highly permeable alluvial sediments. Historically, this gap served as a primary pathway for seawater intrusion into the OC Basin before regional protection measures were implemented.

The Talbert Aquifer, the principal hydrostratigraphic unit in this area, is part of the Shallow Aquifer System and is composed primarily of coarse-grained Holocene to Pleistocene-age sands and gravels. In the

Talbert Gap, the aquifer lies in direct hydraulic connection with the Pacific Ocean, extending seaward beneath Huntington State Beach, and inland where it is interfaced by the Talbert Seawater Intrusion Barrier.

Importantly, in this part of the basin, the Talbert Aquifer is also known to merge hydraulically with deeper aquifers in the Principal Aquifer System, particularly where aquitards are thin or are laterally discontinuous. This mergence increases the potential for vertical and lateral flow exchange, making the Talbert Gap a key zone for managing both intrusion risks and opportunities for accessing seawater replenishable brackish groundwater production.

The Talbert Aquifer contains brackish groundwater, with chloride concentrations exceeding 10,000 mg/L in the southwestern portion of the gap (Figure 3-1). Groundwater model simulations demonstrate that, with appropriate well spacing and production rates, pumping from this area could:

- Intercept intruding seawater as a project source water,
- Minimize inflow from the protected inland basin, and
- Possibly enhance barrier performance by reducing increasing or steepening hydraulic gradients from the Talbert Barrier.

Given the hydrogeologic connectivity to the ocean, favorable aquifer properties, and the opportunity to complement existing basin protection infrastructure, the seaward portion of the Talbert Gap was selected as the preferred sub-area for developing a brackish groundwater supply project.

3.5.2 Bolsa Gap

Bolsa Gap is a low-lying coastal area northwest of the uplifted Huntington Beach Mesa. It is underlain by permeable alluvial deposits, but unlike Talbert Gap, it is structurally constrained by the Newport-Inglewood Fault Zone, which significantly offsets and impedes the hydraulic continuity of the aquifers in this area.

As a result, seawater intrusion is not actively occurring through Bolsa Gap, and brackish conditions are more limited in extent. OCWD modeling indicates that groundwater inflow from the ocean at Bolsa Gap is minimal due to the offsetting effect of the Newport-Inglewood Fault (OCWD, 2017). Furthermore, water quality data suggest a less well-defined brackish wedge. For these reasons—including limited yield potential and the fault-constrained flow paths—Bolsa Gap was not selected as a candidate for brackish groundwater recovery.

3.5.3 Huntington Beach Mesa

Aquifers beneath the Huntington Beach Mesa were evaluated as a potential source due to historical degradation and chloride concentrations that may exceed 2,500 mg/L, indicative of brackish conditions. However, this area was ruled out for two primary reasons.

First, groundwater modeling showed that extraction from this location could increase the risk of seawater intrusion in areas not currently protected by the Talbert Barrier, potentially drawing saline water inland. Second, a large portion of the groundwater yield from this area would come from the Orange County Groundwater Basin itself, rather than from the intruding wedge of seawater, placing undue stress on OCWD's basin management operations. Given these risks and management constraints, this sub-area was not selected for further consideration.

3.5.4 Newport Beach Mesa

Aquifers beneath the Newport Beach Mesa were also considered. This area exhibits moderately elevated chloride concentrations, generally upwards of 1,000 mg/L in deeper wells. However, like Huntington Beach Mesa, pumping from this area presents a risk of inducing seawater flow around the Talbert Barrier, potentially allowing saline water to spread toward inland production wells. Because of this risk to adjacent potable supplies and the likelihood of drawing water primarily from the basin rather than intercepting seawater, this area was not pursued as a brackish supply source.

3.6 Description of Location and Source Water

Description and location of the source water facilities, including capacities, existing flows, treatment processes, design criteria, plans for future facilities, and quantities of impaired water available to meet new reclaimed, recycled and desalinated water demands.

This section describes the proposed location, construction characteristics, and water quality of the brackish groundwater wells that will supply the source water for the project. The project is located in the coastal portion of the OC Basin within the Talbert Gap, a known zone of brackish groundwater and historical seawater intrusion.

3.6.1 Groundwater Model

To support the evaluation of brackish groundwater recovery in the coastal portion of the basin, a refined groundwater flow model—the Talbert Groundwater Model—was utilized for this study. The Talbert Groundwater Model was originally developed by OCWD as a focused sub-model of the larger Orange County Basin Model to analyze groundwater conditions, barrier performance, and seawater intrusion dynamics in the Talbert Gap area (CDM Smith, 2003, draft).

The model discreetly represents the complex hydrogeologic layering of the Talbert Aquifer, which is part of the Shallow Aquifer System, and its interaction with deeper aquifers within the Principal Aquifer System. The model incorporates OCWD's extensive monitoring data, including multi-depth observation wells, production wells, and injection operations at the Talbert Seawater Intrusion Barrier (Talbert Barrier). It has been previously calibrated to simulate both steady-state and transient conditions, representing basin operations, recharge, and coastal barrier performance.

For this study, the Talbert Groundwater Model was applied to simulate proposed brackish water extraction scenarios within the seaward portion of the Talbert Gap, where elevated chloride concentrations have been identified. As part of this analysis, chloride transport capabilities were incorporated into the model, allowing for simulation of salinity dynamics and estimation of chloride concentrations at proposed well locations. The model was also used to evaluate the proportional source contributions of extracted water (i.e., seawater versus inland basin groundwater) and to assess potential drawdown impacts under various extraction scenarios.

While the model provides a valuable framework for testing preliminary feasibility, it should be noted that its calibration does not fully meet industry-standard guidelines for predictive accuracy. The calibration was deemed sufficient for scoping-level analysis, but additional refinement would be warranted in future stages of project planning to improve confidence in long-term performance predictions. In addition, although potential land subsidence from proposed pumping is an important consideration, the Talbert Groundwater Model can only be used to evaluate if water levels may pose a risk of subsidence but not simulate or predict actual subsidence itself.

3.6.2 Location of Groundwater Wells

The Local SiP includes five extraction wells sited within the seaward portion of the Talbert Gap, south of Atlanta Avenue and north of the California Coastal Commission Zone (Figure 3-2). The wells are spaced between Beach Boulevard (west) and Brookhurst Street (east) in Huntington Beach. These locations were selected to:

- Distribute drawdown impacts evenly across the gap,
- Maximize brackish water capture from the seaward portion of the aquifer,
- And minimize interference with the Talbert Barrier, which lies inland of the well field area.

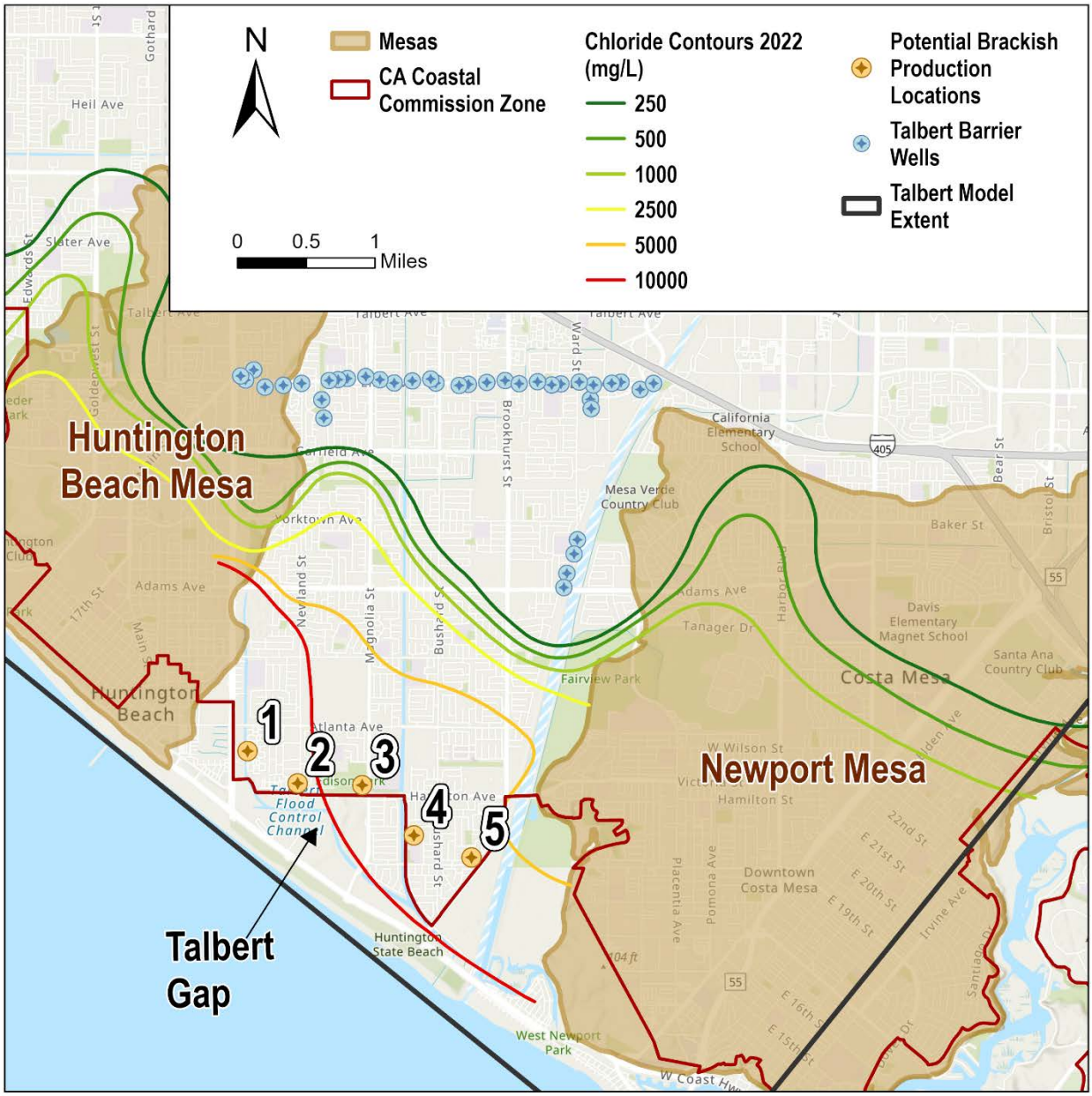


Figure 3-2 Location of Project Wells

The wells will be constructed in the highly transmissive Shallow Talbert Aquifer system. Target well depths are anticipated up to approximately 180 feet below ground surface, informed by prior lithologic data from the area including geologic cross sections, groundwater model lithology, and borehole lithologic logs.

3.6.3 Seaward Talbert Gap Flow and Quality

The seaward portion of the Talbert Gap is characterized by a brackish water zone formed by the mixing of seawater with OC Basin groundwater due to historical intrusion. Groundwater modeling estimates indicate that a groundwater well pumping rate of 8 MGD from the proposed wellfield would induce increased flow from the ocean boundary (~6 MGD) with the remainder (~6 MGD) being inland inflow from the basin, effectively capturing brackish water near the mixing zone between freshwater and saltwater.

The salinity profile at each of the wells during production is expected to vary slightly across the wellfield and remains in the brackish to saline range, with chloride concentrations between 5,000 and 11,000 mg/L depending on relative connectivity to the ocean and the Talbert Barrier.

Using the modeled chloride concentrations, a mass balance calculation was used to determine the blended water quality data shown in Table 3-3. The modeled water quality was validated against historical water quality data from nearby monitoring wells. The majority of modeled parameters aligned with the historical water quality data however, boron and bromide concentrations were both higher in the monitoring well data than the model projected. This could be due to the proximity of the wells to an old landfill. The model was then adjusted by raising the groundwater boron and bromide inputs, so the blend more closely matched historical values. This adjustment addressed the unusually high boron and bromide concentration observed in the coastal aquifer. Because of the high boron, bromide, and TDS levels resulting from the seawater dominated blended water quality, a two-pass RO system typical of seawater designs was included in the conceptual design to treat water to potable drinking water standards.

Table 3-3 Talbert Gap Modeled Water Quality

Feed Parameters	Blended Water Quality from Wells (5.35 MGD Finished Water)
Potassium (mg/L)	208
Sodium (mg/L)	5,588
Magnesium (mg/L)	671
Calcium (mg/L)	265
Strontium (mg/L)	4.70
Barium (mg/L)	0.18
Bicarbonate (mg/L)	287
Nitrate (mg/L)	5.86
Fluoride (mg/L)	0.70
Chloride (mg/L)	10,009
Bromide (mg/L)	40.20
Sulfate (mg/L)	1,460
Phosphate (mg/L)	0.04
Silicon (mg/L)	27.0
Boron (mg/L)	5.09
pH	7.8
TDS (mg/L)	17,597

3.7 Current Groundwater Desalination in the Study Area

Description of any current water reclamation, recycling or desalination taking place in the study area, including a list of reclaimed water uses, type and amount of reuse, and a map of existing pipelines and use sites.

Currently, there are no groundwater desalination facilities in the immediate study area. Outside of the study area, there are multiple brackish groundwater desalters and one major seawater desalination facility that are implemented to supplement the Southern California drinking water supplies. These facilities provide a proved foundation of industry knowledge that serve as a baseline for the proposed treatment approach. The Local SiP will meet the same objectives by enhancing water supply sustainability in the north-central Orange County region.

3.8 Other Wastewater Disposal Options

Description of current and projected wastewaters and disposal options other than the proposed water reclamation, recycling or desalination project, and plans for new wastewater facilities, including projected costs, if any.

As discussed in Subsection 1.3.4, there are multiple brine disposal options within the study area. For the Local SiP, it is anticipated that the groundwater desalted RO brine generated at the treatment plant will be disp

osed to the OC San 78" Interplant trunkline which goes to Plant 2 for retreatment and then ultimately to the OC San Ocean Outfall.

While evaluating brine disposal options, two other approaches were considered. One option was discharging the brine into the sewer collection system; however, this approach was determined to be unnecessary due to access to pre-existing brine management lines. Additionally, if sewer collection discharge were utilized, the groundwater desalted brine could impact the salinity of GWRS influent and risk increasing energy consumption at GWRS. Due to the availability of dedicated brine lines, and potential impacts to GWRS influent salinity, sewer collection system discharge is not recommended for the proposed project.

Another option considered was disposing the brine to the Effluent Junction Box at OC San Plant 1. Utilization of the Effluent Junction Box is not assumed for this project but would provide mutual benefits across project stakeholders. Because the waste stream from the Local SiP would be groundwater desalted brine, the quality is anticipated to be of a higher quality than GWRS indirect potable reuse brine, and therefore should not require additional treatment at OC San Plant 2 prior to ocean discharge. Utilization of this line should be considered during future project phases and will require further coordination with OC San prior to selection.

3.9 Desalination Technology in Use in Study Area

Summary of any water reclamation, recycling and desalination technology currently in use in the study area, and opportunities for development of improved technologies.

Currently there are no groundwater desalination facilities located within the specific project study area. However, within the study area the region does utilize groundwater recharge via indirect potable reuse by GWRS. The treated effluent from GWRS is used to recharge the local groundwater basin and prevent seawater intrusion by injecting water into the Talbert Barrier.

In addition to the ongoing water recycling in the study area, as described in Section 3.7, there are multiple brackish groundwater desalter facilities and one major seawater desalination facility in the Southern California region. These brackish groundwater desalter facilities and the Carlsbad Seawater Desalination Plant offer an industry recognized basis for the conceptual design of the Local SiP treatment process. Commonly utilized desalination technologies include the following:

- **Source Water Abstraction**
  - The groundwater is extracted from brackish groundwater wells.
- **Pre-treatment**
  - The groundwater typically undergoes cartridge filter pre-treatment to remove larger particles and non-soluble material.
- **Reverse Osmosis Desalination**
  - Cartridge filter effluent is provided as source supply for brackish groundwater reverse osmosis desalination.
  - Multi-stage array designs are used to help increase recovery up to the feedwater specific osmotic pressure, or sparingly soluble salt recovery limit
  - For seawater desalination two pass RO design are implemented to reduce boron and bromide concentrations to acceptable levels

- **Decarbonator**
  - After the groundwater is desalinated, it is sent to the forced-air decarbonator to remove the excess carbon dioxide.
  - Note: While typical brackish groundwater desalters require carbon dioxide removal, the seawater influenced Local SiP project will require carbon dioxide addition to meet finished water alkalinity requirements.
- **Post-treatment**
  - Sodium hydroxide and calcium species are added to stabilize the RO permeate and reduce the corrosion potential to the distribution system. Testing is performed to ensure the potable water meets all drinking water health and safety standards.
- **Disinfection**
  - Post-treated effluent is dosed with sodium hypochlorite to provide a free chlorine residual prior to a chlorine contact tank. Residence time within the chlorine contact tank provides pathogen removal credits. Following disinfection, liquid ammonium sulfate is added to form chloramines for disinfection residual.

4.0 Description of Alternatives

4.1 Non-Federal Funding Condition

Description of the non-Federal funding condition. The reasonably foreseeable future actions that the non-Federal project sponsor would take if Federal funding were not provided for the proposed water reclamation, recycling or desalination project, including estimated costs.

Should Federal funding not be provided for this project, Mesa Water and the other project stakeholders would explore alternative funding sources for the construction of the new brackish groundwater treatment facility and groundwater wells. Potential funding sources may include the following:

- Grants
- Low interest loans from local and/or state sources
- Rates and revenues from rate payers

4.2 Alternative Objectives

Statement of the specific objectives all alternatives, including the water reclamation, recycling or desalination project, are designed to address.

Mesa Water's goal for the Local SiP is to develop a new local water supply sources by pumping and treating areas of the OC Basin that are impacted by seawater influenced brackish groundwater. This includes enhancing the effectiveness of the Talbert Barrier to help protect production wells into the future, especially given the potential for future sea level rise. The project alternatives were designed to address the following objectives:

1. Add 5 to 8 MGD of potable water supply
2. Reduce reliance on imported water
3. Improve the region's ability to withstand droughts and changing weather patterns
4. Protect the groundwater basin from further seawater intrusion
5. Provide the most cost-effective alternative with the highest beneficial use of brackish groundwater

4.3 Description of Project With Cost Estimate

Description of the proposed water reclamation, recycling or desalination project including detailed project cost estimate; annual operation, maintenance, and replacement cost estimate; and life cycle costs shall be provided with sufficient detail to permit a more in-depth evaluation of the project, including non-construction costs. In this regard, the cost estimates shall clearly identify expenditures for major structures and facilities, as well as other types of construction and non-construction expenses and shall be based on calculated quantities and unit prices.

4.3.1 Project Description

The Local SiP includes planning, design, permitting, and construction of infrastructure to support long-term water sustainability. The proposed project will produce 5.35 MGD of treated finished water, reducing reliance on imported water, and strengthening the regions' water supply portfolio. By implementing groundwater wells, a brackish groundwater desalination facility, feed conveyance, and brine management,

the project will support environmental resilience and secure a reliable water supply for the future. Details regarding the Local SiP components and estimated costs are outlined below.

4.3.2 Groundwater Wells

As stated in Subsection 3.6.1, five groundwater wells will be placed in evenly distributed locations along the seaward portion of the Talbert Gap, as shown in Figure 3-2. The exact locations of the groundwater wells will be finalized during detailed design. These wells, screened within the shallow Talbert Aquifer, will be outside of the Coastal Commission Zone which will simplify permitting requirements by eliminating the need for Coastal Commission approval. As shown in Table 4-1, the well depths will range from 120 to 180 feet, with individual well flows varying between 0.6 and 2.0 MGD collectively extracting nearly 8 MGD of source water for the proposed 5.35 MGD project.

Table 4-1 Local SiP (5.35 MGD) Groundwater Wells Flow and Depth Information

Well	Approximate Flow (MGD)	Approximate Depth (ft)
Well #1	1.8	180
Well #2	2.0	180
Well #3	2.0	180
Well #4	1.7	180
Well #5	0.6	120
Total	8.0	Not Applicable

For the purposes of this feasibility study, it was assumed that the groundwater wells would be operating at full capacity throughout the year. During detailed design, additional operational modeling scenarios will be evaluated to determine how the new groundwater wells will operate during various seasons, as well as under emergency and drought conditions. These scenarios will consider Mesa Water and the project stakeholder's existing systems.

4.3.3 Site Procurement

A preliminary site investigation was included as part of this Study. Several factors were taken into consideration including:

- Zoning classification
- Footprint
- Ensuring pipeline conveyance would not cross over major highways, railroad tracks, or waterways (including the Santa Ana River)
- Distance to the brine discharge locations
- Distance to the nearest wetland or environmentally sensitive areas

Filtering all the industrial parcels larger than one acre in the study area, an industrial zone in Fountain Valley was recommended for the treatment facility. There is also the potential to find a parcel closer to the groundwater wells during the detailed design phase to reduce construction costs for the conveyance portion of the project; however, further permitting and coordination with Huntington Beach's planning

division would be required to identify the selected parcel of land. Regardless of the treatment site location, Mesa Water would need to procure the land and demolish the existing structure(s). Similarly, Mesa Water will need to procure five separate sites for the groundwater wells. Refer to Section 11.1 for further considerations.

4.3.4 Treatment Process and Facility Area

An illustrative block flow diagram for the proposed treatment facility is shown on Figure 4-1. Table 4-2 describes each component and justification for their inclusion.

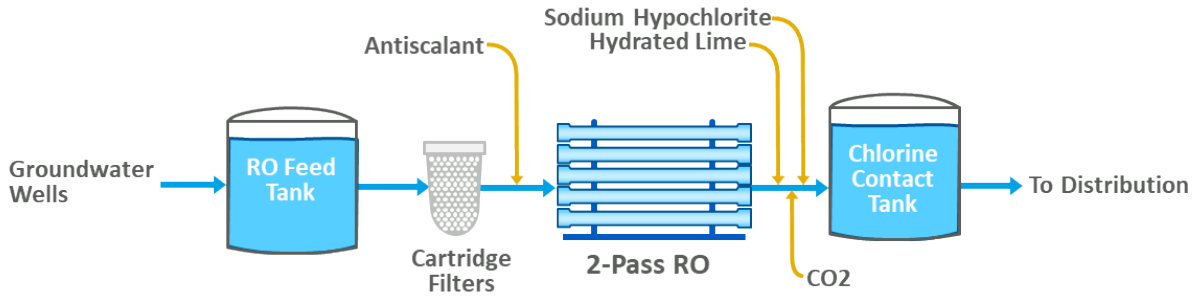


Figure 4-1 Treatment Block Flow Diagram

Table 4-2 Treatment Process Descriptions

Process	Purpose
RO Feed Tank	Flow equalization.
Cartridge Filters	Remove particulates prior to RO.
2-Pass RO	For TDS, boron, and bromide reduction.
Post-treatment	Hydrated lime used for pH adjustment and remineralization of permeate. CO2 addition used for pH adjustment and alkalinity.
Disinfection	Virus inactivation in accordance with regulatory requirements.

A conceptual site layout, incorporating each treatment component, was developed to estimate the total footprint required for site acquisition. The estimated total site footprint is approximately 70,000 square feet (sq-ft) or 1.6 acres. The estimated area includes space for an electrical room, chemical storage, vehicle road access, and an administration office. The estimated footprint will serve as a basis for evaluating site feasibility and guiding future design and permitting activities.

4.3.5 Design Capacity and Annual Yield

There were two design capacities that were evaluated for this feasibility study that are summarized in Table 4-3.

Table 4-3 Design Capacity Summary

	2.65 MGD Alternative	5.35 MGD Alternative
Feed Flow from Groundwater Wells (MGD)	4.00	8.00
Overall RO Recovery	70%	70%
Brine Discharge (MGD)	1.19	2.38
Finished Water Capacity (MGD)	2.65	5.35
Annual Yield (AFY)	2,996	5,993

One of Mesa Water's goals for this project was to produce 5 to 8 MGD of finished water to offset the supply of imported water. The 5.35 MGD finished water capacity achieves this goal.

4.3.6 Distribution

The finished water from the brackish groundwater treatment facility will be conveyed into Huntington Beach and Mesa Water's existing distribution system via OC-44 line as described in Subsection 1.3.3 and Section 3.2. The finished water will feed Mesa Water's two existing reservoirs to then be pumped to customers' homes or used for emergency water storage. The preliminary distribution piping, assuming the treatment facility will be located in the Fountain Valley industrial zone, is shown on Figure 4-2.

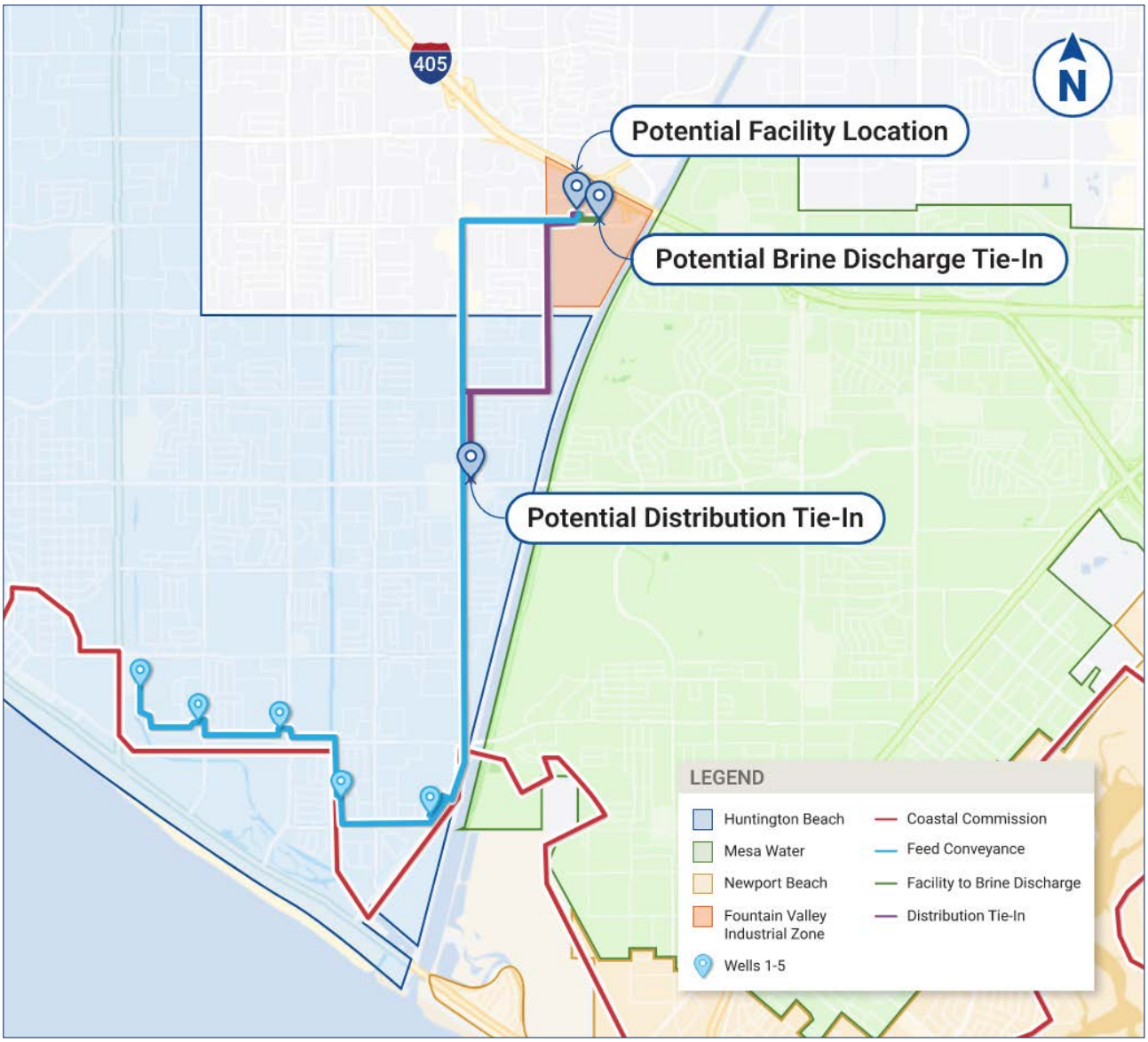


Figure 4-2 **Proposed Local SIP Infrastructure**

4.3.7 Brine Disposal

The preliminary brine disposal strategy for the Local SiP is to convey the brine approximately 1,000 LF from the treatment facility to the OC San Interplant Trunkline. From there, it will be routed to OC San Plant 2 for re-treatment and final discharge through the existing ocean outfall system. For the 5.35 MGD proposed project, a brine flow of 2.38 MGD is anticipated. Discharge into OC San's Interplant Trunkline will comply with specific water quality requirements from OC San and NPDES regarding temperature, salinity, and concentration of pollutants. The project will incorporate operational controls and monitoring to ensure the brine discharge consistently meets all applicable water standards. The proposed brine conveyance alignment can be found in Figure 4-3. The Interplant Trunkline pipe alignment can be found in Figure 4-3.

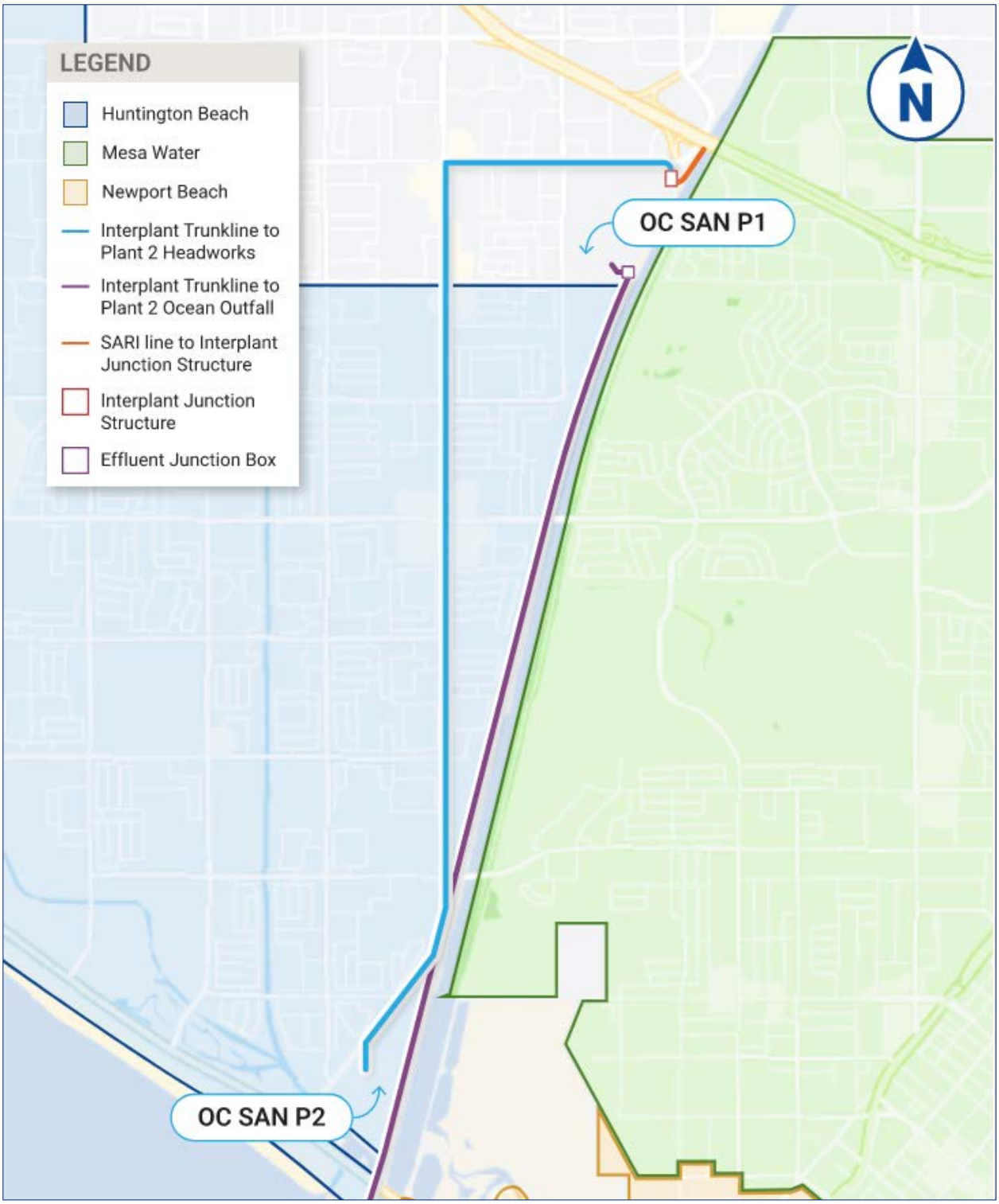


Figure 4-3 **Interplant Trunkline Map**

4.3.8 Local Supply Improvement Project Cost Estimate

A summary of the costs associated with the proposed Local SiP is summarized in Table 4-4. Supporting detailed descriptions for each value are provided in the following subsections. The summary costs in Table 4-4 do not have any grant funding applied.

Table 4-4 Local Supply Improvement Project 5.35 MGD Cost Summary

Component	Costs
Total Construction Cost	$276.9 M
Site Procurement	$12.97 M
Annualized O&M	$8.870 M per year
30-Year Net Present Value (NPV)	$448.5 M
First Year Unit Cost per AF (2025)	$2,671
Cost per AF	$2,495 per AF

4.3.9 Class 5 OPCC Direct Costs

This feasibility study prepared a Class 5 opinion of probable construction costs (OPCC) for the various project components listed in Table 4-5. The direct costs shown in Table 4-5 include material, labor, and equipment costs. The various contractor markups and contingencies were added to the construction subtotal to calculate the total construction costs. According to the Association for the Advancement of Cost Engineering guidelines, a Class 5 cost estimate is defined within a probable range between -50% to +100%. A detailed breakdown of the Local SiP OPCC can be found in Appendix A.

For this feasibility study it was assumed that major facilities and equipment would have an expected service life greater than the 30-year life-cycle evaluation. Therefore, future replacement costs for major facilities and equipment are not included in the direct cost summary shown in Table 4-5. While future replacement costs for major facilities and equipment are not included in the 30-year life cycle evaluation, ongoing repair and refurbishment costs for major equipment are included in the annual operating costs calculations and are explained in further detail in 4.3.11.

Table 4-5 Class 5 OPCC Direct Costs Summary

Project Component	Class 5 Cost Estimate	Notes
Groundwater Wells	$11.38 M	Refer to Subsections 3.6.2 and 4.3.2
Feed Conveyance	$23.44 M	CML&C pipe from each groundwater well location to the proposed treatment site
Site Demolition	$948,900	Structure demolition at existing site to be procured
Treatment	$64.15 M	Refer to Subsection 4.3.4
Finished Water Distribution	$7.617 M	CML&C pipe from treatment site to distribution tie in point
Brine Disposal	$722,300	CML&C pipe to brine discharge location
Construction Subtotal	$108.3 M	Subtotal includes material, labor, and equipment costs
Contractor Markups and Contingencies	$168.6 M	Refer to Appendix A
Total Construction Costs	**$276.9 M**	

4.3.10 Project Costs

In addition to the total construction costs for the Local SiP, Mesa Water will need to procure a new treatment site and five new groundwater well sites as described in Section 0. Based on current real estate values in Fountain Valley's industrial zone, $7.8 million/acre was the assumed land value in the analysis. Finally, a 10% design fee was assumed for the consultant to develop the construction drawings and specifications, groundwater modeling, coordinate permitting requirements, administrative efforts, and construction phase services. The total project cost is summarized in Table 4-6.

Table 4-6 Local SiP Project Costs

Project Component	Class 5 Cost Estimate	Notes
Total Construction Costs	$276.9 M	See Table 4-5
Site Procurement	$12.97 M	Assumed a 1.6-acre treatment site and five groundwater well sites at $7.8 million/acre
Consultant Design Fee	$27.69 M	Assumed 10% of total construction costs
Total Project Cost	$317.5 M	

4.3.11 Operating Costs

In addition to the capital costs, annual operation and maintenance costs to operate the facility were also developed. Refer to Appendix B for the detailed operational expenses (OPEX) cost assumptions. Operational costs consist of:

- Chemical costs
- Energy
- Process consumables
- Spare parts and maintenance costs
- Labor
- Brine disposal
- Replenishment Assessment Fee to OCWD

As referred to in 4.3.8, this feasibility study assumes that major facilities and equipment expected services lives will last longer than the 30-year life cycle evaluation. As such neither the capital cost nor operational costs include full replacement costs for major facilities and equipment. However, the operating costs calculation of spare parts and maintenance does include annual costs for ongoing repair and refurbishment of major facilities and equipment. Refer to Appendix B for the detailed description of the spare parts and maintenance ongoing repair and refurbishment cost calculations.

4.4 Feasibility Study Level Project Cost Estimate

The estimated costs shall also be presented in terms of dollars per million gallons (MG), and/or dollars per acre-foot of capacity, to facilitate comparison of alternatives described in Paragraph 4.B.(5) below. References, design data, and assumptions must be identified. The level of detail shall be as required for feasibility studies in RM D&S, Cost Estimating (FAC 09-01).

The overall project life-cycle costs and financial assumptions are summarized in Table 4-7. A breakdown of the 30-year life-cycle costs are provided in Table 4-8. The Local SiP would provide potable water at a first-year cost of $2,671 per AF. The life-cycle approach assumes that 20 percent of the total project cost would be covered via grants, and the remaining balance would be covered through a loan with an upward-sloping debt profile (2.5% increase in interest per year over 30 years). The following assumptions were applied to the life-cycle analysis:

- Project Cost Loan – 2.5% interest rate with 2.5% increase per annum
- O&M (General) Inflation Rate– 2.5%
- O&M (RA Fee) Inflation Rate – 3.0%
- Discount Rate – 3.7%

Table 4-7 Project Life-Cycle Costs

Life-Cycle Costs and Yield	Cost and Yield	Notes
Project Cost	$317.5 M	Presented in 2025 dollars. Includes total construction cost, site procurement, and 10% design fee. Refer to Table 4-6.
30-Year Net Present Value (NPV)	$448.5 M	See breakdown in Table 4-8 for details.
Annual Project Yield (AFY)	5,993	Equates to 5.35 MGD.
Lifetime Project Yield (AF)	179,800	Life-cycle period of 30 years.
First Year Unit Cost per AF (2025)	$2,671	Year 1 Total Annual Cost ÷ Annual Project Yield
Unit Cost per AF	$2,495	30-Year NPV ÷ Lifetime Project Yield

Table 4-8 30-Year Life Cycle Cost Breakdown for 5.35 MGD Alternative

Year	Loan Payment	O&M (General)	O&M (RA Fee)	Total Annual Cost	Total Annual Cost (in 2025 Dollars)	Cumulative Cost (in 2025 Dollars)
1	$10.3 M	$7.2 M	$1.9 M	$16.5 M	$16.0 M	$16.0 M
2	$10.6 M	$7.3 M	$1.9 M	$17.0 M	$15.8 M	$31.8 M
3	$10.8 M	$7.5 M	$2.0 M	$17.6 M	$15.7 M	$47.6 M
4	$11.1 M	$7.7 M	$2.0 M	$18.1 M	$15.6 M	$63.3 M
5	$11.4 M	$7.9 M	$2.1 M	$18.6 M	$15.5 M	$78.9 M
6	$11.7 M	$8.1 M	$2.2 M	$19.2 M	$15.4 M	$94.3 M
7	$11.9 M	$8.3 M	$2.2 M	$19.7 M	$15.3 M	$109.6 M
8	$12.2 M	$8.5 M	$2.3 M	$20.3 M	$15.2 M	$124.8 M
9	$12.6 M	$8.7 M	$2.4 M	$20.9 M	$15.0 M	$139.9 M
10	$12.9 M	$8.9 M	$2.4 M	$21.5 M	$14.9 M	$154.9 M
11	$13.2 M	$9.2 M	$2.5 M	$22.1 M	$14.8 M	$169.8 M
12	$13.5 M	$9.4 M	$2.6 M	$22.8 M	$14.7 M	$184.5 M
13	$13.9 M	$9.6 M	$2.7 M	$23.4 M	$14.6 M	$199.2 M
14	$14.2 M	$9.9 M	$2.7 M	$24.1 M	$14.5 M	$213.7 M
15	$14.6 M	$10.1 M	$2.8 M	$24.8 M	$14.3 M	$228.1 M
16	$14.9 M	$10.4 M	$2.9 M	$28.3 M	$15.8 M	$243.9 M
17	$15.3 M	$10.6 M	$3.0 M	$29.0 M	$15.6 M	$259.6 M
18	$15.7 M	$10.9 M	$3.1 M	$29.8 M	$15.5 M	$275.1 M
19	$16.1 M	$11.2 M	$3.2 M	$30.5 M	$15.3 M	$290.5 M
20	$16.5 M	$11.5 M	$3.3 M	$31.3 M	$15.1 M	$305.6 M
21	$16.9 M	$11.7 M	$3.4 M	$32.1 M	$15.0 M	$320.6 M
22	$17.3 M	$12.0 M	$3.5 M	$33.0 M	$14.8 M	$335.5 M
23	$17.8 M	$12.3 M	$3.6 M	$33.8 M	$14.6 M	$350.1 M
24	$18.2 M	$12.6 M	$3.7 M	$34.7 M	$14.5 M	$364.7 M
25	$18.7 M	$13.0 M	$3.8 M	$35.5 M	$14.3 M	$379.0 M
26	$19.1 M	$13.3 M	$3.9 M	$36.5 M	$14.1 M	$393.2 M
27	$19.6 M	$13.6 M	$4.1 M	$37.4 M	$14.0 M	$407.2 M
28	$20.1 M	$14.0 M	$4.2 M	$38.3 M	$13.8 M	$421.1 M
29	$20.6 M	$14.3 M	$4.3 M	$39.3 M	$13.7 M	$434.9 M
30	$21.1 M	$14.7 M	$4.4 M	$40.3 M	$13.5 M	**$448.5 M**

4.5 Waste-stream Disposal and Water Quality

Description of waste-stream discharge treatment and disposal water quality requirements, if applicable, for the proposed water reclamation, recycling or desalination project.

Brine generated from the RO concentrate would be discharged into OC San's existing Interplant Trunkline that feeds into Plant 2. The flow would be re-treated at Plant 2 and ultimately be discharged through OC San's 5-mile ocean outfall while complying with ocean discharge standards that meet OC San's NPDES permit requirements. Further coordination with OC San is required during detailed design. Mesa Water would pay a brine disposal fee per AF of discharge to OC San. These costs are reflected in the cost estimates for the project.

4.6 Alternative Measures or Technologies for Reclamation, Distribution, and Reuse

Description of one or more alternative technologies that could be used in the proposed water reclamation, recycling or desalination project under consideration. Where a project only consists of reclaimed, recycled or desalinated water distribution, alternative plans for distribution or implementation will be provided. These alternatives must be approvable by the state(s) or tribal authorities in which the project will be located.

4.6.1 Slant Wells

Slant wells are drilled at an angle from a location on land that allows access to offshore or nearshore aquifers, targeting the saline front. Slant wells should be explored for this project to help more specifically target aquifer zones or zones of particular salinity as well as potentially minimize subsidence risk.

Slant wells would enable specific targeting of aquifer zones which can provide more precision in the salinity zones targeted as well as optimizing the ratio of water sourced from inland (Talbert Barrier) versus the ocean. To prevent concerns over potential induced land subsidence from projected drawdown at the potential well locations, slant wells could distribute the effects of drawdown over a wider area, reducing the likelihood of inducing land subsidence.

4.6.2 High Recovery Reverse Osmosis

A conventional two-pass seawater RO system is proposed for the Local SiP due to elevated TDS, boron, and bromide concentrations in the coastal aquifer caused by seawater intrusion. Conventional seawater RO designs are a proven approach for seawater desalination, however alternative high-recovery technologies such as DesaliTec's Closed-Circuit Reverse Osmosis (CCRO), Rotec's Flow-Reversal RO (FRRO), and IDE Technologies Pulse Flow RO (PFRO) all provide operational advantages that could increase the overall energy efficiency, chemical usage and recovery of the treatment plant. In the case of each of these technologies off-the-shelf conventional RO components are re-configured into non-conventional system designs that are operated with proprietary control programs. These technologies typically seek to vary the local concentration factor on the feed side of the RO membranes, as well as the flow patterns as compared to conventional RO system designs.

As part of pre-design investigations these high recovery RO technologies should be further investigated to quantify their ability to decrease energy and chemical usage, potentially increase the recovery of the first pass of the proposed SWRO and lower annual operational costs. Implementation of these processes could increase the potable water production capacity of the treatment plant and reduce the volume of disposed concentrate. A desktop evaluation and competitive analysis would be required to assess the applicability and financial implications across all available technologies prior to employing the process.

5.0 Economic Analysis

A water reclamation, recycling or desalination feasibility study report must include an economic analysis of the proposed water reclamation, recycling or desalination project relative to other water supply alternatives that could be implemented by the non-Federal project sponsor in lieu of a water reclamation, recycling or desalination project. This assessment needs to identify the degree to which the water reclamation, recycling or desalination project alternative is cost-effective, and the economic benefits that are to be realized after implementation. The study lead must submit the following information for the economic analysis in a water reclamation, recycling or desalination feasibility study report.

5.1 Existing and Projected Future Conditions With and Without Project

The economic analysis included in the feasibility study report shall describe the conditions that exist in the area and provide projections of the future with, and without, the project. Emphasis in the analysis must be given to the contributions that the plan could make toward alleviation of economic problems and the meeting of future water demand.

The existing economic conditions of the project area can first be described with a summary of the Orange County economy. In 2023 the Federal Reverse Bank calculated the Gross Domestic Product of Orange County to be $333 billion dollars annually. If compared as a country this would rank the size of Orange County's economy just behind Chile and ahead of Finland. Major industries in Orange County include technology, aerospace, healthcare, tourism, real estate, higher education, financial and professional services, and agriculture. Once one of the largest agricultural regions in the country, agricultural output has dropped in recent decades due to urbanization of the environment. Currently, Orange County's top agricultural crops include ornamental trees and shrubs, strawberries, vegetables, citrus and fruits and berries. Despite the changing industrial landscape paradigm, the existing economic condition that remains constant in Orange County is growth. Growth in population, employment and economic output all which are built on the foundation of ready access to water.

Future Conditions without Project

Future conditions without the project will require project stakeholders to depend on the existing water supply portfolio to sustain population and economic development growth in the face of furthering water supply reductions. Per the 2022 California Water Supply Strategy, existing water supplies are expected to decrease by 10% by 2045. Across Mesa Water, Huntington Beach and Newport Beach's 2020 Urban Water Management Plans, the projected supply gap resulting from a reduction in available supplies will grow to approximately 4,613 AFY by 2045 (Table 5-1). Without the proposed project, the non-federal project sponsors will need to reduce supply to either business or residential sectors.

Table 5-1 Projected Supply Gap by 2045

Supply Type	2040	2045
Total Supplies After Anticipated 10% Reduction by 2040 (AFY)	56,026	56,295
Projected Demand (AFY)	*60,609*	*60,908*
Project Supply Gap (AFY)	**-4,583**	**-4,613**

According to *The Economic Impacts of Water Shortages in Orange County (Brattle, 2022)* reductions in residential and commercially available water supply are likely to result in:

- Direct revenue loss to utilities that would need to either be absorbed by services providers or passed on to rate payers.
- Reduction in annual business output and loss of jobs.

To offset the loss of supply services, providers would also likely need to implement strict water restrictions. However, following the severe drought period from 2013 to 2015, the project stakeholders have already implemented permanent water conservation practices to reduce per capita water use across their services areas. As a result, the projected supply gap is at risk of directly hampering economic development in the study area in the form of reduced economic output and job losses.

Future Conditions with Project

With the implementation of the Local Sip project stakeholders will be able to develop a new sustainable locally sourced water supply to offset the projected water supply gap. Based on the groundwater model performed to date, it is estimated that up to 85% of the anticipated supply gap could be met with implementation of the Local SiP. Additionally, proper implementation of the seawater influenced extraction wells could help draw the current 250 mg/L chloride contour line closer to the seaward portion of the Talbert Gap, thereby improving water quality in the OC Basin. Finally, the proposed project would also help reduce the dependence of project stakeholders on imported water during emergency periods of severe drought or seismic activity.

5.2 Alternatives Cost Comparison

A cost comparison of alternatives that would satisfy the same demand as the proposed water reclamation, recycling or desalination project. Alternatives used for comparison must be likely and realistic, and developed with the same standards with respect to interest rates and period of analysis.

This section provides a cost comparison for the three alternatives investigated during this feasibility study.

5.35 MGD Brackish Groundwater Treatment Facility

The Local SiP consists of a 5.35 MGD brackish groundwater treatment facility. Refer to Section 4.3 for further information.

2.65 MGD Brackish Groundwater Treatment Facility

The second alternative is a 2.65 MGD finished water flow brackish groundwater treatment facility. Similar to the first alternative, there would be five groundwater wells spread evenly through the seaward portion of the Talbert Gap to pump seawater influenced brackish groundwater to a new treatment facility. However, only 4.0 MGD would be pumped from the groundwater basin. This alternative was considered because it is the upper limit of groundwater pumping before land subsidence becomes a concern. As discussed in Section 10.1, the groundwater model needs further recalibration to determine a more accurate limit of groundwater pumping.

The treatment process flow diagram would be the same as presented in Section 4.3 but with a reduced number of equipment to reflect the reduced influent flow. For example, only two RO trains would be needed instead of three trains in the proposed project alternative. Mesa Water would produce 2.65 MGD

of finished water that would be tied into the existing distribution system. Finally, 1.19 MGD of brine would be discharged into the OC San Interplant Trunkline to be routed to the ocean outfall.

No Project Alternative

The No Project Alternative would consist of Mesa Water and project stakeholders continuing to rely on imported water from the SWP and CRA. There would be no further diversification of the region's water supply portfolio. With severe drought conditions in the study area, there is a larger risk for Mesa Water to continue their current water management strategy. In addition, MWDOC is anticipating an 11.5% imported water rate increase from 2027 to 2028. While MWDOC projections extend to 2030, the project life-cycle period extends 25 years further. There are a wide variety of unknowns that may impact the inflation rate of imported water over the 30-year span, including exponential exacerbation of imported water supply and the implementation of large-scale MWD projects, such as Pure Water Southern California. Accordingly, the project team has elected to provide a potential range of life-cycle costs for the No Project Alternative. The more-favorable end of the range assumes a 9% inflation rate of imported water over the full 30-year project life cycle. The less-favorable end of the range assumes a 9% inflation rate for the first 10 years of the project, followed by 7.2% inflation rate for the remaining 20 years. 7.2% was derived by averaging all historical inflation rates from 2008 to 2030, along with five years of 9% inflation from 2030 to 2035.

Besides being able to meet water demand for the study area, this alternative does not meet any of Mesa Water's objectives to provide a sustainable water supply to its customers.

Alternatives Cost Comparison

The cost comparison between the three alternatives described above is shown in Table 5-2. The proposed project has the lowest cost per AF as shown below and is recommended because it meets Mesa Water's water supply goals and is the most cost effective over a 30-year life cycle.

Table 5-2 Alternatives Cost Comparison

Cost Component	5.35 MGD Brackish Groundwater Treatment Facility [1]	2.65 MGD Brackish Groundwater Treatment Facility [1]	Import 5.35 MGD of Treated Water (No Project Alternative) [1, 2]
Total Construction Costs	$276.9 M	$193.3 M	-
Total Project Cost [4]	$317.5 M	$223.4 M	-
Total Project Cost less 20% Grant	$254.0 M	$178.7 M	-
OPEX Costs (Year 2025)	$8.870 M	$4.771 M	$9.625 M
30-Year Net Present Value (NPV)	$448.5 M	$284.4 M	$490.6 M
Annual Project Yield (AFY)	5,993	2,996	5,993
Lifetime Project Yield (AF)	179,800	89,890	179,800
First Year Unit Cost per AF (2025)	$2,671	$3,459	$1,606
Unit Cost per AF [3]	**$2,495**	**$3,163**	**$2,728**

1. The interest rate, discount rate, inflation rate, and other cost assumptions are described in Section 4.4.
2. A treated water cost baseline (2025) of $1,528 was used with a 9.0% treated imported water inflation rate for the first 10 years followed by 7.2% for the remaining 20 years.
3. Unit cost per AF is in 2025 dollars over the next 30 years.
4. Project costs include total construction costs, site procurement, and consultant's design fee as described in Section 4.3.10.

Comparing the 5.35 MGD Brackish Groundwater Treatment Facility Alternative with the No Project Alternative, the break-even point in cumulative present value may occur anywhere between year 18 and year 25 of the 30-year analysis as shown in Figure 5-1.

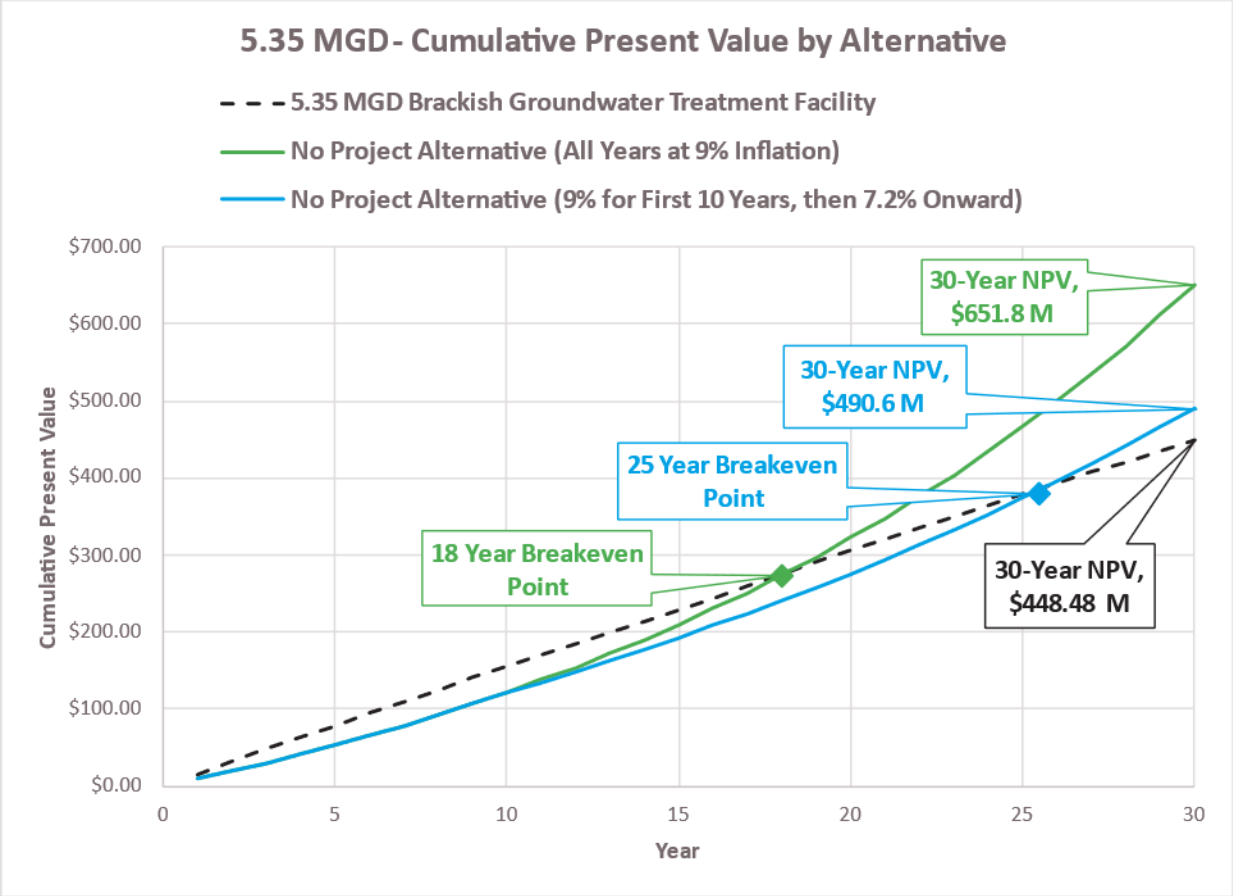


Figure 5-1 **Net Present Value Break-even Point**

5.3 Description of Water Supply Alternatives

Description of other water supply alternatives considered to accomplish the objectives to be addressed by the proposed water reclamation, recycling or desalination project, including benefits to be gained by each alternative, total project cost, life cycle cost, and corresponding cost of the project water produced expressed in dollars per MG, and/or dollars per acre-foot. An appraisal level cost estimates, or better, is acceptable for these alternatives.

Water supply alternatives such as seawater desalination and indirect potable reuse are not suitable solutions for Mesa Water's water demand concerns; therefore, there are no costs to compare to the Local SiP.

From 1998 to 2022, seawater desalination in the area was thoroughly studied for the Huntington Beach Desalination Project which is near the Local SiP study area. The project aimed to convert seawater to 50 MGD of potable drinking water. The seawater desalination facility was designed to use reverse osmosis to treat the seawater and planned to discharge the brine byproduct back into the Pacific Ocean. Opposing parties argued that treating seawater with reverse osmosis was an energy intensive method and that brine discharge could result in negative environmental impacts. The proposed location of the

seawater desalination facility was also a concern due to its proximity to the coast and the risk of flooding from sea level rise and increased storm surges. Due to the outside opposition associated with desalinating seawater, the California Coastal Commission denied the project in 2022. Therefore, exploring seawater desalination is not a relevant alternative for Mesa Water.

Indirect potable reuse is currently not a feasible water supply alternative because the GWRS facility in Orange County, California, is already capturing and treating all reclaimable wastewater sources in the study area. As a result, there is no further recycled water or indirect potable reuse production capacity due to source supply constraints.

5.4 Alternatives Cost Comparison in Absence of Project

When a water reclamation, recycling or desalination project provides water supplies for municipal and industrial use, the benefits of the project can be measured in terms of the cost of the alternative most likely to be implemented in the absence of the project. This is assuming that the two alternatives would provide comparable levels of service. This comparison must be provided, if applicable.

The most feasible and comparable alternative to the Local SiP would be the 2.65 MGD Brackish Groundwater Treatment Facility Alternative presented in Section 5.2. As noted, this alternative does not meet Mesa Water's objective of providing sufficient potable water supply to offset the reliance on imported water and account for the future projected supply gap. Additionally, it has a higher cost per AF because of the economies of scale related to the reduced finished water capacity.

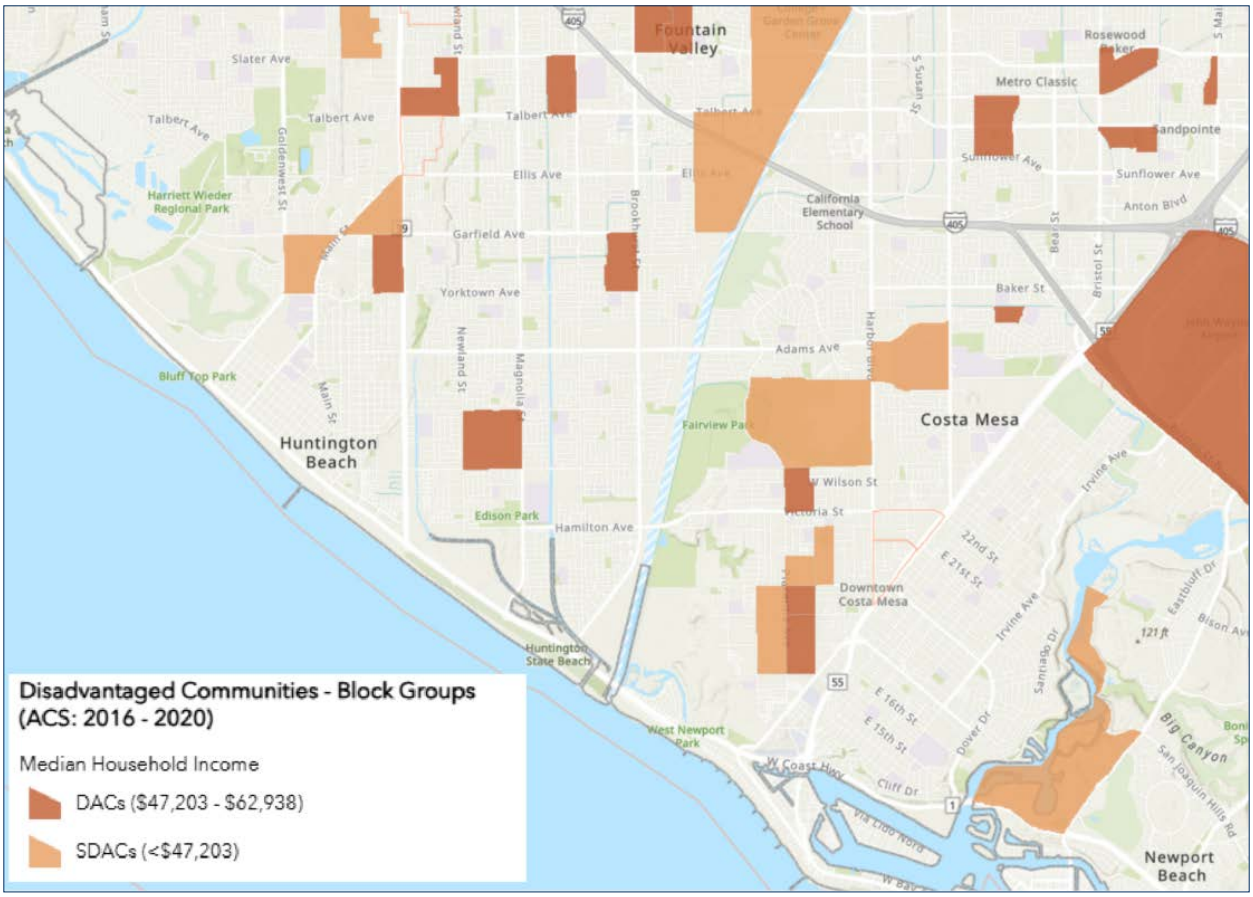
5.5 Project Benefits

Some water reclamation, recycling or desalination project benefits will be difficult to quantify; for example, a drought tolerant water supply, reduced water importation, and other social or environmental benefits. These benefits shall be documented and described qualitatively as completely as possible. These qualitative benefits can be considered as part of the justification for a water reclamation, recycling or desalination project in conjunction with the comparison of project costs described above.

The Local SiP would provide a new and sustainable potable water supply to the project stakeholders that would reduce the region's reliance on imported water and directly address projected future supply gap threatening Orange County's economy. In addition to having the lowest cost per AF of water, there are a range of qualitative benefits related to water supply, water quality, environmental, and the community as defined in Table 5-3 and Figure 5-2Table 5-3. Finally, the Local SiP is the only alternative that meets all of Mesa Water's objectives to supply 5 to 8 MGD of potable water; reduce reliance on imported water; improve the region's ability to withstand droughts and changing weather patterns; protect the groundwater from seawater intrusion; and provide a cost-effective alternative with the highest beneficial use of brackish groundwater.

Table 5-3 Qualitative Project Benefits

	Project Benefits	Description
Water Supply	Increased Resiliency	Mesa Water currently provides 100% of its water supply from local groundwater. The Local SiP will enhance local and regional water supplies.
	Increased Reliability	By providing alternative supplies within Orange County, the Local SiP will enhance supply reliability for Mesa Water and project stakeholders.
	Reduce Imported Water Usage	The Local SiP will reduce reliance on imported water sources from MWD.
	Reduced Potable Water Usage	The project will reduce potable water usage through desalination of brackish groundwater.
Environment	Support Seawater Intrusion Management	Strategic extraction of brackish groundwater from the seaward portion of the Talbert Gap may intercept seawater before it migrates inland, potentially reducing injection volumes required at the Talbert Barrier while maintaining protection of inland aquifers.
	Resilience	Implementing the Local SiP will provide a flexible water supply during water shortages resulting from droughts and changing weather patterns
	Salinity Management in Groundwater Basin	The Local SiP would reduce the salinity of the local groundwater basin over the life-cycle of the project.
Community/ Economy	Regional Collaboration	Continued water resource collaboration for OCWD, Huntington Beach, Newport Beach, Mesa Water, and other community stakeholders within Orange County.
	Disadvantage Communities (DAC)	The project will increase water security in Mesa Water's service area (13% DAC) and will enhance the supply reliability for the Santa Ana River Watershed (23% DAC). Refer to Figure 5-2.
	Public Knowledge/Education	Public outreach and opportunities for the public to learn about the project details. Educational programs related to water conservation and water use efficiency efforts.



Source: [DAC Mapping Tool]

Figure 5-2 Disadvantaged Communities Map

6.0 Selection of the Proposed Title XVI Project

6.1 Selected Alternative

Provide a justification of why the proposed water reclamation, recycling or desalination project is the selected alternative in terms of meeting objectives, demands, needs, cost effectiveness, and other criteria important to the decision.

The selected Local SiP would provide local, reliable, year-round and cost-effective water supplies to Mesa Water and other project stakeholders. The Local SiP would meet the following objectives:

- Add 5 to 8 MGD of potable water supply
- Reduce reliance on imported water
- Improve the region's ability to withstand droughts and changing weather patterns
- Protect the groundwater basin from further seawater intrusion
- Provide the most cost-effective alternative with the highest beneficial use of brackish groundwater

The Local SiP would provide water at a first year unit cost of $2,655 per AF. Although this is higher than the current 2025 cost of imported water, it is important to consider the long-term financial implications. Project stakeholders have experienced significant increases in the cost per AF of imported water over recent years. Additionally, with concerns about drought conditions, imported water from the SWP is not a reliable source of drinking water for the study area. Overall, the Local SiP would improve the region's resilience in the face of changing weather patterns and unreliable water supply. It is the most cost-effective investment to meet the long-term goals.

6.2 Project Impacts to Existing and Future Supplies

Provide an analysis and, if applicable, an affirmative statement of whether the proposed water reclamation, recycling or desalination project would address the following:

(i) ***Reduction, postponement, or elimination of development of new or expanded water supplies;***

(ii) ***Reduction or elimination of the use of existing diversions from natural watercourses, or withdrawals from aquifers;***

(iii) ***Reduction of demand on existing Federal water supply facilities; and***

(iv) ***Reduction, postponement, or elimination of new or expanded wastewater facilities.***

6.2.1 New or Expanded Water Supplies

The local SiP provides an alternative water supply to the region by treating seawater influenced groundwater from the Talbert Gap. This allows Mesa Water and project stakeholders to offset buying imported water with groundwater within the region, creating a new, sustainable water supply.

6.2.2 Reduction or Elimination of the Use of Existing Diversions or Withdrawals

The Local SiP has been designed to offset the amount of imported water by 5.35 MGD (5,993 AFY) to the region by pumping local seawater influenced brackish groundwater, treating it to meet local drinking water standards, and distributing to Mesa Water and project stakeholders' customers. The Local SiP would reduce the reliance on imported water and provide a local, reliable, and clean option for Mesa Water.

6.2.3 Existing Federal Water Supply Facilities

This subsection is not applicable to the Local SiP. Mesa Water and project stakeholders use groundwater from the OC Basin, which is managed by OCWD, and imported water through the SWP and CRA which is managed by MWD and provided by MWDOC.

6.2.4 New or Expanded Wastewater Facilities

This subsection is not applicable to the Local SiP. There are no new wastewater facilities planned in the study area.

7.0 Environmental Considerations and Potential Effects

The review of a water reclamation, recycling or desalination feasibility study report does not require National Environmental Policy Act (NEPA) compliance. The Department of the Interior categorical exclusion 1.11 "Activities which are educational, informational, advisory, or consultative to other agencies, public and private entities, visitors, individuals or the general public" applies to Reclamation's consultative review, and preparation of the water reclamation, recycling or desalination feasibility study reports. As stated in Paragraph 1. Scope, Reclamation is not making a recommendation to go forward with the proposed water reclamation, recycling or desalination project, nor is Reclamation using the water reclamation, recycling or desalination feasibility study report to propose an action to the Congress.

The water reclamation, recycling or desalination feasibility study report must include sufficient information on the proposed water recycling or desalination project to allow Reclamation to assess the potential measures and costs that will be necessary to comply with NEPA, and any other applicable Federal law. Accordingly, the following information is required.

(i) Discussion whether, and to what extent, the proposed water reclamation, recycling or desalination project will have potentially significant impacts on endangered or threatened species, public health or safety, natural resources, regulated waters of the United States, or cultural resources.

(ii) Discussion whether, and to what extent, the project will have potentially significant environmental effects, or will involve unique or undefined environmental risks.

(iii) Description of the status of required Federal, state, tribal, and/or local environmental compliance measures for the proposed water reclamation, recycling or desalination project, including copies of any documents that have been prepared, or results of any relevant studies.

(iv) Any other information available to the study lead that would assist with assessing the measures that will be necessary to comply with NEPA, and other applicable Federal, state or local environmental laws such as the Endangered Species Act or the Clean Water Act.

(v) Discussion of how the proposed water reclamation, recycling or desalination project will affect water supply and water quality from the perspective of a regional, watershed, aquifer, or river basin condition.

(vi) Discussion of the extent to which the public was involved in the feasibility study, and a summary of comments received, if any.

(vii) Description of the potential effects the project will have on historic properties. Discussion must include potential mitigation measures, the potential for adaptive reuse of facilities, an analysis of historic preservation costs, and the potential for heritage education, if necessary.

7.1 Environmental Considerations for Assessing NEPA Compliance

Efforts to analyze potential project impacts are in the early stages. However, preliminary analysis shows that impacts from the Local SiP would be less than significant, or could be reduced to less than significant, with implementation of appropriate mitigation measures. Necessary mitigation measures would be further developed and refined during the CEQA/NEPA process and incorporated into the final design. Preliminary analysis did not identify any significant and unavoidable impacts associated with implementation of the proposed project.

The Local SiP Feasibility Study analyzes various alternatives for implementation, as described below:

- Alternative 1 – Construct groundwater wells and treatment plant to produce 2.65 MGD
- Alternative 2 – Construct groundwater wells and treatment plant to produce 5.35 MGD
- Alternative 3 – No Action Alternative

Refer to Section 5.0 for a detailed description of the alternatives.

7.1.1 Potential Significant Impacts

Discussion whether, and to what extent, the proposed water reclamation, recycling, or desalination project will have potentially significant impacts on endangered or threatened species, public health or safety, natural resources, regulated waters of the United States, or cultural resources.

7.1.1.1 Endangered, Threatened, or Proposed Species

Species listed as threatened or endangered under the Endangered Species Act (ESA) are provided federal protection, and the killing or possession of plants and animals listed as a California endangered species is prohibited by the California Endangered Species Act (CESA).

The U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) online tool, accessed on June 12, 2025, was used to generate a list of federally protected species that could be impacted by projects within the study area. The list is based on the geography of the study area boundary, which encompasses all alternatives. According to the IPaC, a total of 15 threatened and endangered (T&E) species were identified to potentially inhabit the alternative study areas. No designated critical habitat was identified within the Local SiP vicinity.

Alternatives 1 and 2 run along the same route eastward from five wells near Huntington City Beach, across the Talbert Channel, and then north to a proposed desalination facility near the Santa Ana River. Both these alternatives could have the potential to impact the federally listed species discussed in this report. However, based on a preliminary analysis and experience with similar projects, no impacts are anticipated. If impacts were to occur, adequate mitigation is available and can be implemented to avoid them, reduce them to less than significant, or compensate for potential impacts, if necessary.

Currently, California does not maintain databases of state-listed protected plant or animal species by geographic area, such as by county. However, the online Calflora® database is a nonprofit database that provides information on California vegetation, including records of species identification across the state. Black & Veatch reviewed this database to identify if any state-listed threatened or endangered plant species have been recorded within the project area. Although the database records showed no current identification of state-listed species within the study area, it is recommended to survey for these species should future field visits and/or site reconnaissance be necessary. Along with protection under the CESA, the California Native Plant Protection Act (NPPA) prohibits the take of endangered or rare native species. There are some exceptions for agricultural and nursery operations, emergencies, and after proper notification to the California Department of Fish and Wildlife (CDFW).

The construction and operation of the Local SiP may directly or indirectly affect biological resources as it will potentially utilize areas within Huntington Beach. T&E fauna and flora species that may occur in the Local SiP vicinity and may be impacted by the implementation of this project, are described below.

- The **Pacific pocket mouse (*Perognathus longimembris pacificus*)** is listed as endangered by the ESA, but is not listed by the state. The species has been federally listed since 1994, when a single population in Orange County was discovered after the species had been assumed extinct. Several more populations have been discovered since. The Pacific pocket mouse is primarily associated with sandy soils in a range of habitats with open vegetation structure in coastal southern California, including dunes, strands, mesas, and drainages with mixed coastal scrub, grasses, and forbs. Besides their small population size, the main threat to the species is habitat fragmentation and degradation. The probability of the Pacific pocket mouse occurring within the vicinity of the Local SiP is low, but upland areas of the Newland Marsh property south of Wells 1 and 2 could potentially provide adequate habitat.
- The **California least tern (*Sternula antillarum browni*)** is listed as endangered by both the ESA and CESA. One of the smallest species of tern, the California least tern was first listed as endangered in 1970 after habitat loss caused drastic population decline. The species' current range includes coastal areas from San Pablo Bay, California, in the north, to San Jose del Cabo, in the state of Baja California Sur, Mexico, to the south. They require open/sandy dunes for nesting habitat and shallow coastal waters for feeding. Considering the Local SiP's vicinity to the coastline and Newland's marsh property, which includes patches of open sand, the probability of the California least tern occurring within the vicinity of the Local SiP is moderate.
- The **coastal California gnatcatcher (*Polioptila californica californica*)** is listed as threatened under the ESA, but is not listed by the state. The species has been federally listed as threatened since 1993. The range of this species extends coastal southern California to northwestern Mexico, where it lives in and around coastal sage scrub. This species is non-migratory, and is threatened by habitat loss and brood parasitism by the brown-headed cowbird (*Molothrus ater*). Due to the general lack of appropriate habitat, the probability of the coastal California gnatcatcher occurring within the Local SiP vicinity is low.
- The **least Bell's vireo (*Vireo bellii pusillus*)** is listed as endangered by both the ESA and CESA. First federally listed as endangered in 1986, the least Bell's vireo is threatened primarily by habitat loss. However, the species' recovery has also been hindered by brood parasitism by the brown-headed cowbird. During breeding season, they require areas with dense vegetation along riparian corridors. They forage in a variety of habitats and migrate from southern California to northwestern Mexico in winter. Considering the Local SiP's vicinity to the Newland's marsh property, which includes some riparian vegetation, the probability of the least Bell's vireo occurring within the vicinity of the Local SiP is moderate.
- The **light-footed Ridgway's rail (*Rallus obsoletus levipes*)** is listed as endangered by both the ESA and CESA. The species was originally federally listed as endangered in 1969, and its largest threats continue to be habitat degradation associated with hydrology modifications, pollution, sea level rise, and non-native invasive species. They rely on saltmarsh habitats for foraging and nesting areas. Currently, their range is restricted to a handful of coastal marshes, lagoons, and some freshwater habitats from southern Ventura County, California, southward to northern Baja California, Mexico. Considering the project's vicinity to the Newland's marsh property, probability of the light-footed Ridgway's rail occurring within the vicinity of the Local SiP is moderate.
- The **southwestern willow flycatcher (*Empidonax traillii extimus*)** is listed as endangered by the ESA and CESA. It has been federally listed as endangered since 1995, mostly due to loss of

densely vegetated riparian habitats. These habitats have been altered by development, water impoundment (dams), water diversion for agriculture, and groundwater pumping. Their current breeding range includes southern California, southern Nevada, southern Utah, Arizona, New Mexico, and southwestern Colorado. They are migratory, travelling south to overwinter in Mexico, Central America, and northern South America. Considering the Local SiP's vicinity to the Newland's marsh property, which includes some riparian vegetation, the probability of the southwestern willow flycatcher occurring within the vicinity of the project is moderate.

- The **western snowy plover (*Charadrius nivosus nivosus*)** is listed as threatened by the ESA, but is not listed by the state. The species was first federally listed in 1993 as human activity, urban development, and increased predation caused declining populations. The western snowy plover nests on the ground on broad open beaches or flats, where vegetation is sparse. Human disturbance, such as beach use and introduction of beach grasses, continues to limit reproductive success. They are migratory, and their current range covers several southwestern states and Mexico. Due to the general lack of appropriate habitat, the probability of the coastal western snowy plover occurring within the Local SiP vicinity is low.
- The **southwestern pond turtle (*Actinemys pallida*)** is proposed for listing as threatened under the ESA, but is not listed under the CESA. They are a medium-sized turtle that can inhabit aquatic habitats at varying elevations throughout their range, including ponds, lakes, and rivers. Habitat loss combined with high nest predation, siltation, and invasive predators such as the bullfrog, have caused declines in the southwestern pond turtle population. Their current range extends from just south of San Francisco Bay to Baja California, Mexico. Due to the general lack of appropriate habitat, the probability of the southwestern pond turtle occurring within the Local SiP vicinity is low.
- The **western spadefoot (*Spea hammondii*)** is proposed for listing as threatened under the ESA, but is not listed under the CESA. It is a relatively smooth-skinned species of spadefoot toad that can be found in localized populations throughout the central valley of California, and as far south as San Diego. It is predominantly found in grassland, scrub, and chaparral communities. The western spadefoot's largest threat is urban development of their primary habitats, along with growing scarcity of vernal pools for egg-laying. Due to the general lack of appropriate habitat, the probability of the western spadefoot occurring within the Local SiP vicinity is low.
- The **monarch butterfly (*Danaus plexippus*)** is proposed for listing as threatened under the ESA. The monarch butterfly overwinters in southwestern California and Mexico. During spring, the butterfly disperses northward across North America. They utilize a wide variety of habitats in search of nectar sources and milkweed plants (genus *Asclepias*). Milkweed plants are essential in their life cycle, as only species of *Asclepias* provide food for monarch caterpillars. Adult monarchs require flowering plants to provide nectar as a food source. From October through early March, they migrate to southwestern California. Because the Local SiP area is within the migratory corridor of the monarch butterfly, and could contain suitable habitat for the species life-history requirements, the probability of occurrence is moderate.
- The **San Diego fairy shrimp (*Branchinecta sandiegonensis*)** is listed as endangered by the ESA, but is not listed by the state. The species was first listed as federally endangered in 1997, and faces threats that include habitat development, off-road vehicles, and altered hydrological regimes. The San Diego fairy shrimp lives exclusively in vernal pools and ephemeral basins, hatching and developing rapidly after adequate rainfall between January and March. They feed on algae and organic matter, and the cysts that contain their eggs can withstand long dry periods. The current range of the San Diego fairy shrimp is believed to be limited to southwestern

California and northwester Baja California, Mexico. Due to the lack of appropriate habitat, the probability of the San Diego fairy shrimp occurring within the Local SiP vicinity is zero.

- **Nevin's barberry (*Berberis nevinii*)** is listed as endangered by both the ESA and the CESA. The Nevin's barberry is an evergreen, flowering shrub that grows up to 13 feet tall, flowering from March to April. The species has tough leaves and many small yellow flowers that produce clusters of yellow/red berries, which are eaten by many bird species. Although it can be found in a variety of topographies and habitats, populations of Nevin's barberry have drastically declined due to development, fire, and low reproductive output. They are generally found in mesic habitats, which can also be threatened by changes in hydrological regimes. Considering the Local SiP's vicinity to the Newland's marsh property, and Nevin's barberry ability to survive in a variety of habitats, the species could occur within the Local SiP vicinity, but probability is low.
- **Salt marsh bird's-beak (*Cordylanthus maritimus ssp maritimus*)** is listed as endangered by the ESA, but is not listed by the state. Salt marsh bird's beak is a flowering annual plant and may grow up to 1.5 feet in height. While the species' historical range was widespread from Santa Barabara County, California, south to Baja California, Mexico, its current range has become fragmented to isolated salt marshes along the California coast. Along with habitat fragmentation, the salt marsh bird's beak is sensitive to changes in salinity. Considering the Local SiP's vicinity to the Newland's marsh property, which includes marsh vegetation, salt marsh bird's beak could occur within the Local SiP vicinity, but probability is low.
- **San Diego button-celery (*Eryngium aristulatum var parishii*)** is listed as endangered by the ESA and the CESA. It is an annual herbaceous species that grows in a spreading pattern along the ground, up to 16 inches across. It is only found in vernal pools within freshwater wetland, sage scrub, or grassland communities. Loss of these vernal pools is the greatest threat to the San Diego button-celery, but trampling, vehicle traffic, and nonnative species competition also challenge the species' recovery. Due to the lack of appropriate habitat, the probability of San Diego button-celery occurring within the Local SiP vicinity is zero.
- **Venture marsh milk-vetch (*Astragalus pycnostachyus var lanosissimus*)** is listed as endangered by the ESA and the CESA. It is a short-lived perennial herb with yellow-white flower cluster that bloom from June to October. The Ventura marsh milk-vetch was thought to have gone extinct until its rediscovery in 1997, and was subsequently listed as federally endangered. It has an extremely limited current range, with only one known wild population surviving in an abandoned oil-field site in Oxnard known. Habitat loss and degradation are the largest factor in the species' decline, although its complicated pollinator requirements have also hindered reintroduction efforts. Due to the lack of appropriate habitat, and Venture marsh milk-vetch's extremely limited range, the probability of the species occurring within the Local SiP vicinity is zero.

Considering the current information from the alternatives, which includes the use of existing infrastructure and ground disturbance in already disturbed areas, Tables 7-1 and 7-2 illustrate the Probability of Occurrence for each species within the study area.

Black & Veatch reviewed available federal, and state listed species data and study area habitats to assign a Probability of Occurrence rating for each species. Probability of Occurrence ratings found in Table 7-1 are defined as follows:

- **Zero** – Species has no chance of naturally occurring within the study area.
- **Low** – Species has not been documented in the region or suitable habitat within the study area is limited and of low quality.

- **Moderate** – Species has been documented in the region and suitable habitat is present within the study area.
- **High** – Species has been documented in the region and high-quality suitable habitat is available within the study area.

Table 7-1 Federal and State Listed Species, Study Area Polygon, Orange County, California

Scientific Name	Common Name	Federal Status	State Status	Probability of Occurrence
Mammals				
Pacific Pocket Mouse	*Perognathus longimembris pacificus*	E	N	Low
Birds				
California Least Tern	*Sternula antillarum browni*	E	E	Moderate
Coastal California Gnatcatcher	*Polioptila californica californica*	T	N	Low
Least Bell's Vireo	*Vireo bellii pusillus*	E	E	Moderate
Light-footed Ridgway's Rail	*Rallus obsoletus levipes*	E	E	Moderate
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	E	E	Moderate
Western Snowy Plover	*Charadrius nivosus nivosus*	T	N	Low
Reptiles and Amphibians				
Southwestern Pond Turtle	*Actinemys pallida*	PT	N	Low
Western Spadefoot	*Spea hammondii*	PT	N	Low
Insects				
Monarch Butterfly	*Danaus plexippus*	PT	N	Moderate
Crustaceans				
San Diego Fairy Shrimp	*Branchinecta sandiegonensis*	E	N	Zero
Plants				
Nevin's Barberry	*Berberis nevinii*	E	E	Low
Salt Marsh Bird's-beak	*Cordylanthus maritimus ssp maritimus*	E	N	Low
San Diego Button-celery	*Eryngium aristulatum var parishii*	E	E	Zero
Ventura Marsh Milk-vetch	*Astragalus pycnostachyus var lanosissimus*	E	E	Zero

Source: USFWS IPaC: https://ipac.ecosphere.fws.gov/, Calflora: https://www.calflora.org/

N- Not listed

E- Endangered

T- Threatened

PT- Potentially Threatened

Critical Habitats

No designated critical habitats were identified within the vicinity of the Local SiP area. An official critical habitat designation does not affect land ownership, allow the government to take or manage private property, establish a conservation area, or allow the government or public access to private land. Critical habitat designations also do not impact the activities of private landowners if there is no federal nexus.

Bald and Golden Eagles

According to the IPaC, both Bald (*Haliaeetus leucocephalus*) and Golden eagles (*Aquila chrysaetos*) are potentially found in the study areas. The Bald and Golden Eagle Protection Act (BGEPA), enacted in 1940, specifically prohibits the take of bald eagles and golden eagles, including feathers, eggs, and nests, without a permit.

Golden eagles are typically found near mountains, canyonlands, and bluff areas adjacent to grassland, chapparal, and shrubland habitats. The study area is not typical of the Golden eagle's range, nor does it contain suitable foraging habitat. Most Golden eagles in California are permanent residents, with others migrating into California for winter.

The IPaC report indicates that there is likely a presence of Bald eagles within the study area. Bald eagles occur throughout the United States and are commonly associated with river courses or large bodies of water that provide foraging opportunities. Bald eagles eat fish, waterfowl, and carrion, and tend to build large nests in proximity to rivers/lakes.

The proposed alternatives are in urban/developed areas. While the coastal areas near the Local SiP may provide hunting areas for bald and golden eagles, it is unlikely that the study area will provide nesting opportunities for these species.

Migratory Birds

The Migratory Bird Treaty Act (MBTA) of 1918 represents an assemblage of international conservation treaties intended to ensure the sustainability of populations of protected migratory bird species. The MBTA prohibits the take, including killing, capturing, selling, trading, and transport, of protected migratory bird species without prior authorization by the USFWS. The MBTA is applicable to migratory bird species native to the United States and US territories, listing more than 1,000 species. The species described in Table 7-2 were indicated through the IPaC report to potentially utilize the Local SiP study area. The probability of occurrence for each species is based on USFWS survey data recorded within the 10 km grid cell(s) containing the Local SiP boundary.

Table 7-2 Migratory Bird Resources, Study Area Polygons, Orange County, California

Scientific Name	Common Name	Breeding Season	Probability of Presence[1]
Allen's Hummingbird	*Selasphorus sasin*	Feb. 1 - Jul. 15	Jan. - Dec.
Bald Eagle	*Haliaeetus leucocephalus*	Jan. 1 - Aug. 31	Oct. - Nov., Jan.
Belding's Savannah Sparrow	*Passerculus sandwichensis beldingi*	Apr. 1 - Aug. 15	Jan. - Dec.
Black Oystercatcher	*Haematopus bachmani*	Apr. 15 - Oct. 31	Jan., Apr. - Sep.
Black Skimmer	*Rynchops niger*	May 20 - Sep. 15	Jan. - Dec.
Black Swift	*Cypseloides niger*	Jun. 15 - Sep. 10	May, Nov.
Black Tern	*Chlidonias niger surinamenisis*	May 15 - Aug. 20	Jul. - Oct.
Black Turnstone	*Arenaria melanocephala*	Breeds elsewhere	Feb. - Dec.
Black-chinned Sparrow	*Spizella atrogularis*	Apr. 15 - Jul. 31	Sep.
Brandt's Cormorant	*Urile penicillatus*	Apr. 15 - Sep. 15	Jan. - Dec.
Bullock's Oriole	*Icterus bullockii*	Mar. 21 - Jul. 25	Jan. - Dec.
California Gull	*Larus californicus*	Mar. 1 - Jul. 31	Jan. - Dec.
California Thrasher	*Toxostoma redivivum*	Jan. 1 - Jul. 31	Sep. - May
Clark's Grebe	*Aechmophorus clarkii*	Jun. 1 - Aug. 31	Jan. - Dec.
Common Yellowthroat	*Geothlypis trichas sinuosa*	May 20 - Jul. 31	Jan. - Dec.
Elegant Tern	*Thalasseus elegans*	Apr. 5 - Aug. 5	Mar. - Nov.
Golden Eagle	*Aquila chrysaetos*	Jan. 1 - Aug. 31	Dec.
Gull-billed Tern	*Gelochelidon nilotica*	May 1- Jul. 31	Mar. - Aug.
Heermann's Gull	*Larus heermanni*	Mar. 15 - Aug. 31	Jan. - Dec.
Lawrence's Goldfinch	*Spinus lawrencei*	Mar. 20 - Sep. 20	Feb. - Jun.
Long-eared Owl	*Asio otus*	Mar. 1 - Jul. 15	Jan.
Marbled Godwit	*Limosa fedoa*	Breeds elsewhere	Jan. - Dec.
Mountain Plover	*Charadrius montanus*	Breeds elsewhere	Nov. - Mar.
Northern Harrier	*Circus hudsonius*	Apr. 1 - Sep. 15	Jan. - Dec.
Nuttall's Woodpecker	*Dryobates nuttallii*	Apr. 1 - Jul. 20	Jan. - Dec.
Oak Titmouse	*Baeolophus inornatus*	Mar. 15 - Jul. 15	Jul., Sep. - Oct.
Olive-sided Flycatcher	*Contopus cooperi*	May 20 - Aug. 31	Apr. - May, Aug. - Oct.
Red Knot	*Calidris canutus roselaari*	Breeds elsewhere	Jan. - Dec.
Santa Barbara Song Sparrow	*Melospiza melodia graminea*	Mar. 1 - Sep. 5	Jan. - Dec.

Scientific Name	Common Name	Breeding Season	Probability of Presence[1]
Scripps's Murrelet	*Synthliboramphus scrippsi*	Feb. 20 - Jul. 31	Aug.
Short-billed Dowitcher	*Limnodromus griseus*	Breeds elsewhere	Jan. - Dec.
Tricolored Blackbird	*Agelaius tricolor*	Mar. 15 - Aug. 10	Jan., May
Western Grebe	*Aechmophorus occidentalis*	Jun. 1 - Aug. 31	Jan. - Dec.
Western Gull	*Larus occidentalis*	Apr. 21 - Aug. 25	Jan. - Dec.
Willet	*Tringa semipalmata*	Breeds elsewhere	Jan. - Dec.
Wrentit	*Chamaea fasciata*	Mar. 15 - Aug. 10	Jan. - Dec.

Source: USFWS IPaC: https://ipac.ecosphere.fws.gov/

[1] Probability of Presence – months with the highest probability of presence as reported in IPaC resource list.

Of the 36 migratory bird species identified by the IPaC report, most are more likely to be found within nearby protected marsh habitats than within the Local SiP boundary. The Newland, Magnolia, and Brookhurst Marshes are owned and managed by the Huntington Beach Wetlands Conservancy, and are located less than 0.5 miles from the Local SiP route. All appropriate best practices should be employed to reduce potential impacts in areas closest to these marshes, particularly Newland Marsh, which lies just south of Wells 1 and 2.

The presence of all these species, including mitigation measures to eliminate or reduce impacts, will be further analyzed during the CEQA/NEPA process.

7.1.1.2 Potential Significant Impacts to Public Health

Discussion whether, and to what extent, the proposed water reclamation, recycling or desalination project will have potentially significant impacts on public health or safety.

Construction and operation of either Alternative 1 or 2 for Mesa Water District could adversely impact public health and safety. The potential for public health and safety impacts would be confirmed during the CEQA review process. Based on preliminary evaluation, it is anticipated that significant impacts to public health and safety can be avoided or reduced to a less than significant level through the development and implementation of appropriate mitigation measures.

7.1.1.3 Potential Significant Impacts to Natural Resources

Discussion whether, and to what extent, the proposed water reclamation, recycling or desalination project will have potentially significant impacts on natural resources.

Refer to Section 2.4 for a detailed description of the Local SiP's impact on water quality.

The potential for significant impacts to natural resources can be confirmed during the CEQA review process. Based on preliminary evaluation, it is anticipated that significant impacts to natural resources can be avoided or reduced to a less than significant level through development and implementation of appropriate mitigation measures.

7.1.1.4 Potential Significant Impacts to Regulated Waters of the United States

Discussion whether, and to what extent, the proposed water reclamation, recycling or desalination project will have potentially significant impacts on regulated waters of the United States.

Prior to implementation and construction of either Alternatives 1 or 2 for the Mesa Water District, preliminary jurisdictional delineations of waters crossed by the proposed project or otherwise potentially affected by project activities would be performed. Statutes within the Clean Waters Act (CWA), California Fish and Game Commission (CFGC), and California Poter-Cologne Act protect wetlands and riparian habitat. USACE has regulatory authority over wetlands and waters of the United States (WOTUS) under Section 404 of the CWA. The Regional Water Quality Control Boards (RWQCBs) ensure water quality protection in California pursuant to Section 401 of the CWA, and Section 13263 of the Porter-Cologne Act. The CDFW regulates waters of the State as it relates to sensitive biological resources under the CFGC Section 1600 (et seq.). A search of the USFWS National Wetlands Inventory (NWI) June 2025, identified the Santa Ana River roughly 260 feet from the proposed pipe route for Alternatives 1 and 2. The pipeline appears to cross a manmade channel between Wells 3 and 4.

The potential for significant impacts to regulated waters can be confirmed during the CEQA review process. Based on preliminary evaluation, it is anticipated that significant impacts to regulated waters can be avoided or reduced to a less than significant level through development and implementation of appropriate mitigation measures.

7.1.2 Potential Significant Environmental Impacts

Discussion whether, and to what extent, the project will have potentially significant environmental effects, or will involve unique or undefined environmental risks.

In addition to the discussed impacts of the Local SiP discussed above, there may be additional effects in areas such as greenhouse gas emissions, noise, vibration, drought risks, drawdown concerns, ecosystem impacts, transportation and traffic, and others. The CEQA/NEPA document will analyze impacts to all resource areas as determined by appropriate regulations. It is anticipated that the Local SiP will have minimal to no impacts based on the preliminary review presented in this report. If any impacts are identified, mitigation would be implemented to eliminate or reduce them to a less than significant level.

Groundwater extraction in the Talbert Gap has the potential to cause localized drawdown in the confined Talbert Aquifer. Lowering water levels in highly compressible soils (e.g., confining units) can induce subsidence. While the aquifer lies within a coarse, high-transmissivity unit that may reduce the risk of compaction, the risk of land subsidence cannot be entirely ruled out, particularly in areas where the aquifer is overlain by thick units comprised compressible fine-grained sediments.

Groundwater modeling results indicate that under higher extraction scenarios (e.g., 6 to 8 MGD), localized drawdown near production wells may drop below historically low water levels, introducing risk of decreased pore pressure to offset overburden strain. While the shallow depth and unconfined nature of some sediments in this zone reduce the likelihood of deep compaction, subsidence cannot be ruled out, particularly if prolonged drawdown propagates within the compressible clay-rich units. As a result, further investigation into characterizing and mitigating the risk of land subsidence is recommended.

Land subsidence mitigation strategies include the following:

- Defining operational thresholds for minimum water levels
- Monitoring of land elevations

- Staged production ramp-up to detect early signals of land subsidence
- Considering alternative well technologies to distribute the impacts of drawdown (Refer to Subsection 4.6.1)

The CEQA/NEPA analyses will evaluate options to minimize the above-mentioned impacts. Mitigation measures or changes to the project design or operation will be implemented to minimize or avoid potential negative impacts.

7.1.3 Status of Required Environmental Compliance Measures

Description of the status of required Federal, state, tribal, and/or local environmental compliance measures for the proposed water reclamation, recycling, or desalination project, including copies of any documents that have been prepared, or results of any relevant studies.

The Local SiP may require permits, surveys, or reviews from various agencies, including, but not limited to, USACE, USFWS, California Department of Fish and Wildlife (CDFS), Santa Ana RWQCB, and the State Historic Preservation Office (SHPO). Appropriate right-of-way easements and permits may also be required for any construction staging areas, or if access roads or driveways are needed. No CEQA or NEPA documentation has been prepared for any of the alternatives at this time.

The following is recommended for Alternatives 1 and 2, and may be required for the CEQA/NEPA review:

- Wetland Delineation
- Endangered Species Act consultation
- Cultural Resource surveys
- Brine Waste Disposal Study
- Mixing/Dilution Study
- Public outreach/involvement programs
- Geotechnical Report
- Phase I Environmental Assessment

This subsection does not contain all the permits and surveys that may be required. Depending on which alternative option is chosen, additional studies may be required in the CEQA/NEPA analysis.

For the purposes of this feasibility study, Mesa Water has begun a preliminary assessment of permits that would be needed for the project. Coordination with regulatory agencies will begin during the detailed design phase.

7.1.4 Additional Information

Any other information available to the study lead that would assist with assessing the measures that will be necessary to comply with NEPA, and other applicable Federal, state, or local environmental laws such as the Endangered Species Act or the Clean Water Act.

During the groundwater treatment, minimal odor can be generated from the process treatment, which disperses naturally into the surrounding environment. These odors may impact nearby areas, which can lead to complaints and public opposition. Mesa Water District actively participates in several programs that address impacts to water supplies including:

- Hosting Water Issues Study groups for community members.
- Providing educational experiences, like STEM Night, at local schools, which discuss the importance of water quality.
- Actively work with organizations like Orange County Water District to implement groundwater protection programs.
- Adhere to their transparency policy and support policies that balance the benefits and cost of new mandates, that includes government transparency and accountability.

7.1.5 Regional Effects on Water Supply and Water Quality

Discussion of how the proposed water reclamation, recycling, or desalination project will affect water supply and water quality from the perspective of a regional, watershed, aquifer, or river basin condition.

The Local SiP intends to provide long-term water sustainability for the project stakeholders and their consumers. As noted in Section 1.1.1, groundwater is Mesa Water District's sole water source. The current water supply for the Mesa Water District is pumped from the OC Basin via nine wells. Water from the Santa Ana River, imported water from MWD, and product water from the GWRS are used to replenish the basin. Water from the Mesa Water Reliability Facility (MWRF) is also used to supplement groundwater.

The proposed brackish groundwater project has the potential to influence both water supply reliability and water quality conditions within the Orange County Groundwater Basin, particularly in its coastal region.

From a water supply standpoint, the project introduces a new, locally controlled, and drought-resilient source of potable supply by recovering brackish groundwater from the seaward portion of the Talbert Aquifer. This zone, located between the Talbert Barrier and the Pacific Ocean, contains impaired groundwater with chloride concentrations exceeding 10,000 mg/L—water that is not currently extracted for beneficial use. By targeting this underutilized resource, the project supports regional supply diversification without increasing reliance on imported water. However, model results also suggest that some portion of the water extracted by the project may include injected water from the Talbert Barrier, which otherwise would have migrated inland to contribute to replenishing the basin.

While this interception of barrier water may reduce its intended protective benefit, it also presents an opportunity: by capturing injected water before it mixes with higher salinity seawater, the project may enhance treatment efficiency and reduce salinity loading. This tradeoff will be evaluated in coordination with OCWD to ensure alignment with basin management objectives.

With respect to water quality, groundwater modeling indicates that the project could provide hydraulic benefit to the basin by reducing the burden on the inland Talbert Barrier system in its role of providing protection to the basin from seawater intrusion.

Additional evaluations regarding the Local SiP's effects on water supplies and water quality, will be conducted as part of the CEQA/NEPA review process during preliminary design. Mitigation measures or changes to the project design or operation will be implemented to minimize or avoid potential negative impacts.

7.1.6 Feasibility Study Public Involvement

Discussion of the extent to which the public was involved in the feasibility study, and a summary of comments received, if any.

Mesa Water has been actively working with stakeholders to prepare information for water resource alternatives for its customers. The Local SiP analyzed in this report has not yet been presented.

Mesa Water holds regular monthly board meetings and committee meetings. When an alternative is chosen for the Local SiP, it is reasonable to conclude that it would be presented to the public during a regularly scheduled Board and/or council meeting. An option to sign up for a community letter is available as well.

Mesa Water has developed an Urban Water Management Plan and a Water Shortage Contingency Plan that have been made available through their website. The plans provide public education and outreach programs and provide information about local organizations and groups they work with in the community.

Mesa Water includes updates through their website about construction or improvement projects that impact their customers. If an alternative is chosen, it will be reasonable to conclude that it will publicly share this information through their website. Their social media pages are used to inform the community of upcoming events and proposed projects.

Mesa Water is fully committed to public engagement throughout the planning phase to ensure transparency and keep community members informed. Public outreach will remain an important component of Local SiP as it advances through planning, design, construction, and operation. The public will continue to have opportunities to engage with Mesa Water District through the CEQA/NEPA process.

7.1.7 Potential Effects on Historic Properties

Description of the potential effects the project will have on historic properties. Discussion must include potential mitigation measures, the potential for adaptive reuse of facilities, an analysis of historic preservation costs, and the potential for heritage education, if necessary.

The following summary is based on a review of publicly available databases, including the National Register of Historic Places (NRHP), and the California Register of Historic Resources (CRHR). There are no properties currently listed on the NRHP within the Local SiP Area as currently defined. There are at least two NRHP and two CRHR listed properties within 1-mile of the Local SiP Area.

The closest NRHP listed properties to any construction activities are the Huntington Beach Public Library on Triangle Park, and the Helme-Worthy Store and Residence. Both properties are approximately 0.9-miles northwest of the proposed Well One. These properties are separated from the proposed Local SiP area by dense urban development. The Helme-Worthy Store and Residence is also listed on the CRHR.

Additionally, the Fairview Indian Site is an NRHP listed property in Costa Mesa. The location of the Fairview Indian Site is not available in public databases, but consultation with the California Historical Resource Information System (CHRIS) would identify the proximity of the site to the Local SiP area. The Diego Sepúlveda Adobe is a California Historical Landmark listed on the CRHR approximately 0.8-mile east of the proposed pipeline in Costa Mesa. The proposed Local SiP Area is separated from the city of Costa Mesa by dense development and the Santa Ana River. Because of visual buffers separating the project area from listed properties, it is unlikely the NRHP and CRHR listed properties will be affected by project construction.

Orange County is located in an area traditionally inhabited by the Tongva and the Acjachemen indigenous peoples. The Tongva people primarily inhabited the northern area of Orange County, and the Acjachemen people typically inhabited southern Orange County. Both the Tongva and Acjachemen lived in villages and seasonal camps to procure resources that were available during certain seasons. Villages near the coast also relied on fish and shellfish for subsistence. Sites were often situated near freshwater sources, and in ecotones where plant and animal life were diverse and abundant. The nearby Lupukngna and Genga large village sites are located on bluffs overlooking the Santa Ana River. In the late 18th century, Spanish exploration and mission settlements encroached the Orange County area. Many native villages are identified on Spanish missions and ranchos maps of the area. Orange County has since been heavily developed.

Activities associated with the Local SiP could potentially disturb cultural resources. A cultural resource evaluation in accordance with CEQA/NEPA, and Section 106 of the National Historic Preservation Act (NHPA) will be conducted to avoid cultural resources wherever possible and mitigate disturbance if not. This would include a review of the publicly available NRHP and CRHR, a review of the CHRIS to identify previously recorded cultural resources within the project Area, local consultation, a survey of the project Area, and the identification of appropriate measures to address potential impacts to historic properties, if applicable. These measures may include, but will not be limited to, an archaeological excavation, archaeological and/or Native American monitoring, and/or Historic American Building Survey/Historic American Engineering Record documentation, as appropriate. A paleontological assessment will also be conducted to identify potential impacts to paleontological resources.

At this time, Alternatives 1 and 2 will involve construction activities that involve substantial ground disturbance in previously disturbed areas. Excavation in undisturbed areas could potentially impact buried and aboveground cultural and/or tribal resources. Native American consultation under Assembly Bill 52 of 2014 will be conducted. It is anticipated that appropriate avoidance or mitigation measures can be developed during the Native American consultation and CEQA/NEPA review process to reduce impacts to tribal cultural resources to a less than significant level, if needed.

7.2 NEPA Compliance

If, at a later date, Reclamation provides funds for construction, all appropriate NEPA and other environmental and cultural compliance must be completed prior to any ground disturbing activities beginning in order for the project to be eligible.

Mesa Water District recognizes that no ground-disturbing activities (including grading, clearing, and other preliminary activities) can begin on the Local SiP until environmental compliance is fully achieved, and Reclamation authorizes the work to proceed under Title XVI funding. This requirement applies to all aspects of the proposed project, including those covered by the non-Federal sponsors.

8.0 Legal and Institutional Requirements

The water reclamation, recycling or desalination feasibility study shall identify any legal or institutional requirements, or barriers to implementing the proposed project.

8.1 Potential Water Right Issues

Analysis of any water rights issues potentially resulting from implementation of the proposed water reclamation, recycling desalination project. All proposed water reclamation, recycling or desalination projects must comply with state water law.

The Local SiP will require compliance with the State Water Resources Control Board (SWRCB) and the state law regarding the extraction and treatment of groundwater. The project must align with OCWD's groundwater management framework outlined in the Groundwater Management Plan (GWMP) and Groundwater Sustainability Plan Alternative in compliance with the California Sustainable Groundwater Management Act. The Local SiP facility's brine discharge is planned to be conveyed to the OC San Interplant Trunkline. The project must comply with all applicable OC San operational, environmental, and regulatory requirements.

8.2 Potential Legal and Institutional Requirements with Potential to Impact Implementation

Discussion of legal and institutional requirements (e.g., contractual water supply obligations, Indian trust responsibilities, water rights settlements, regional water quality control board requirements), state, and/or local requirements with the potential to affect implementation of the project. Water reclamation, recycling or desalination projects using Reclamation project water must address contractual requirements as described in RM D&S, Reuse of Bureau of Reclamation Project Water (PEC 05-09).

The implementation of the Local SiP potentially will have to meet legal requirements under the Bureau of Reclamation's Reclamation Manual Directive and Standards (RM D&S) Policy and Environmental Compliance 05-09 (PEC 05-09) as well as legal requirements to OCWD. Under PEC 05-09, the reuse of Reclamation project water, such as desalinated brackish groundwater, requires formal agreements that address water rights, usage, pricing, and environmental compliance. All conditions must be met and approved by Reclamation to ensure responsible and authorized water reuse. In addition, because OCWD manages the groundwater basin that will be drawn for supply, Mesa Water may be subject to replenishment or basin management fees and requirements. These combined federal and local requirements could have an impact on the overall financial feasibility of the project. Early coordination with Reclamation, OCWD, and any other institutions will be critical to manage regulatory and cost impacts.

8.3 Multi-Jurisdictional or Interagency Agreements

Discussion of the need for multi-jurisdictional or interagency agreements, any coordination undertaken, and any planned coordination activities.

For the Local SiP, the non-federal project sponsors would need to enter into an agreement that details the financial and operational responsibility of all parties for construction, maintenance, and operations.

Mesa Water would independently construct and operate the Local SiP treatment facility and groundwater wells; however it would be required to enter into a discharge connection agreement with OC San in order to connect to and discharge brine through the Interplant Trunkline.

8.4 Implementation Permitting Procedures

Discussion of permitting procedures required for the implementation of water reclamation projects in the study area, and any measures that the non-Federal project sponsor can implement that could speed the permitting process.

Implementation of the Local SiP will require permits and other forms of approval from Federal, State, and local agencies, as described in Table 8-1. While these permits have not been obtained yet, efforts to initiate the permitting process will begin as early as possible during the design process. Ongoing coordination with permitting agencies will be essential for permit approval.

Table 8-1 Potential Permits

Potential Permit Type	Issuing Agency
Encroachment/Construction Permits	City of Fountain Valley City of Huntington Beach OC Public Works
Building Permit	City of Fountain Valley City of Huntington Beach
Air Quality Permit	South Coast Air Quality Management District
NPDES Permit	RWQCB
Waste Discharge Requirements	RWQCB
Drinking Water Permit	SWRCB
Discharge Agreement	Orange County Sanitation

8.5 Unresolved Issues for Implementation

Discussion of any unresolved issues associated with implementing the proposed water reclamation and reuse project, how and when such issues will be resolved, and how the project would be affected if such issues are not resolved.

One unresolved issue for the implementation of the Local SiP includes land acquisition for the groundwater wells and the treatment facility. An approximately 1.6-acre site will be needed for the treatment facility. It is assumed the property would be purchased in the Fountain Valley industrial zoned area; however, a specific site has not been identified or purchased. Additionally, five groundwater well sites in Huntington Beach outside of the coastal commission zone will need to be acquired. While approximate locations have been identified, formal property acquisition is required.

Further investigation is needed to fully assess subsidence risk associated with drawdown from higher production rates. Site-specific subsurface evaluations and refined modeling will help determine safe extraction rates and wellfield design to avoid infrastructure impacts.

The groundwater model, while sufficient for feasibility-level evaluation, should be updated with recent geologic data and conceptual model refinements. These updates will improve predictions of chloride concentrations, source water contributions from seawater, inland basin groundwater, and injected barrier water, as well as better characterize drawdown impacts. Without these refinements, uncertainties could affect wellfield performance and treatment design, potentially increasing project costs or requiring operational adjustments.

In addition, coordination among project stakeholders and OCWD will be necessary to address management of extracted water that may include previously injected recycled water. Establishing accounting frameworks and financial agreements will be critical for final basin management approvals. Failure to resolve these issues could delay implementation but is not expected to prevent project advancement with appropriate additional analysis and coordination.

8.6 Waste Discharge Requirements

Identification of current and projected wastewater discharge requirements resulting from the proposed Title XVI project (e.g., brine disposal).

As discussed in previous sections, brine generated from the reverse osmosis process is planned to discharge to the OC San Interplant Trunkline to Plant 2 and the ultimately to the existing ocean outfall 5 miles off the coast of Huntington Beach. Discharge to the OC San Ocean Outfall must comply with the Waste Discharge Requirements (WDRs) and OC San's current National Pollutant Discharge Elimination System (NPDES) Permit. Mesa Water will be required to comply with constituent limits established in the NPDES permit and the discharge agreements with OC San.

8.7 Wastewater Discharge Rights

Description of rights to wastewater discharges resulting from implementation of the proposed water reclamation, recycling, or desalination project.

This section is not applicable to the Local SiP. The project will generate brine effluent discharged to the Pacific Ocean.

9.0 Financial Capability of Sponsor

At the water reclamation, recycling or desalination feasibility study stage, Reclamation must request enough information to determine that the non-Federal project sponsor is likely to demonstrate financial capability if the project moves to construction. Reclamation will request more detailed information to make a determination that the non-Federal project sponsor is financially capable of funding the non-Federal share of the project's costs before a funding agreement covering construction can be executed. Accordingly, the following information is required to be included in the water reclamation, recycling or desalination feasibility study report.

9.1 Implementation Schedule

Proposed schedule for project implementation.

Implementation of the Local SiP requires preliminary investigations, design, permitting, and construction of the facility. The anticipated Local SiP schedule milestone dates and timeline is shown in Table 9-1.

Table 9-1 Anticipated Project Schedule

Milestone	Completion Date
Preliminary Investigations	Jan 2027
Facility Design	Jan 2029
Permitting	Jan 2031
Construction	Jan 2032
Testing and Startup	July 2032

9.2 Project Sponsor Willingness to Pay

Discussion of the willingness of the non-Federal project sponsor to pay for its share of capital costs and the full operation, maintenance, and replacement costs.

The non-Federal cost share for the Local SiP will be funded through Mesa Water's capital budget, and contributions from Huntington Beach, and Newport Beach. Mesa Water, Newport Beach, and Huntington Beach are AAA bond-rated, which reflects their financial stability and readiness to support the project. Mesa Water is committed to constructing and operating the groundwater treatment plant for the life of the project. Additionally, they will take all necessary actions to pay for the construction, operation, maintenance, and replacement costs. Mesa Water, Huntington Beach, and Newport Beach will gain long-term benefits from the Local SiP, as it will secure a sustainable and resilient water future for generations ahead. Therefore, they are willing and committed to funding the project.

9.3 Funding Plan

A plan for funding the proposed water reclamation, recycling or desalination project's construction, operation, maintenance, and replacement costs, including an analysis of how the non-Federal project sponsor will pay construction and annual operation, maintenance, and replacement costs.

The funding for the Local SiP would be secured by Mesa Water taking a leading role in coordinating any collaborative funding efforts with the other project stakeholders. Outside funding from federal and state sources will be critical to implement this project without putting a great burden on the local communities.

A combination of grants, low interest loans, and cost-sharing contributions amongst the project stakeholders are anticipated to fully fund the project.

One potential local funding program is MWD's Local Resources Program (LRP). The LRP provides funding for the development of water recycling, groundwater recovery, and seawater desalination supplies that offset existing demand on Metropolitan's imported water deliveries through either direct replacement of imported water or increased regional groundwater production. If the Local SiP secures LRP funding, it could be used for O&M costs because the funding only becomes available once the facility is in operation.

Mesa Water and project stakeholders will continue to investigate and pursue future funding opportunities to assist with project costs.

9.4 Funding Sources

Description of all Federal and non-Federal sources of funding and any restrictions on such sources, for example, minimum or maximum cost-share limitations. Generally, for water reclamation, recycling or desalination projects, the Federal cost share is limited to 25 percent, or $20,000,000, whichever is less.

Funding through outside state and federal programs has not been secured yet for the Local SiP. Mesa Water is actively researching both grant and low interest loan opportunities to reduce project costs and potential impacts to local rate payers amongst the project stakeholders.

Mesa Water anticipates pursuing federal funding through Reclamation's Title XVI Water Reclamation and Reuse program for up to $20,000,000 of the project cost, in accordance with the Title XVI funding limits.

10.0 Research Needs

At a minimum, the report must include a statement on whether the proposed water reclamation, recycling or desalination project includes basic research needs, and the extent that the proposed project will use proven technologies and conventional system components. The following information is required only if further research is necessary to implement the proposed water reclamation, recycling or desalination project:

10.1 Research Needs

Description of research needs associated with the proposed water reclamation, recycling or desalination project, including the objectives to be accomplished through research; There are elements of the Local SiP that require additional research, analysis, and approvals before project implementation.

Various components of the Local SiP will require further investigation and refinement before the project can proceed to implementation.

One key area for further investigation is the risk of land subsidence associated with brackish groundwater extraction. This includes evaluating subsidence potential in the project area, particularly in relation to compressible clay layers and critical infrastructure. Proposed efforts include targeted field studies, subsurface characterization, and development of a subsidence risk model. These analyses will help determine appropriate operational thresholds and inform mitigation strategies, such as monitoring benchmarks and adaptive pumping plans.

In parallel, the groundwater flow and transport model could be refined to better represent critical hydrogeologic dynamics. Updated modeling is needed to:

- Improve predictions of relative source contributions (seawater versus basin water),
- Assess local drawdown magnitudes and gradients, and
- Reduce uncertainty in chloride concentrations and brackish water yield.

The current evaluation indicates uncertainty in the projected inflow sources and salinity levels at proposed well sites. Additional modeling enhancements should also enable the simulation of alternative well configurations, such as slant wells, to evaluate their effect on capture efficiency, drawdown distribution, and barrier interaction.

Further water quality evaluations are necessary to finalize the treatment design, optimize pretreatment costs and better characterize distribution system quality requirements. In addition to further definition of feed water quality, it is also recommended to define finished water requirements for compatibility with the regional distribution system. As part of this analysis stability parameters will be finalized and blending analysis should be performed to estimate disinfection byproduct formation and determine if mitigation strategies are necessary.

As described in Section 3.6, a preliminary siting analysis was conducted using known chloride contours and aquifer transmissivity data to identify the potential well locations. This was followed by detailed groundwater modeling. Later, monitoring well data was cross referenced to the blending water results and it was revealed that boron and bromide levels were unusually high in the monitoring wells. This could be the result of groundwater impacts from a nearby landfill. Currently, a two-pass system was designed due to the elevated boron concentrations at Well 3. Due to water quality concerns related to Well 3 and prod

uction concerns at Well 5, future investigations should be conducted to determine if the 2nd pass can be eliminated to further reduce treatment costs.

Additional analysis is needed to optimize pipeline routing, minimize the project footprint, and reduce site procurement expenses. These research and investigation efforts are expected to result in final design project refinements.

10.2 Basis for Reclamation Participation in Research

Description of the basis for Reclamation participation in the identified research.

Reclamation involvement is not necessary for any additional analysis or research needed to implement the Local SiP.

10.3 Parties Administering and Conducting Research

Identification of the parties who will administer and conduct necessary research.

Mesa Water, Black & Veatch, and INTERA will continue to advance the project through the planning and design phase of the project. Specific parties have not been identified to conduct the required research. Details are anticipated to be determined in early 2026 when the RFP for design is released.

10.4 Research Timeframe

Identification of the timeframe necessary for completion of necessary research.

All research required for the project design is anticipated to be completed by 2027. The final design is anticipated to start in January 2027 and complete in January of 2029.

11.0 References

Calflora. *https://www.calflora.org/*.California Department of Water Resources. 2003. California's Groundwater Bulletin No. 118.

California Department of Water Resources. Disadvantage Communities Mapping Tool. *DAC Mapping Tool*. Accessed June 30, 2025.

California State Parks. California Register of Historic Resources. *California Historical Resources (ca.gov)*. Accessed June 12, 2025.

CDM Smith. 2003. Interim Report (Draft) Model Refinement and Calibration Talbert Gap Barrier Model, Orange County, California. Prepared for Orange County Water District, Fountain Valley, California.

Fitch Ratings. https://www.fitchratings.com/. Accessed September 17, 2025.

Local Groundwater Supply Improvement Project Desalination Feasibility Study. February 23, 2023. WaterSMART: Water Recycling and Desalination Planning Grant.

National Drought Mitigation Center. U.S. Drought Monitor. *http://www.droughtmonitor.unl.edu*. Accessed June 30, 2025.

National Register of Historic Places. Available: *National Register of Historic Places (nps.gov)*. Accessed June 11, 2025.

Orange County Water District. 2017. Basin 8-1 Alternative: Orange County Water District's Alternative to a Groundwater Sustainability Plan for the Coastal Plain of Orange County Groundwater Basin (DWR Basin 8-1). Submitted to California Department of Water Resources. Fountain Valley, California. Available at: *www.ocwd.com*.

Orange County Water District. January 2, 2024. *Coastal Aquifer Mergence Zones and Chloride Concentration v20241217*.

U.S. Fish & Wildlife Service. Information for Planning and Consultation. *https://ipac.ecosphere.fws.gov/*.

Appendix A. Class 5 Opinion of Probable Construction Costs (OPCC)

Appendix B. Operational Expenses (OPEX) Summary

Appendix B provides an overview of the projected annual operational costs for the 2.65 MGD and 5.35 MGD project alternatives. Chemical dosing estimates are broken down into continuous use and intermittent use dosing in Table B and Table B.

Table B-1 Continuous Use Chemical Dosing Operational Costs

Chemical	Application	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Sodium Hypochlorite	Oxidation of Fe/Mn	$350,900	$701,800
Sodium Bisulfite	RO Feed Quenching	$65,400	$130,800
Antiscalant	Inorganic Scale Prevention	$128,400	$212,700
Sodium Hydroxide	Boron Rejection. In 2nd Pass	$80,200	$157,800
Hydrated Lime	Stabilization	$158,800	$317,500
Carbon Dioxide	Stabilization	$111,500	$222,500
Sodium Hypochlorite	Disinfection	$117,300	$234,700
Liquid Ammonium Sulfate	Chloramination	$15,630	$31,300

Table B-2 Intermittent Use Chemical Dosing Operational Costs

Chemical	Application	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Citric Acid	CIP Makeup & Base Neutralization	$51,920	$77,000
Sodium Hydroxide	CIP Makeup & Acid CIP Neutralization	$2,080	$3,120

The following assumptions were incorporated into the chemical analysis:

- CIP frequency of four per year per train
- Minimum chemical storage duration of 30 days on average

Annual energy costs of $0.13 per kWh were assumed for the following equipment:

- Major Pumps (Outside of Process Building)
    - Raw Water Contact Tank Pumps
    - RO Feed Tank Pumps
    - Finished Water Pumps
    - Brine Receiving Station Pumps

- Major Process Pumps (Inside Process Building)
    - 1st Pass Feed Pumps
    - 1st Pass Interstage Booster Pumps
    - 2nd Pass Feed Pumps
- RO CIP, Flush, and Neutralization Pumps
- Pumping Energy for the Wells

Table B-3 outlines the annual costs for process consumables including cartridge filter replacements and RO membrane replacements.

Table B-3 Process Consumables

Item	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Cartridge Filters	$1,800	$3,900
SWRO Membrane Replacements	$60,420	$119,700
BWRO Membrane Replacements	$17,850	$34,650

Table B-4 presents the anticipated additional fees for the Local SiP including the Replenishment Assessment and brine disposal fees. The unit costs are from the year 2025.

Table B-4 Additional Fees

Item	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Replenishment Assessment Unit Cost ($/AF)	$206	
Replenishment Assessment Annual Cost	$924,900	$1.850 M
Brine Disposal Unit Cost ($/AF)	$90	
Brine Disposal Annual Cost	$120,100	$240,300

Table B presents the annual costs for anticipated spare parts and maintenance.

Table B-5 Spare Parts and Maintenance Operational Costs

Item	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Mechanical, Electrical, and I&C Costs (5% of Total Construction Costs)	$9.665 M	$13.84 M
Spare Parts (1.5% of M/E/I&C)	$145,000	$207,700
Maintenance (2.0% of M/E/I&C)	$193,300	$276,900

Three FTEs were assumed for both alternatives. The total annual labor cost is presented in Table B-6.

Table B-6 Labor Operational Costs

Item	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Additional FTEs	$338,000	$338,000

The resulting annual operational costs are presented in Table B.

Table B-7 Opinion of Annual Operational Costs

Category	2.65 MGD Annual Cost ($/yr)	5.35 MGD Annual Cost ($/yr)
Chemical	$1.08 M	$2.09 M
Energy	$1.89 M	$3.71 M
Process Consumables	$80.1 K	$158 K
Replenishment Assessment	$925 K	$1.85 M
Brine Disposal	$120 K	$249 K
Spare Parts & Maintenance	$338 K	$485 K
Labor	$338 K	$338 K
Total OPEX	**$4.77 M**	**$8.87 M**

MEMORANDUM

MesaWater DISTRICT®

Dedicated to Satisfying our Community's Water Needs

TO: Board of Directors

FROM: Calvin Hsu, CPA, Chief Financial Officer

DATE: April 8, 2026

SUBJECT: Pension & Other Post-Employment Benefits Trust Update

RECOMMENDATION

Receive the presentation.

STRATEGIC PLAN

Goal #3: Be financially responsible and transparent.

PRIOR BOARD ACTION/DISCUSSION

At its April 10, 2014 meeting, the Board of Directors (Board) approved the selection of Public Agency Retirement Services (PARS) as a third party Other Post-Employment Benefits (OPEB) Trust provider and funded the trust with annual $250,000 contributions over four years.

At its June 16, 2014 meeting, the Finance Committee directed staff to invest $150,000 by June 30, 2014 into the OPEB Trust and the remaining $100,000 within the succeeding three months.

At its July 10, 2014 meeting, the Board approved an investment strategy of Capital Appreciation and selection of an Active Portfolio Management Strategy for Mesa Water District's (Mesa Water®) OPEB Trust.

At its April 17, 2017 meeting, the Finance Committee received an update on the OPEB Trust performance and Pension Stabilization Fund.

At its June 8, 2017 meeting, the Board adopted Resolution No. 1499 Adoption of the Public Agencies Post-Employment Benefits Trust Administered by PARS; appointed the District Treasurer as Mesa Water's Plan Administrator; authorized the Plan Administrator to execute an Agreement for Administrative Services and other documents necessary to implement and administer the Public Agencies Post-Employment Benefits Trust (Program); and authorized the Plan Administrator to move assets currently in the Public Agencies Post-Retirement Health Care Plan Trust to the OPEB Account established in the name of Mesa Water under the Public Agencies Post-Employment Benefits Trust.

Since 2020, the Board has received an annual update on the Pension & OPEB Trust.

DISCUSSION

Mesa Water, at the direction of its Board, established an OPEB Trust and Pension Rate Stabilization Trust to set aside the funds necessary to pay for future OPEB and Pension liability payments. This decision has reduced the District's OPEB and Pension liability by 96%, which is presently within $0.7MM of having no unfunded liabilities of the combined OPEB and Pension Trusts.

The OPEB trust to pre-fund Other Post-Employment Benefits was established in June 2014.

- Since it was established, the District has funded the OPEB Trust with $1,550,000 over nearly ten fiscal years.
- These funds have grown through the investment in the Capital Appreciation HighMark Plus investment account to $3,022,230 (approximately 104.4%) as of February 28, 2026 (Attachment A).
- In Fiscal Year 2026, Mesa Water has not requested any distributions as of February 28, 2026 (Attachment A).
- Staff intends to take distributions at the end of June 2026 to cover any OPEB expenses for this fiscal year.
- The total OPEB liability as of June 30, 2024 is $1,835,807 - resulting in a Net OPEB Plan Asset of $1,186,423 as of February 28, 2026.

The Defined Benefit Pension Plan trust to pre-fund Pension Liability was established in June 2017.

- Since it was established, the District, with direction from the Board, has funded the Pension Trust with $13,000,000 in $1MM increments over thirteen months.
- These funds have increased through the investment in the Capital Appreciation HighMark Plus investment account over nearly nine years to $16,677,691 (approximately 75.9%) as of February 28, 2026.
- In Fiscal Years 2019, 2020, 2021, 2022, 2023, 2024 and 2025, Mesa Water distributed $531,042, $517,312, $795,933, $945,887, $1,092,047, $1,042,578 and $1,262,045 respectively, to pay CalPERS the annual pension payment.
- Additionally, Mesa Water has not distributed any money for CalPERS pension payments as of February 28, 2026 (Attachment A).
- Staff intends to take distributions at the end of June 2026 to cover the twelve CalPERS pension payments for this fiscal year.
- The total Defined Benefit Pension Plan liability as of June 30, 2024 is $17,390,653, resulting in a Net Pension Plan Liability of $712,962 as of February 28, 2026.

Although, an excess pension liability of $0.7MM was realized; due to the variability of each actuarial valuation, staff recommends not funding any additional amounts at this time and revisiting this topic in one year.

FINANCIAL IMPACT

Increased potential investment returns for long-term reductions in the District's pension expense and pension liability.

ATTACHMENTS

Attachment A: PARS OPEB and Pension Trust Contributions and Earnings Detail

PARS OPEB AND PENSION TRUST
CONTRIBUTIONS AND EARNINGS DETAIL

PARS OPEB TRUST

							1 Year Return	
Date	Beginning Balance	Contributions	Disbursements	Investment Gain (Loss)	PARS Expenses	Ending Balance	PARS[1]	CALPERS[2]
6/30/2014	-	150,000	-	0	-	150,000	N/A	18.40%
6/30/2015	150,000	350,000	-	14,385	(4,359)	510,025	5.66%	2.40%
6/30/2016	510,025	250,000	-	(3,104)	(5,072)	751,849	-1.70%	0.60%
6/30/2017	751,849	250,000	-	135,762	(6,367)	1,131,243	15.56%	11.20%
6/30/2018	1,131,243	-	-	113,337	(6,991)	1,237,589	10.05%	8.60%
6/30/2019	1,237,589	-	-	81,003	(6,279)	1,312,312	6.56%	6.70%
6/30/2020	1,312,312	110,000	-	27,415	(6,904)	1,442,823	1.92%	4.70%
6/30/2021	1,442,823	110,000	-	506,326	(8,411)	2,050,739	33.11%	21.30%
6/30/2022	2,050,739	110,000	-	(313,411)	(9,798)	1,837,531	-14.56%	-6.10%
6/30/2023	1,837,531	110,000	-	218,398	(9,565)	2,156,364	11.58%	5.80%
6/30/2024	2,156,364	110,000	(145,712)	332,453	(10,513)	2,442,592	15.81%	9.30%
6/30/2025	2,442,592	-	-	287,841	(11,844)	2,718,589	11.82%	11.60%
2/28/2026	2,718,589	-	-	312,343	(8,702)	3,022,230	16.31%	NA
		1,550,000	(145,712)	1,112,563	(74,259)			

[1] Source: PARS Statements, return stated net of PARS expenses.
[2] Source: CALPERS Website, return stated net of expenses.

PARS PENSION TRUST

							1 Year Return	
Date	Beginning Balance	Contributions	Disbursements	Investment Gain (Loss)	PARS Expenses	Ending Balance	PARS[1]	CALPERS[2]
6/30/2018	-	12,000,000	-	308,740	(30,617)	12,278,123	7.96%	8.60%
6/30/2019	12,278,123	1,000,000	(531,042)	845,616	(64,636)	13,528,061	6.59%	6.70%
6/30/2020	13,528,061	-	(517,312)	244,221	(66,170)	13,188,800	1.83%	4.70%
6/30/2021	13,188,800	-	(795,933)	4,293,719	(71,031)	16,615,556	33.50%	21.30%
6/30/2022	16,615,556	-	(945,887)	(2,318,306)	(73,708)	13,277,654	-14.70%	-6.10%
6/30/2023	13,277,654	-	(1,092,047)	1,497,063	(65,210)	13,617,460	11.50%	5.80%
6/30/2024	13,617,460	-	(1,042,578)	2,123,659	(67,617)	14,630,925	15.67%	9.30%
6/30/2025	14,630,925	-	(1,262,045)	1,703,168	(70,840)	15,001,208	11.72%	11.60%
2/28/2026	15,001,208	-	-	1,724,522	(48,038)	16,677,691	16.13%	NA
		13,000,000	(6,186,844)	10,422,402	(557,867)			

[1] Source: PARS Statements, return stated net of PARS expenses.
[2] Source: CALPERS Website, return stated net of expenses.

MesaWater DISTRICT

Dedicated to Satisfying our Community's Water Needs

MEMORANDUM

TO: Board of Directors

FROM: Karyn Igar, P.E., Principal Engineer

DATE: April 8, 2026

SUBJECT: Water System Master Plan and 10-Year Capital Improvement Program

RECOMMENDATION

Adopt the 2026 Water System Master Plan Update and 10-Year Capital Improvement Program Update.

STRATEGIC PLAN

Goal #1: Provide an abundant, local, reliable and safe water supply.
Goal #2: Perpetually renew and improve our infrastructure.
Goal #3: Be financially responsible and transparent.

PRIOR BOARD ACTION/DISCUSSION

At its April 24, 2024 meeting, the Board of Directors (Board) awarded a contract to Carollo Engineers, Inc. for $954,504 and a contingency of $95,450 for an amount not to exceed $1,049,954 for Capital Improvement Program Update Professional Services.

At its January 28, 2026 meeting, the Board received a presentation on the Water System Master Plan and Capital Improvement Program Update.

BACKGROUND

As the 2014 Capital Improvement Program nears completion, the Board included a Fiscal Year (FY) 2026 Strategic Plan item to update the 2014 Water System Master Plan and develop an Asset Management Plan to generate the next 10-year Capital Improvement Program (CIP) for future projects based on data driven and life-cycle cost decisions. The key goals for the 2026 CIP Update include the following:

- **Water System Master Plan:**
  - Update potable and recycled water demands
  - Document capacity of water supplies
  - Compare supply and demand, and make recommendations to close any supply gaps
  - Update the hydraulic model and recalibrate with Well Nos. 12 and 14
  - Assess technology advancements that will influence how water districts function in the next 10 years
  - Assess current and upcoming regulations
- **Asset Management Plan:**
  - Define an "asset", and the requirements for asset management software
  - Evaluate asset management software
  - Develop a roadmap for Asset Management Program Implementation
- **Asset Condition Assessment:**
  - Plan and execute site by site condition assessment of all water production and storage assets, transmission system assets and property assets

- Rate asset condition and estimate remaining useful life
- Document asset condition in asset management plan-ready format
- Define projects to replace or refurbish assets that will reach the end of useful life in the next 10 years

- **Capital Improvement Program:**
  - Develop a prioritized 10-year CIP based on the findings of each task

DISCUSSION

Mesa Water District's (Mesa Water®) Water System Master Plan and CIP Update was completed primarily in FY 2024 and 2025, with some refinements in FY 2026. The recommended 10-year CIP was developed for FY 2027-2036. The findings and recommendations were presented to the Board on January 28, 2026, for comments and discussion. Based on the Board's feedback, the following key updates were incorporated in the final Summary Report and Technical Memoranda:

- Clarification that the fire flow CIP projects are recommended enhancements
- Clarification that water conservation may affect the overall water supply and demand, but the affect is not quantified as a supply or demand
- Note that funding will be needed for Mesa Water's share of the Local Supply Improvement Project (Local SIP) in the long term CIP

The Revised Summary Report is provided in Attachment A. The findings for the key goals are summarized below.

Water System Master Plan

The Water System Master Plan assessment of potable water demand found a 7% projected growth in demand over the next ten years. With the successful implementation of the Mesa Water Reliability Facility (MWRF) from 2010-2012, Well Automation Project for Well Nos. 1B, 3B, 5, 7 and 9B from 2017-2019, and the addition of Well Nos. 12 and 14 from 2020-2023, Mesa Water District's (Mesa Water®)local groundwater supplies were found to be sufficient to meet future demands. Should recycled water for irrigation currently served from the Orange County Water District's Green Acres Project (GAP) become unavailable, the demand projection would double to 14%, and Mesa Water may have to supplement its current groundwater supplies from new groundwater sources to meet this demand. Projects to enhance groundwater supplies, such as the Local Supply Improvement Project (Local SIP) and drilling replacement wells for Well Nos. 5 and 7, are on the 10-year CIP. Regulatory requirements for drinking water did not present any recommendations for CIP projects; however, compliance with air quality regulations added projects to the CIP for fleet replacement and conversion from aqueous ammonia to liquid ammonium sulfate.

Asset Management Plan

The software requirements for an asset management system were defined, and staff saw demonstrations of five software packages. A roadmap for the expansion of Mesa Water's asset maintenance system into an asset management program was developed and recommended.

Asset Condition Assessment

A detailed condition assessment of Mesa Water's "vertical" assets was planned and executed, as well as a desktop condition assessment of Mesa Water's "horizonal" assets, such as pipelines and appurtenances.

Vertical Assets: Site visits were performed at all of the vertical assets. The vertical assets that had been the focus of the 2014 CIP, such as wells, reservoirs and pumping stations, were found to be in good condition, with the key recommendation to continue the current project to upgrade the Reservoir 1 Booster Pump Station. The import stations and emergency intertie vaults received recommendations for capital and maintenance projects in the 10-year CIP.

Horizontal Assets: A desktop analysis using records from the Pipeline Integrity Program and MaintStar maintenance records was performed. The pipeline stock was found to be in good condition. Projects for condition assessment of two transmission lines based on break history or high consequence of failure for transmission lines that have exceeded their age-based useful life are included in the 10-year CIP. Additionally, cathodic protection test reports were reviewed, and retested as needed. Projects for improvements to cathodic protection systems are included in the 10-year CIP.

10-year CIP

The 10-year CIP was developed based on the water supply and demand analysis, results of the condition assessment, projects not completed in the 2014 CIP, and Information Technology (IT) projects that are funded in the capital budget. The proposed 10-year CIP is summarized in Table 1.

Table 1. Proposed 10-year CIP

Facility Type	Near-Term (FY 2027-2031)	Mid-Term (FY 2032-2036)	10-Year CIP (FY 2027-2036)	10-Year CIP (%)
MWRF	$240,000	$1,820,000	$2,060,000	3%
Booster Pumps	$0	$10,000,000	$10,000,000	14%
Wells	$530,000	$4,190,000	$4,720,000	7%
Reservoirs	$200,000	$868,000	$1,068,000	2%
Fire Flow Enhancements	$0	$7,396,000	$7,396,000	10%
Transmission (incl. Cathodic Protection)	$2,319,000	$0	$2,319,000	3%
Distribution System	$8,184,000	$24,017,000	$32,201,000	45%
Vaults	$775,000	$752,000	$1,527,000	2%
Tech & Software	$5,355,500	$2,225,000	$7,580,500	11%
Clean Fleet	$80,000	$1,960,000	$2,040,000	3%
Studies	$0	$0	$0	0%
Total	**$17,683,500**	**$53,228,000**	**$70,911,500**	100%
Annualized Cost	**$3,500,000**	**$10,600,000**	**$7,100,000**	

The total 10-year CIP is approximately $71MM. The first five years has spending of approximately $18MM, with the last five years having approximately $53MM. While the previous CIPs have focused on improvements to water supply reliability with the MWRF, wells, reservoirs and pumping stations, the FY 2027-2036 CIP emphasizes pipelines, with approximately 58% of the funding going to enhancements for fire flow, transmission systems and distribution systems.

Staff recommends the Board adopt the 2026 Water System Master Plan Update and 10-Year CIP Update.

FINANCIAL IMPACT

$1,000,000 is budgeted for the Water System Master Plan; $1,049,994 has been spent to date.

	Contract Actual Amounts	Contract Cost Amounts
Initial Contract Estimate	$1,000,000	
Original Contracts		$ 954,504
Change Orders		$ 95,450
Requested Funding		$ 0
Revised Contracts		$1,049,994
Actual Spent to Date		$1,049,994
Revised Contract Estimate	$1,049,994	

ATTACHMENTS

Attachment A: CIP Revised Summary Report

MesaWater DISTRICT©

Capital Improvement Program Update

Summary Report

FINAL / March 2026

carollo®

in collaboration with

V&A consulting engineers

BLUE LOCKER

Mesa Water District©

Capital Improvement Program Update

Summary Report

FINAL / March 2026

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Abbreviations

AC	asbestos cement
AF	acre-feet
AFY	acre-feet per year
Basin	Orange County Groundwater Basin
Blue Locker Diving	Blue Locker Diving, LLC
BPP	basin pumping percentage
Carollo	Carollo Engineers
cfs	cubic feet per second
CIP	Capital Improvement Program
CMMS	computerized maintenance management system
CO	carbon monoxide
CP	Cathodic Protection
EPA	Environmental Protection Agency
fps	feet per second
FY	fiscal year
GIS	Geographic Information System
gpcd	gallons per capita per day
gpm	gallons per minute
HAA	haloacetic acid
HDR	HDR, Inc.
HVAC	heating, ventilation, and air conditioning
ID	identification
µg/L	micrograms per liter
mA	milliampere
Mesa Water/District	Mesa Water District
Metropolitan	Metropolitan Water District of Southern California
MG	million gallons
mgd	million gallons per day
MWDOC	Municipal Water District of Orange County
MWRF	Mesa Water Reliability Facility
N/A	not applicable
NOx	oxides of nitrogen
O&M	operations and maintenance
PFAS	perfluoroalkyl and polyfluoroalkyl substances
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PLC	programmable logic controller

ppmv	parts per million by volume
psi	pounds per square inch
SCADA	supervisory control and data acquisition
SH	sodium hypochlorite
V&A	V&A Consulting Engineers, Inc.

EXECUTIVE SUMMARY

Mesa Water District (Mesa Water, or District) initiated the preparation of this Capital Improvement Program (CIP) Update to continue to deliver safe, reliable, and high quality water service to customers by proactively identifying future water supply and infrastructure needs for the next decade and beyond. This update supersedes its 2014 Water Master Plan and outlines prioritized capital projects for Fiscal Years (FY) 2027-2036 and beyond to provide a continued safe, reliable, high quality, and local water supply to its customers. Significant investments made by Mesa Water in the last decade have strengthened the overall performance and reliability of its water system infrastructure. In fact, when reviewing the 5-year CIP from the 2014 Water Master Plan, it was concluded that a majority of the recommended CIP projects have already been completed in just one decade. The 2026 CIP Update involves looking ahead to future water supply needs, evaluating the condition of Mesa Water's existing water system infrastructure, keeping abreast of regulatory compliance, investing not only in projects related to physical water infrastructure but also in technological advancements to optimize water system operations.

Mesa Water anticipates a 12.2 percent increase in water demands as the service area population is anticipated to grow from approximately 110,000 in 2025 to approximately 120,000 in 2035. This increase of roughly 10,000 people translates to a one percent annual growth rate. The population and associated service area growth increase is projected to increase Mesa Water's total system water demand from 16,455 acre-feet per year (AFY), which equates to an average day demand of 14.7 million gallons per day (mgd) in 2025 to 18,742 AFY or 16.5 mgd in 2035.

Based on the water demand analysis prepared for this effort, Mesa Water is projected to remain in compliance with California Senate Bill 1157 (2022) and Bill 555 (2015) Urban Water Use Objective through year 2040. Moreover, Mesa Water has already met the State Water Resources Control Board capped objective of 92 gallons per capita per day (gpcd), with an actual 2020 consumption of 85 gpcd. It is estimated that the indoor water use of Mesa Water's customers could be as low as 41 gpcd, which is well below the State's 2035 indoor water use target of 50 gpcd. Mesa Water expects to have enough water to meet the community's needs with solely groundwater supplies because of its investments in local water supplies and ongoing water conservation.

Mesa Water's primary source of water is local groundwater supplied from the Orange County groundwater basin. Mesa Water uses a combination of clear groundwater wells, as well as amber groundwater wells which are treated at the Mesa Water Reliability Facility (MWRF). Imported water from the Municipal Water District of Orange County (MWDOC) and water deliveries from interagency connections have only served as backup and emergency supplies since FY 2017-18. To analyze system resilience, multiple future scenarios were analyzed. The results indicate that Mesa Water has sufficient supplies to meet even 115 percent of the projected future maximum day demands in 2035 with its existing groundwater supplies only. However, if the MWRF or either of the two highest producing groundwater wells (Well 12 or 14) were temporarily out of service during maximum day demand conditions, Mesa Water is projected to have a supply shortfall of 3.4 mgd without supplemental imported water or inter-agency deliveries from neighboring agencies. To address this supply shortfall without relying on imported water, and meet all demands with local supplies only, four potential new local supply options were identified to increase supply reliability. These projects include replacement of clear

groundwater Well 5 and partnering on the Local Supply Improvement Project that is a proposed brackish groundwater desalination facility with other organizations. Several associated studies and projects are recommended to be implemented within the next decade.

To reliably distribute water supplies to its customers, Mesa Water is diligently assessing and maintaining its wells, transmission and distribution pipes and appurtenances, booster pumps, reservoirs, and other equipment. Mesa Water's Pipeline Integrity Program helps identify and address potential problems before they lead to service disruptions. Mesa Water is also investing in cathodic protection systems to prevent corrosion and extend the lifespan of its pipelines. Based on hydraulic modeling performed as part of this CIP Update, the distribution and transmission systems meet pressure and velocity criteria under both existing and future maximum day demand conditions. Hydraulic modeling analysis also confirmed that the system is adequately sized to meet the minimum pressure and maximum head loss criteria under maximum day demand plus fire flow demand for the selected locations evaluated as part of this CIP Update.

To be even more efficient and strategic in utility management, Mesa Water plans to develop an asset management plan and explore a broad range of new technologies. For example, Mesa Water's investment in an enterprise asset management system will help staff make better decisions about when to repair or replace equipment by using digital data and tools to track the condition of its assets.

To achieve these goals, a comprehensive water system CIP was prepared with a planning horizon from FY 2027 through FY 2036 and for projects beyond the planning period. As shown in Table ES.1, the CIP includes eleven different facility types and groups projects into a near-term phase (FY 2027-2031), mid-term phase (FY 2032-2036), and a long-term phase (beyond FY 2036). The total estimated CIP cost is $129 million[1] in 2025 dollars. On average, the recommended CIP would require an annual investment of roughly $8.6 million, ranging from $3.5 million/year in the near-term phase to $11.7 million/year in the long-term phase.

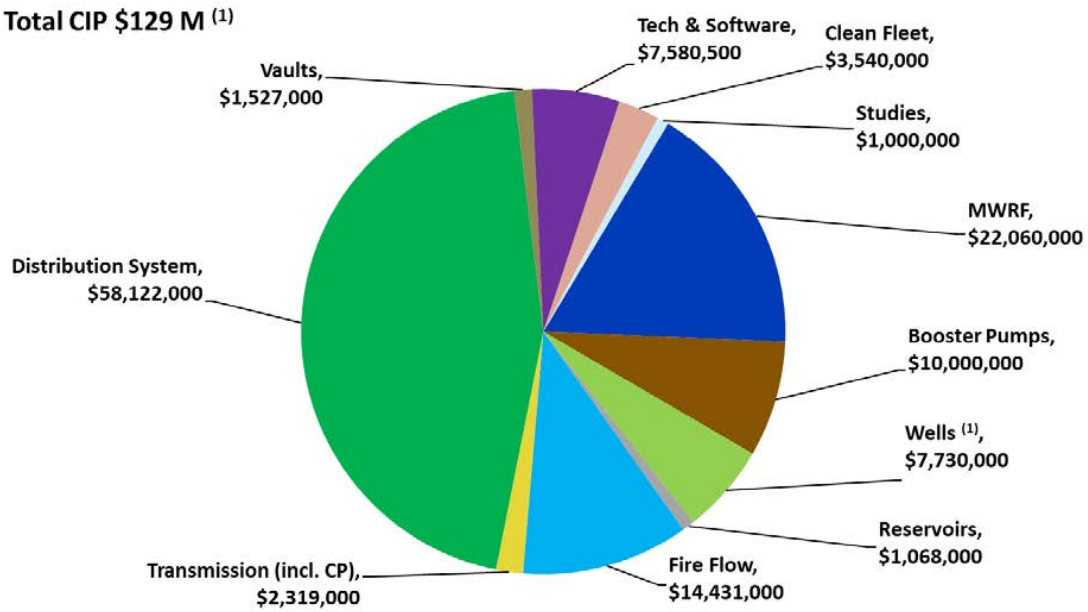
The distribution of the combined CIP costs by facility type is graphically shown in Figure ES.1. As shown, distribution system improvement projects represent the highest cost category, totaling $58 million or 45 percent of the total CIP. When distribution system improvements are combined with transmission main and fire flow capacity enhancement projects, it can be concluded that pipeline improvements together account for nearly $75 million or 58 percent of the entire CIP projects.

[1] In the event the Local Supply Improvement Project is approved, the total estimated CIP cost could increase to $193 million in 2025 dollars.

Table ES.1 CIP Cost Estimates by Facility Type and Planning Period

Facility Type	Near-Term (FY 2027-2031)	Mid-Term (FY 2032-2036)	Long-Term[1] (beyond FY 2036)	Total CIP[2] (FY 2027-2036+)	Total CIP[3] (%)
MWRF	$240,000	$1,820,000	$20,000,000	$22,060,000	17%
Booster Pumps	$0	$10,000,000	$0	$10,000,000	8%
Wells[5]	$530,000	$4,190,000	$3,010,000	$7,730,000	6%
Reservoirs	$200,000	$868,000	$0	$1,068,000	1%
Fire Flow	$0	$7,396,000	$7,035,000	$14,431,000	11%
Transmission (incl. CP)	$2,319,000	$0	$0	$2,319,000	2%
Distribution System[4]	$8,184,000	$24,017,000	$25,921,000	$58,122,000	45%
Vaults	$775,000	$752,000	$0	$1,527,000	1%
Tech & Software	$5,355,500	$2,225,000	$0	$7,580,500	6%
Clean Fleet	$80,000	$1,960,000	$1,500,000	$3,540,000	3%
Studies	$0	$0	$1,000,000	$1,000,000	1%
Total Cost by Phase	$17,683,500	$53,228,000	$58,466,000	$129,377,500	100%
Annual Cost by FY[1]	$3,500,000	$10,600,000	$11,700,000	$8,600,000	N/A

Notes:
CP - Cathodic Protection
(1) Recurring programmatic project cost and the average annual cost ($/FY) for the Long-Term CIP Phase is based on a 5-year period.
(2) Costs shown are planning level costs presented in current dollars (Los Angeles January 2025 Engineering News-Record Construction Cost Index of 15592 and subject to future cost escalation.
(3) Total may not add up due to rounding.
(4) Dependent on Pipeline Integrity Program.
(5) Excludes Local Supply Improvement Project.



Notes:(1) Excludes local supply improvement project.

Figure ES.1 Total CIP Cost Distribution by Facility Type

CHAPTER 1 INTRODUCTION

1.1 Project Background and Objectives

Mesa Water retained Carollo Engineers (Carollo) to prepare this CIP update to aid in the planning of future water supplies, water system improvements, and system operations. This CIP update replaces the previous Water Master Plan prepared by Carollo in 2014.

The purpose of this CIP update is to provide Mesa Water with a comprehensive reference document of its water distribution system infrastructure and a detailed phased CIP that summarizes water system improvements required to meet the projected water demands through FY 2036. To achieve this goal, the following project objectives were identified:

- Prepare a new water demand forecast through year 2035;
- Identify future water supply needs to meet the projected water demands;
- Conduct a comprehensive condition assessment of existing water system facilities;
- Calibrate the existing hydraulic model and conduct a distribution system analysis;
- Determine system regulatory compliance;
- Prepare a CIP for rehabilitation and replacement projects; and
- Prepare a comprehensive CIP with recommendations to address water supply, facility condition assessment, regulatory compliance, distribution system improvement, rehabilitation and replacement improvement, and technological advancement needs.

1.2 Study Area

The study area of this CIP update is the existing water service area of Mesa Water as depicted in Figure 1.1. Mesa Water's service area is approximately 16.3 square miles and encompasses portions of the City of Costa Mesa, parts of City of Newport Beach, and unincorporated Orange County (primarily John Wayne Airport).

1.3 Planning Horizon

The planning horizon of this master plan is year 2036.

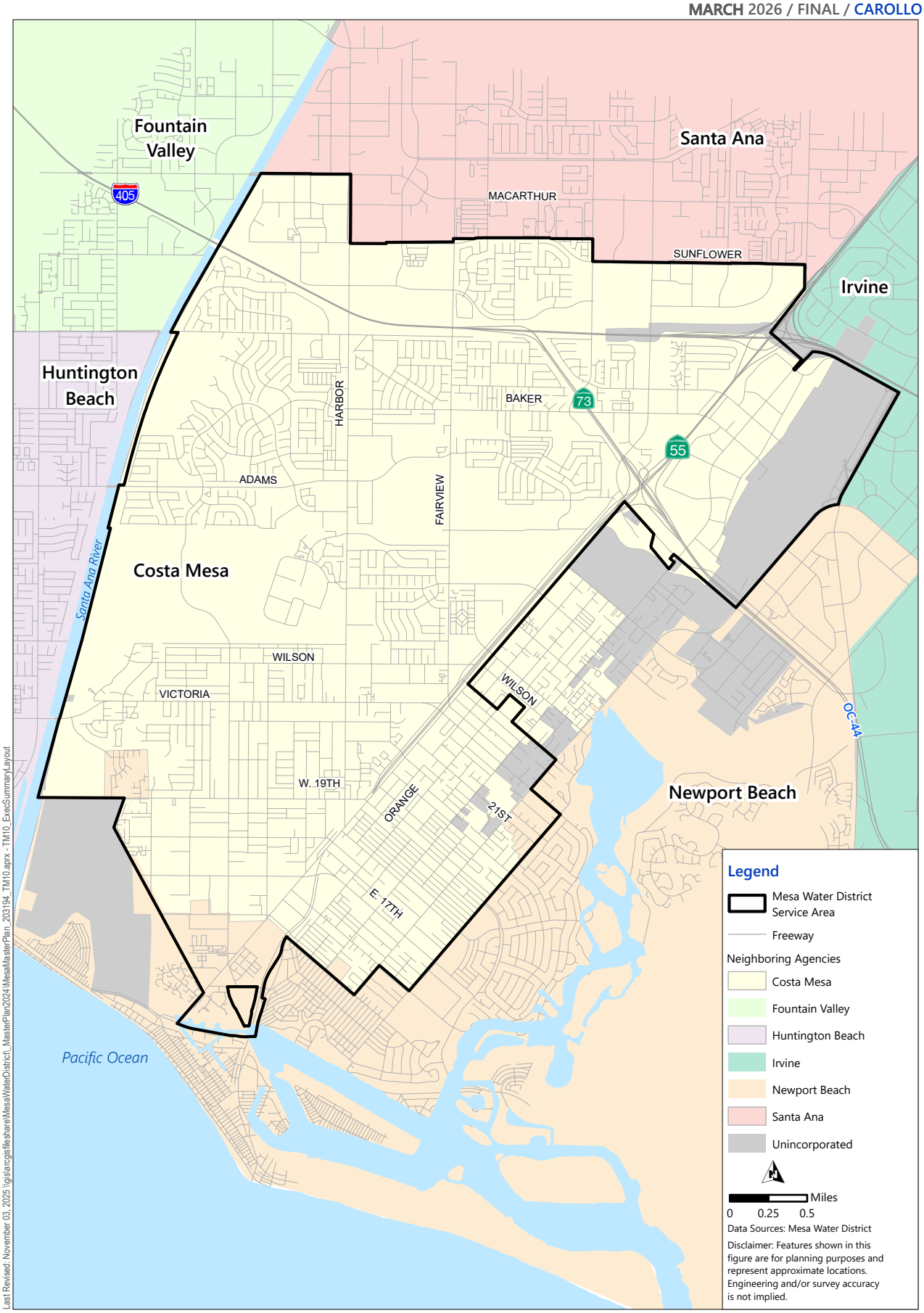


Figure 1.1 Study Area
MESA WATER DISTRICT
CAPITAL IMPROVEMENT PROGRAM UPDATE

1.4 Acknowledgements

Carollo wishes to acknowledge and thank all Mesa Water staff for their support and oversight of this project. In particular, Carollo appreciates the contributions of:

- Paul E. Shoenberger, PE, General Manager
- Andrew D. Wiesner, PE, District Engineer
- Karyn Igar, PE, Principal Engineer, Project Manager
- Tyler Jernigan, MPA, Water Operations Manager
- Kaying Lee, Water Quality and Compliance Supervisor

Carollo's primary team members involved in the preparation of this plan, and the associated technical memoranda were:

- Inge Wiersema, PE, Principal-in-Charge/Project Manager and Technical Review
- Graham Juby, PhD, PE, Technical Advisor
- Janet Ortega, PE, Project Manager (former Carollo employee)
- Felicia James, PE, Transmission System Condition Assessment (Technical Memorandum 3) and Technological Advancements (Technical Memorandum 6) Lead
- Chrissy Henderson, PhD, PE - Cathodic Protection Analysis (Technical Memorandum 3)
- Andy Baldwin, Technological Advancements support (Technical Memorandum 6)
- Michelle Eckard, PE, Project Engineer - Field Condition Assessment support (Technical Memorandum 3 and Technical Memorandum 9)
- Matt Huang, PE - Water Demand Analysis (Technical Memorandum 1) and Hydraulic Modeling Lead (Technical Memorandum 4)
- Cassidy Thornbury, Water Demand Analysis (Technical Memorandum 1) and Hydraulic Modeling support (Technical Memorandum 4)
- Ann Casey, MBA - Asset Management Plan Roadmap (Technical Memorandum 7), Condition Assessment Plan (Technical Memorandum 8) and Facilities Condition Assessment (Technical Memorandum 9) Lead
- Khalil Khirouz, PhD, PE - Mechanical Discipline Lead for the Facilities Condition Assessment (Technical Memorandum 9)
- Mathew Esquer, PE - Structural Discipline Lead for the Facilities Condition Assessment (Technical Memorandum 9)
- John Lin, PE - Instrumental and Control Lead for the Facilities Condition Assessment (Technical Memorandum 9)
- Cameron Kaufmann (former Carollo employee) - Electrical Lead for the Facilities Condition Assessment (Technical Memorandum 9)
- Andrew Burton, PE - Data Management support
- Malik Awan - Data Management support

- Shyamala Raveendran, PE - Regulatory Compliance (Technical Memorandum 5) and Capital Improvement Plan (Technical Memorandum 10) Lead
- Mayra Lara, Project Engineer - Water Supply Analysis Lead (Technical Memorandum 2) and Regulatory Compliance (Technical Memorandum 5) and Capital Improvement Plan (Technical Memorandum 10) support
- Jackie Silber, GIS Analysis and mapping

The following subconsultants' team members were involved in this project:

- Jessica Mullins, (V&A Consulting Engineers, Inc. [V&A]) - Valve Condition Assessment
- Mark Moore and Kelan Gondrezick, (Blue Locker Diving, LLC [Blue Locker Diving]) - Reservoir Condition Assessment

1.5 Report Organization

This Summary Report describes the effort related to the work conducted to achieve the project objectives of the CIP update report, which is organized into nine sections, supplemented by appendices that include all ten Technical Memoranda that were prepared as part of this effort. This Summary Report is organized as follows:

- **Chapter 1 - Introduction.** This Chapter describes the project background, objectives, study area, planning horizon, and report organization.
- **Chapter 2 - Water Demands.** This Chapter summarizes the existing water demands, population forecast, and water demand forecast through year 2035. Detailed information regarding the information presented herein is included in **Appendix B** (Technical Memorandum 1: Water Demand).
- **Chapter 3 - Water Supply Reliability.** This Chapter summarizes Mesa Water's existing water resources and future water supply needs, considering local groundwater, recycled water, imported water, inter-agency connections, and potential brackish water supplies to meet the forecasted water demands through year 2035. Detailed information regarding the information presented herein is included in **Appendix C** (Technical Memorandum 2: Water Supply Reliability).
- **Chapter 4 - Distribution System Analysis.** This Chapter summarizes the calibration of Mesa Water's domestic water distribution system hydraulic model against field conditions. The model was then used to evaluate the performance of the distribution system under existing, future, and fire flow demand conditions. Detailed information regarding the information presented herein is included in **Appendix E** (Technical Memorandum 4: Hydraulic Modeling Calibration and Distribution System Analysis) and **Appendix L** (Calibration Plan).
- **Chapter 5 - Facilities Condition Assessment**. This Chapter summarizes desktop as well as field condition assessments of Mesa Water's facilities. The desktop assessments include an evaluation of Mesa Water's leak detection program, Pipeline Integrity Testing Program, estimated remaining useful life of its distribution transmission system pipelines. Field condition assessments were performed on transmission system appurtenances and associated cathodic protection system as well as visual inspections of Mesa Water's wells, vaults, reservoirs, MWRF, and buildings. Detailed information regarding the information presented herein is included in **Appendix D** (Technical Memorandum 3: Distribution and Transmission System), **Appendix I** (Technical Memorandum 8: Condition Assessment Plan), and **Appendix J** (Technical Memorandum 9: Condition Assessment).

- **Chapter 6 - Regulatory Compliance.** This Chapter summarizes the federal and state regulations impacting Mesa Water District's facilities and operations related to water quality, air emissions, risk management, and other regulations. Detailed information regarding the information presented herein is included in **Appendix F** (Technical Memorandum 5: Regulatory Compliance).
- **Chapter 7 - Asset Management Road Map.** This Chapter summarizes technological advancements for water utilities, highlighting their potential to improve business practices at Mesa Water over the planning horizon and beyond. It explores innovations to streamline processes, enhance security, improve asset management, enable leak detection, and leverage predictive analytics for resource allocation. Detailed information regarding the information presented herein is included in **Appendix H** (Technical Memorandum 7: Asset Management Plan Roadmap).
- **Chapter 8 - Technological Advancements.** This Chapter summarizes technological advancements for water utilities, focusing on software, data management, artificial intelligence, and geographic information systems (GIS) improvements to enhance efficiency and address key challenges. Detailed information regarding the information presented herein is included in **Appendix I** (Technical Memorandum 6: Technological Advancements).
- **Chapter 9 - Capital Improvement Plan.** This Chapter summarizes the cost estimating assumptions, proposed project phasing for the recommended improvement projects, and the CIP. Detailed information regarding the information presented herein is included in **Appendix K** (Technical Memorandum 10: Capital Improvement Program).

CHAPTER 2 WATER DEMANDS

2.1 Historical Demands

Mesa Water provided historical customer billing records by customer class for the FY 2021 through 2024. The historical metered water use for this time period is shown in Figure 2.1. FY 2022 had the highest demand in recent years, approximately 15,500 acre-feet per year (AFY) for potable water, and was used to represent existing demands. The billing data presented in Figure 2.1 indicates that the total consumption for FYs 2021 and 2022 are similar, followed by a slight decrease in FY 2023 and 2024.

Monthly metered water use for FY 2022 depicted in Figure 2.2 shows that multi-family residential demands were the largest proportion of demands. Together with single family residential demands, residential water use comprises 67 percent of Mesa Water's total water demand. Commercial water use accounts for the next largest category, followed by Governmental users, while industrial and irrigation users accounted for only 1 percent of annual consumption. Monthly billing data shows that all meter classifications increase their usage during the summer months to some degree.

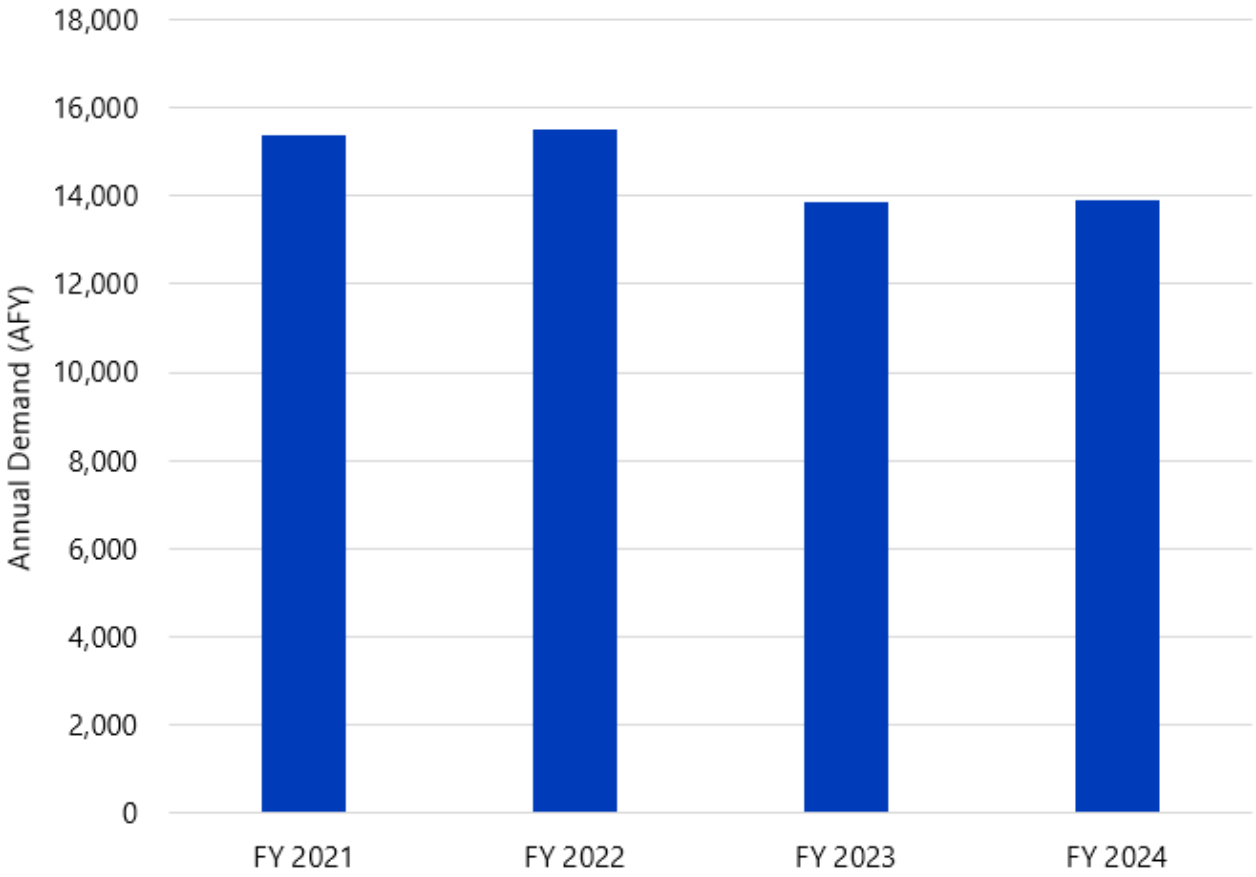


Figure 2.1 Total Annual Water Demand

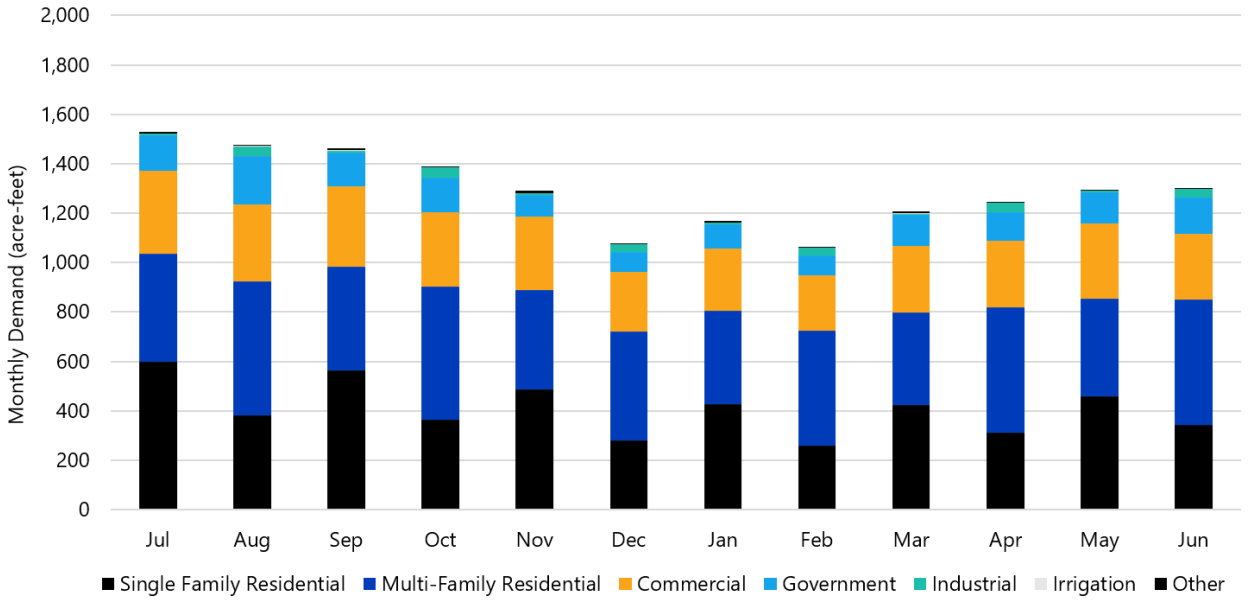


Figure 2.2 FY 2022 Water Demand by Customer Class

2.1.1 Historical Production

Mesa Water obtains potable water through pumping groundwater from the Orange County Groundwater Basin (Basin) and has additional supply available through imported water and inter-agency connections. Amber colored groundwater is pumped through two deep-water wells owned and operated by Mesa Water, which is then treated at the MWRF. Seven clear water wells provide the majority of the potable supply within Mesa Water's service area. Recycled water is also used to serve a small portion of the demands. The historical water production from FYs 2021 through 2024 is shown in Figure 2.3. The average annual potable water supply between the FYs of 2021 and 2024 is 15,649 AFY, with the majority being sourced from clear groundwater wells. Recycled water is used to serve non-potable customers using irrigation services through the Green Acres Project.

2.1.2 Non-Revenue Water

The non-revenue water for well-operated systems is typically less than 10 percent. As shown in Table 1.4 of Technical Memorandum 1, Mesa Water's estimated historical non-revenue water over this period is 6.3 percent, which is well within the generally accepted range of non-revenue water for an efficiently operated system.

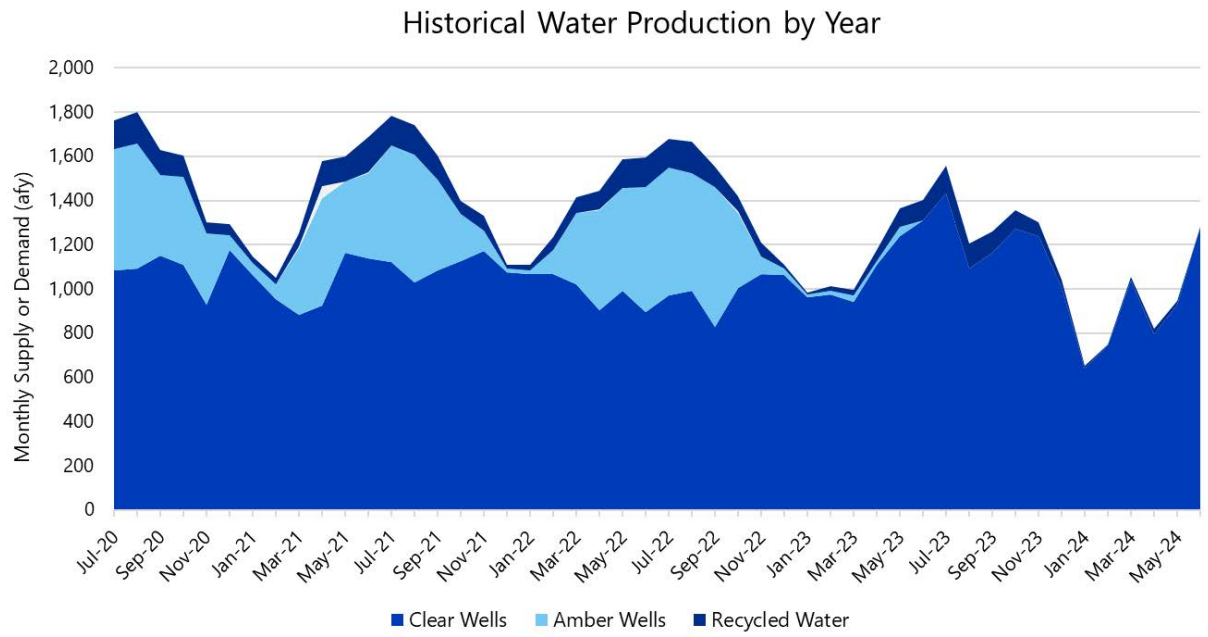


Figure 2.3 Historical Water Production by Month From July 2020 Through May 2024

2.1.3 Peaking Factors

Peaking factors are typically used to determine the water demands for conditions other than average day demand conditions. Peaking factors account for fluctuations in demand on a seasonal or hourly basis. For example, during hot summer days, water use is typically higher than on a colder winter day due to increased irrigation demands.

Mesa Water provided supervisory control and data acquisition (SCADA) data for FY 2021 through 2024. Analysis of SCADA data shows that the average day demand was 13.25 mgd. Peaking factors were analyzed for maximum and minimum day demand conditions. Table 2.1 list the peaking factors used for the water system analyses conducted as part of this CIP as documented in Technical Memorandum 4 (**Appendix E**). For planning purposes and analysis, a maximum day demand to average day demand peaking factor of 1.5 and a minimum day demand to average day demand peaking factor of 0.65 were used.

Two diurnal curves were developed for weekday and weekend summer conditions using a mass balance calculation using flow data obtained from Mesa Water's SCADA during the week of August 1, 2024 through August 8, 2024. The weekday summer demand is based on data from Tuesday, August 6, 2024, with a daily average demand of 20.1 mgd and a maximum day demand peaking factor of 1.39. The weekend summer demand is based on data from Sunday, August 4, 2024, with an average of 18.7 mgd and a peak hourly demand peaking factor of 1.12. The data used to compile these peaking factors are summarized in Table 1.5 of Technical Memorandum 1 (**Appendix B)**.

Table 2.1 Seasonal and Hourly Demand Peaking Factors

Demand Condition	Peaking Factor(1)
Average Day Demand	1.00
Maximum Day Demand	1.50
Minimum Day Demand	0.65
Peak Hour Demand on weekdays	1.39
Peak Hour Demand on weekend days	1.12

Notes:
(1) The data used to compile these peaking factors are summarized in Table 1.5 of Technical Memorandum 1 (Appendix B).

2.2 Population and Water Demand Forecast

Demand forecasting is the process of predicting the level of demand that might occur at some point in the future, or over a specified period. A population-based method was used to forecast water demand through 2035. According to an analysis of Transportation Analysis Zone level data provided by Southern California Association of Governments, the population within Mesa Water's service area is expected to increase from approximately 110,432 in 2025 to 119,811 in 2035. This increase of 9,379 people translates to an annual growth rate of about 1 percent. The population increase is projected to drive a rise in residential water demand from 10,988 AFY in 2025 to 11,921 AFY in 2035. This projection equates to an annual growth rate of approximately 1 percent.

2.2.1 Projected Demands through 2035

Demand projections were developed using a combination of per-capita water use and land information. Recycled water and conservation considerations were also included in the demand projections.

Mesa Water is considering converting the 43 recycled water customers currently served by the Green Acres Project to potable water service, due to concerns about the availability of Green Acres Project water supply and water quality. For conservative potable water supply planning purposes, this conversion is considered in the potable water demand projections and is assumed to take place by year 2035.

The Urban Water Use Objective is a calculated limit on total water consumption for urban retail water suppliers, as mandated by *California's Making Conservation a California Way of Life* framework. Suppliers must calculate their objective annually, beginning January 1, 2025, and demonstrate compliance starting January 1, 2027. Mesa Water remains below its Urban Water Use Objective, even without new conservation measures, demonstrating that Mesa Water's investments in potable reuse, recycled water, and water efficiency programs will continue to sustain long-term compliance with the state's framework.

The projected demand is summarized through year 2035 in Table 2.2, while details of the forecasting methodology and assumptions are described in Technical Memorandum 1 (**Appendix B**). As shown, the average day demand is projected to increase from 14.7 mgd in 2025 to 16.5 mgd in 2035, while the maximum day demands are projected to increase to 24.7 mgd in 2035 if recycled water customers are converted.

Table 2.2 Potable Water Demand Projections

	2022	2025	2030	2035
Service Area Population[1,2]	109,189	110,432	114,184	119,811
Residential Demand (AFY)[3]	10,862	10,988	11,361	11,921
Non-Residential Demand (AFY)[4]	5,467	5,467	5,467	5,467
Green Acres Project Conversion (AFY)	0	0	0	1,084
Total Demand (AFY)	16,329	16,455	16,828	18,742
Average Day Demand (mgd)	14.6	14.7	15.0	16.5
Maximum Day Demand (mgd)[5]	21.9	22.0	22.5	24.7

Notes:
(1) Reference: Transportation Analysis Zone-level data provided by Southern California Association of Governments as used in 2024 Connect SoCal.
(2) Population projections for the years 2022 and 2030 were developed linearly.
(3) Residential demand includes single family and multi-family billing classifications.
(4) Non-residential demand includes commercial, government, industrial, and other billing classifications.
(5) Peaking factor of 1.5.

CHAPTER 3 WATER SUPPLY RELIABILITY

3.1 Existing Water Supply Sources

Mesa Water's primary source of water is groundwater pumped from seven active clear wells within the Basin plus two amber colored wells at the MWRF. Mesa Water's current supply mix consists of 100 percent groundwater. Mesa Water was able to achieve this by:

- Maximizing the use of groundwater from the Basin as allowed by annually defined maximum basin pumping percentage (BPP).
- Supplementing remaining supplies with the pumping and treatment of amber groundwater at the MWRF.

In addition to groundwater, Mesa Water has a backup water supply of imported water from Metropolitan Water District of Southern California (Metropolitan) through deliveries from the MWDOC, one of Metropolitan's member agencies. Additionally, Mesa Water has several emergency interconnections with three neighboring agencies, the City of Santa Ana, City of Newport Beach, and Irvine Ranch Water District. A portion of Mesa Water's irrigation demands are met with recycled water provided by Orange County Water District that is delivered through the Green Acres Projects. A map of Mesa Water's existing supplies is shown on Figure 3.1.

Since FY 2017-18, Mesa Water has been able to meet its entire water demand using its local water supplies only, and thus not relying on imported water. Including non-potable water use, Mesa Water's water portfolio for FY 2023-24 was comprised of 96 percent groundwater and 4 percent recycled water.

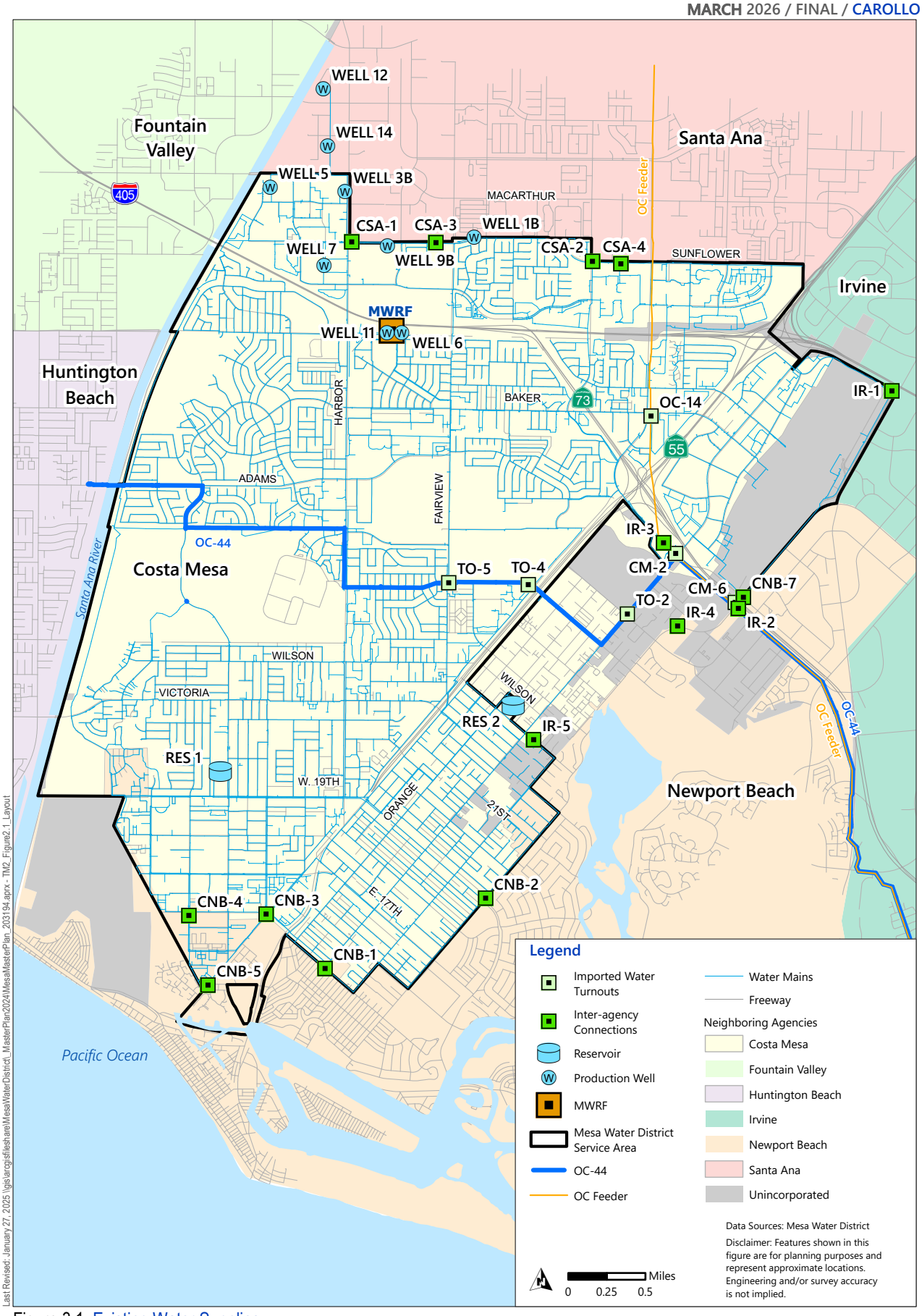


Figure 3.1 Existing Water Supplies
MESA WATER DISTRICT
CAPITAL IMPROVEMENT PROGRAM UPDATE

3.1.1 Groundwater

Mesa Water's owns and operates seven groundwater wells that pump clear water from the Basin. As shown in Figure 3.2, the combined pumping capacity is 17,200 gallons per minute (gpm), which equates to 24.8 mgd if all wells would be operating 24 hours a day, 7 days a week.

Table 3.1 Groundwater Wells Capacity (Clear Water Wells)

Source	Status	2011 Water Master Plan Capacity (gpm)	2012 SCADA Capacity (gpm)	2013 Step Down Testing(1) (gpm)	Capacity (gpm)
Well 1B	Active	2,400	2,912	2,500	2,300
Well 3B	Active	2,260	1,762	1,200	1,600
Well 5	Active	3,800	2,646	2,800	2,200
Well 7	Active	1,500	1,664	1,300	1,300
Well 9B	Active	1,980	2,027	2,000	1,800
Well 12(2)	Active	N/A	N/A	N/A	4,000
Well 14(3)	Active	N/A	N/A	N/A	4,000
Pumping Capacity(4)		11,940	11,011	12,215	17,200

Notes:
N/A - not applicable
(1) Step-down tests performed October 2013.
(2) Well 12 did not become operational until November 2023.
(3) Well 14 did not become operational until May 2023.

As shown However, each year, Orange County Water District recommends a BPP for its member agencies, which is the same for all Orange County Water District's member agencies. The BPP provides a limit on how much each agency can pump from the Basin without paying the Basin Equity Assessment fees in addition to the replenishment assessment fees. The BPP is calculated by dividing the optimum groundwater production (yield) by the estimated total potable water demand. The BPP is based on the groundwater conditions, availability of imported water supplies that used for recharge, and the Basin's management objectives. A historical trend of the BPP since 2021 is shown on Figure 3.2.

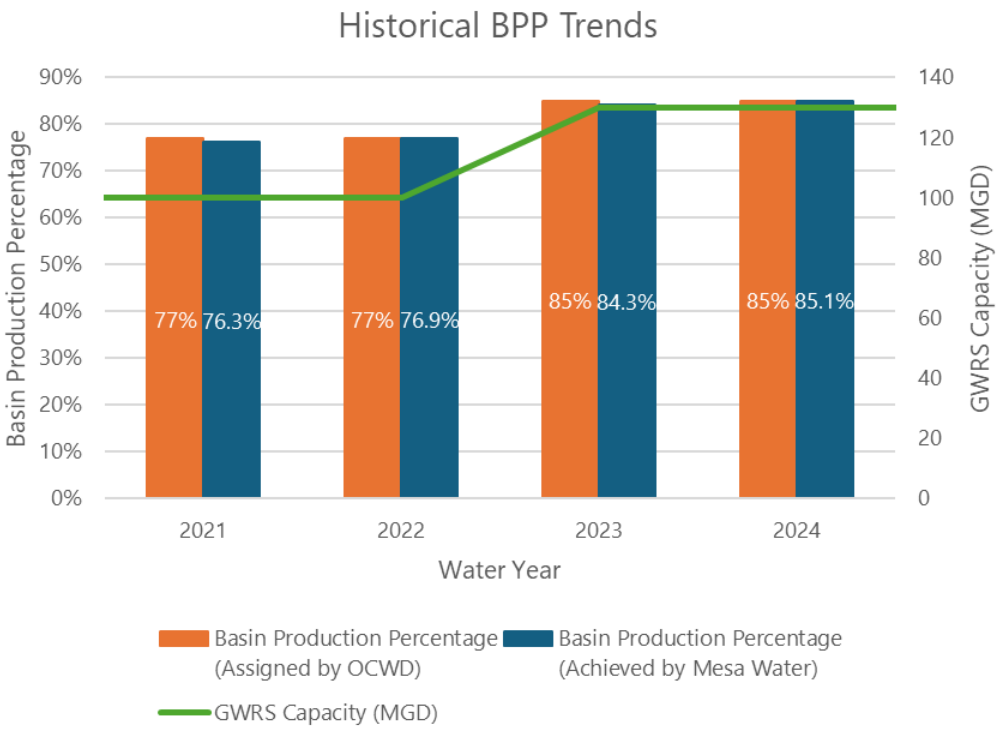


Figure 3.2 Historical BPP and Groundwater Replenishment System Capacity

As shown, the BPP for the 2022-23 Water Year was established at 85 percent in February 2023 for the remainder of the water year in response to increased investment and a final 30 mgd expansion of the Groundwater Replenishment System. It is expected that the BPP will stay at 85 percent for the foreseeable future FY.

3.1.2 Mesa Water Reliability Facility

In addition to the seven (7) clear wells, Mesa Water owns and operates two other groundwater wells that pump amber groundwater from a deeper part of the Basin aquifer. The MWRF treats amber colored water pumped from Wells 6 and 11, which have a combined capacity of 7,200 gpm or 10.3 mgd. The current MWRF capacity is rated at 6,600 gpm or 8.6 mgd. It should be noted that Mesa Water is still required to pay the replenishment assessment fee for water pumped from the amber aquifer and treated at the MWRF.

Table 3.2 Amber Wells and MWRF Capacity

Source	Status	2011 Water Master Plan Capacity (gpm)	2013 Step Down Testing(1) (gpm)	2024 Capacity (gpm)
Well 6	Active	4,000	2,200	3,300
Well 11	Active	4,000	5,000	3,300
Pumping Capacity		8,000	7,200	6,600
MWRF Treatment Capacity			6,000	6,000(2)

Notes:
(1) Step-down tests performed in October 2013.
(2) 2020 Water Supply Reliability Assessment.

3.1.3 Imported Water

While Mesa Water is currently 100 percent reliant on local sources, Mesa Water also maintains imported water connections as a backup to local supplies. Mesa Water can obtain imported water from MWDOC through four connections as listed in Table 3.3.

Table 3.3 Imported Water Connections and Capacities

Imported Water Conveyance Pipeline	Active Number of Turnouts	Turnout Capacity (cfs)	Maximum Delivery Capacity (mgd)	Maximum Delivery Capacity (gpm)
OC-44(1)	3	67	43.3	30,069
OC-14(2)	1	10	6.5	4,514
CM-2(2)	1	15	9.7	6,736
CM-6(2)	1	4	2.6	1,806
Total	6	96	62.1	43,125
Firm Capacity(3) (Without OC-44)	3	29	18.8	13,056

Notes:
cfs - cubic feet per second
(1) Connects to East Orange County Feeder No. 2.
(2) Located downstream of the Santa Ana Cross Feeder. Therefore, it can be supplied from either the East Orange County Feeder No. 2 or the Orange County Feeder.
(3) Firm capacity is defined as the combined capacity of all sources except the largest source of supply (OC-44).

As shown in Table 3.3, the combined capacity from these connections totals about 62 mgd, while the firm capacity (without OC-44) is 18.8 mgd. It should be noted that , the actual capacity that can be obtained is determined by the difference in hydraulic grade line between the imported water transmission main and Mesa Water's distribution system as well as the conveyance capacity within Mesa Water's distribution system.

3.1.4 Emergency Interconnections

Mesa Water has 15 emergency interconnections with the City of Santa Ana, City of Newport Beach and Irvine Ranch Water District with an additional emergency interconnection with the City of Huntington Beach that is currently in the preliminary stages of development. The interconnections are listed in Table 3.4. As indicated, Mesa Water has 38,750 gpm or 55.8 mgd of emergency capacity available from its neighboring agencies. As shown in Table 3.4, all 4 emergency interconnections with the City of Santa Ana have a system pressure below the minimum required operating pressure of 20 psi for water distribution systems in California, per California Code Regulations Title 22, §64602. Utilization of these interconnections would therefore require temporary pumping equipment to meet the hydraulic grade line of Mesa Water service area.

Table 3.4 Inter-Agency Connections

Connection	Agency	Direction(1)	Location	Size (inches)	Capacity (gpm)
CNB-1	City of Newport Beach	to MW	East 15th Street and Santa Ana Avenue	12	1,350
CNB-2	City of Newport Beach	to MW	Irvine Avenue and West 19th Street	8	1,800

Connection	Agency	Direction(1)	Location	Size (inches)	Capacity (gpm)
CNB-3	City of Newport Beach	to MW	Superior Avenue and West 16th Street	16	3,100
CNB-4	City of Newport Beach	to MW	Monrovia Avenue and West 16th Street	6	1,350
CNB-5	City of Newport Beach	to MW	Superior Avenue and Placentia	12	1,350
CNB-7	City of Newport Beach	to MW	North Bristol Street and Campus Drive	16	6,700
CSA-1	City of Santa Ana	to MW	Sunflower Avenue and Harbor Boulevard	12	3,100
CSA-2	City of Santa Ana	to MW	Sunflower Avenue and Bear Street	12	3,100
CSA-3	City of Santa Ana	to MW	Sunflower Avenue east of Orange County Flood Control District	12	3,100
CSA-4	City of Santa Ana	to MW	Sunflower Avenue east of Bristol Street	8	3,100
IR-1	Irvine Ranch Water District	to MW	Airport Way and I-405 Freeway	12	3,300
IR-2	Irvine Ranch Water District	to MW	Campus Drive and Bristol Street	10	2,250
IR-3	Irvine Ranch Water District	to MW	Bristol Street and Red Hill Avenue	12	1,800
Res. 2	Irvine Ranch Water District	to MW	2340 Orange Avenue	6	2,000
IR-5	Irvine Ranch Water District	to MW	23rd Street and Santa Ana Avenue	6	1,350
Total(2)					38,750

Notes:
psi - pounds per square inch
(1) Due to the generally lower surface area elevation and water system hydraulic grade line than its neighboring agencies, flow will generally be in the direction of Mesa Water. The volumes that Mesa Water may be able to provide to its neighbors is dependent upon hydraulic conditions as described in the *Emergency Interconnection Study* (RBF, 2012).
(2) Emergency capacity from neighboring agencies towards Mesa Water.

3.1.5 Recycled Water

Mesa Water currently uses recycled water from Orange County Water District's Green Acres Project, a direct non-potable reuse system that serves close to 100 customer sites within the cities of Costa Mesa, Fountain Valley, Huntington Beach, Newport Beach, and Santa Ana. The total annual demand for Green Acres Project water in FY 2022-23 was nearly 3,400 acre-feet (AF), or about 3 mgd.

Through its 43 recycled water service connections, Mesa Water's total recycled water usage in FY 2023-24 was 816 AFY, or 0.6 mgd.

3.2 Historical Water Supply Trends

Mesa Water's historical water supply mix from FY 2021 through 2024 is illustrated on Figure 3.3. As shown on Figure 3.3, Mesa Water has traditionally used clearwell groundwater (shown in blue) to meet as much

demand as possible. Amber well water treated at MWRF is then utilized, while recycled water is only used to meet any irrigation demands. In FY2024, Mesa Water used 12,647 AFY (82 percent) from clear wells, 2,213 AFY (14 percent) from amber wells treated at MWRF, and 585 AFY (4 percent) recycled water.

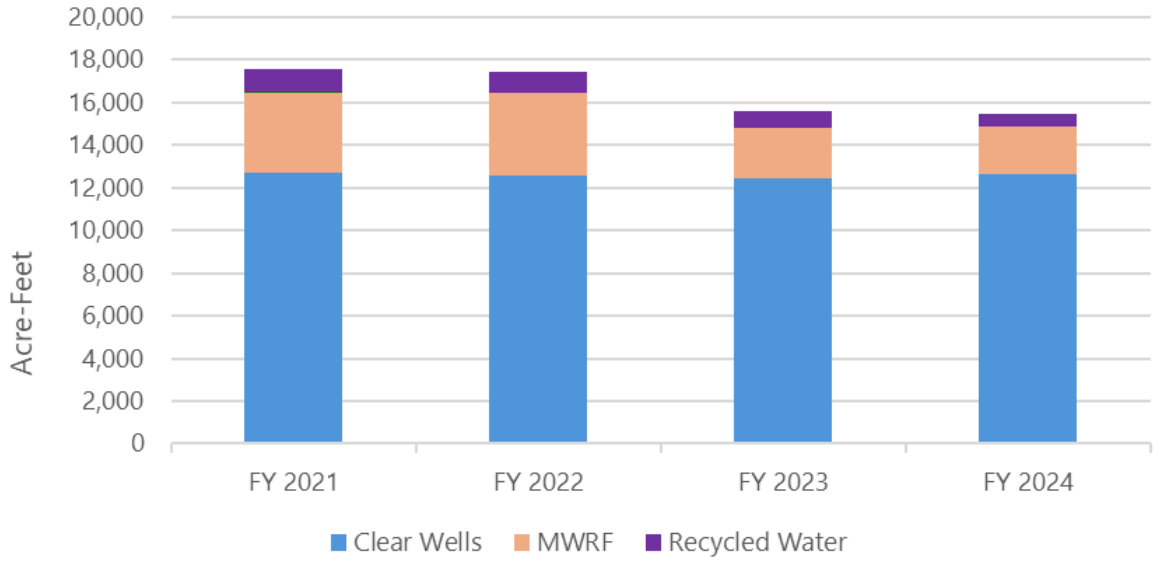


Figure 3.3 Historical Water Production by FY

The historical monthly variation of Mesa Water's supply sources from July 2021 through June 2024 is shown in Figure 3.4. As shown, groundwater production from clear wells has been relatively consistent year-around, showing modest seasonal fluctuations. Meanwhile, production from amber well and recycled water are more seasonally dependent and used more when water demand peaks due to higher temperatures and evapotranspiration rates requiring more outdoor water use.

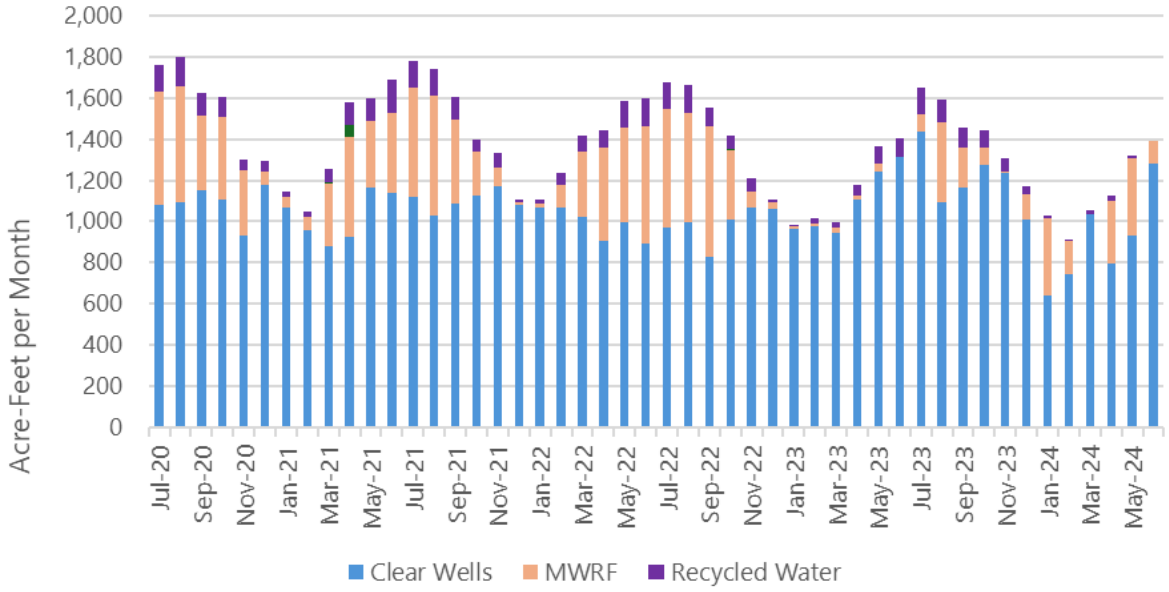


Figure 3.4 Historical Water Production by Month

3.3 Water Supply Analysis

The total and firm capacities of Mesa Water's existing water supply sources are summarized in Table 3.5.

Table 3.5 Existing Water Supply Capacities by Source

Supply Source	Capacity (gpm)	Capacity (mgd)
Clearwell Groundwater Pumping Capacity	17,200	24.8
MWRF Treatment Capacity for Amber Wells	6,000	8.6
Total Groundwater Supply (Wells + MWRF)	23,200	33.4
Imported Connections	43,125	62.1
Total Potable Water Supply Capacity	66,325	95.5
Emergency Interties	38,750	55.8
Recycled Water from the Green Acres Project	625	0.9
Total Supply Capacity	105,700	152.2
Firm Potable Supply Capacity (without OC-44)	36,256	52.2
Firm Groundwater Supply (without MWRF)	17,200	24.8

As shown in Table 3.5, the total potable supply capacity, without emergency interties or the Green Acres Project, is 95.5 mgd. This is a significant supply capacity compared the Mesa Water's 2022 maximum day demand of 21.9 mgd. Even without imported water, the total groundwater production capacity is approximately 33.4 mgd, thus exceeding the current average day demand by more than 50 percent.

As shown, the combined delivery capacity of all the imported water connections from MWDOC totals 62.1 mgd, while the combined hydraulic capacity of all interties with neighboring agencies is estimated to be 55.8 mgd. However, it should be noted that it is unlikely that there would be enough water available from neighboring cities to supply the maximum hydraulic capacity of these interties simultaneously. With inclusion of the Green Acres Project, the combined supply capacity is about 152 mgd.

As the largest supply source is OC-44 with 43.3 mgd, the remaining firm potable water supply capacity from other imported water connections, the clear groundwater wells and the MWRF is 52.2 mgd. Similarly, as the largest groundwater source is the MWRF, the existing firm groundwater capacity (without MWRF) is about 24.8 mgd.

Based on the information presented above, it can be concluded that Mesa Water has the ability to meet the current average day demand and maximum day demand conditions with the clear well groundwater pumping capacity alone, without relying on the MWRF or imported water.

3.3.1 Supply and Demand Comparison

In 2020, Mesa Water conducted a Water Supply Reliability Assessment to analyze their supply program under extreme emergency and operational scenarios where water sources were unavailable. The assessment presented solutions for deficiencies found, recommending Mesa Water purchase imported water in the event of a supply shortage due to the high costs of maintaining self-sufficiency during emergencies.

Mesa Water is interested in evaluating whether future water demands can continue to be met exclusively by using local groundwater and recycled water sources and thus continue to avoid the use of imported water. To answer this question, a capacity analysis was performed that determines the remaining supply capacity or shortfall under the following supply mix scenarios:

- **Scenario 1:** Baseline conditions with all existing potable water supplies available (clearwells, MWRF, and imported water).

- **Scenario 2:** Firm supply capacity with the largest potable water supply source (OC-44) out of service to serve maximum day demand with local groundwater supplies; while recycled water is no longer available to service customers.
- **Scenario 3:** Groundwater supplies only, including all clear wells and the amber wells treated at the MWRF.
- **Scenario 4:** Imported supplies only using all import station connections but no groundwater, interties, or Green Acres Project.
- **Scenario 5:** Firm groundwater supplies only, which translates to outages of the MWRF and use of the clear wells only.
- **Scenario 6:** Firm Groundwater Supply only but with the Green Acres Project still operational, thereby reducing the potable water demand as recycled water would be used to serve the Green Acres irrigation demands.

The supply scenarios and corresponding future water demand forecast are compared to establish the water supply surplus or deficit for the year 2035. For conservative planning purposes, Mesa Water has adopted a supply planning criterion wherein the projected maximum day demand is increased by 115 percent. This supply and demand balance comparison is presented in Table 3.6 for both 100 percent and 115 percent of the projected maximum day demand for year 2035.

Table 3.6 Potable Water Supply Balance Analysis

Supply Source	Scenario 1 Baseline (All Potable Supplies) (mgd)	Scenario 2 Firm Supply Capacity Only (No OC-44) (mgd)	Scenario 3 Groundwater Only (mgd)	Scenario 4 Imported Water Only (mgd)	Scenario 5 Firm Groundwater Capacity Only (mgd)	Scenario 6 Firm Groundwater With Green Acres Project[4] (mgd)
Clearwells	24.8	24.8	24.8	0.0	24.8	24.8
MWRF	8.6	8.6	8.6	0.0	0.0	0.0
Imported	62.1	18.8	0	62.1	0	0.0
Interties[5]	0	0	0	0	0	0.0
Total Supply	95.5	52.2	33.4	62.1	24.8	24.8
100% 2035 maximum day demand[2]	24.7	24.7	24.7	24.7	24.7	23.3[4]
Balance[1]	70.7	27.4	8.6	37.4	0.0	1.5
115% 2035 maximum day demand [3]	28.4	28.4	28.4	28.4	28.4	26.8
Balance[1]	67.0	23.7	4.9	33.7	-3.7	-2.0

Notes:
(1) Values shown in green font reflect a supply surplus, while negative values shown in purple font indicate a supply shortfall.
(2) Maximum day demand reflects 2035 demand conditions, using 1.5 maximum day demand/average day demand peaking factor.
(3) Per Mesa Water planning criteria, a 115 percent buffer is applied to maximum day demand to project future supply needs.
(4) Reflects a decrease in potable maximum day demand of 1.5 mgd due to recycled water being available to serve the Green Acres Project irrigation demands.
(5) Emergency interties provide additional short-term redundancy during emergency conditions but are not relied upon for future supply planning.

As shown in Table 3.6, Mesa Water will have sufficient supply capacity to meet 115 percent of the projected maximum day demand for year 2035 under all the scenarios evaluated. However, Mesa Water would not have sufficient supply capacity to meet 115 percent of the projected maximum day demand in 2035 for the extreme scenarios 5 and 6 with only firm groundwater supplies.

However, in the event of an outage of any of the larger groundwater wells and the MWRF, temporary use of imported water from Metropolitan via MWDOC or via utilization of one or more of the existing emergency interties would be required to address the supply shortfalls shown in Table 3.6.

3.4 Future Supply Options

A total of four potential new water supply options were identified to increase the amount of local water supply to address the identified supply shortfalls shown in Table 3.6. These potential supply projects and their corresponding estimated supply capacities are summarized in Table 3.7.

Table 3.7 Potential Future Water Supply Options

Project Descriptions	Estimated Additional Capacity/Yield		
	gpm(1)	mgd(1)	AFY(2)
Replacement of Clear Groundwater Well 5	600	0.9	580
Local Supply Improvement Project	625	0.9	1,000
Increase in Local Supply Improvement Project Capacity	1,250	1.8	2,000
Increase in Water Conservation	Unknown	Unknown	Unknown

Notes:
(1) Additional capacity, assuming continuous use.
(2) The additional annual yield of clear well 5 considers a BPP of 85 percent. All values are rounded to nearest 10 AFY.

As listed in Table 3.7, the estimated supply capacity of these supply options range from 0.9 mgd to 1.8 mgd. The additional yield that could be achieved with increased water conservation is unknown as that depends on voluntary customer behavioral changes in response to ongoing and/or new voluntary water conservation programs. It should be noted that the annual yield of the clear water wells is not a straight unit conversion to AFY because Mesa Water would not be able to utilize each source all year, due to seasonal variability of demands and BPP annual pumping constraints.

3.5 Water Supply Recommendations

As Mesa Water has sufficient supplies to meet 115 percent of the projected 2035 maximum day demand with groundwater only, there is no actual supply shortfall because a temporary outage of any combination of groundwater wells and/or the MWRF can readily be addressed by using imported water or delivery via 1 of its 16 emergency connections from neighboring utilities.

Hence, the only recommendations to strengthen Mesa Water's local water supply reliability are as follows:

- **Supply Improvement Project:** Continue the local Supply Improvement Project feasibility study in collaboration with the cities of Huntington Beach and Newport Beach to determine the potential, costs, benefits, and constraints of brackish groundwater desalination. As this project will take years to implement and future imported water costs are expected to continue to increase, proactive local supply planning will allow Mesa Water to make informed investment decisions. Depending on how this feasibility evolves, Mesa Water could consider negotiating a larger capacity share to increase its local supply capacity beyond the current estimate.

- **Well 5 Replacement:** Once Well 5 reaches the end of its useful life it will be replaced. Production from the replacement well is estimated to provide approximately 580 AFY of additional local supply capacity.
- **Water Conservation:** Although additional water conservation is not needed by Mesa Water to meet the water supply reliability criterion of 115 percent of maximum day demand or meet the State Water Resources Control Board's total water use objective of 92 gpcd as the estimated current average water use is 85 gpcd, it is anticipated that additional water conservation may occur through voluntary participation in ongoing and/or new programs implemented by Mesa Water and MWDOC. As customers are becoming increasingly more aware of water scarcity challenges; the average per capita water use may continue to decline further. It is recommended that Mesa Water continue to monitor new state regulations, as additional conservation may be required to meet future state mandates and specific targets for indoor or outdoor water use.

CHAPTER 4 DISTRIBUTION SYSTEM ANALYSIS

4.1 Hydraulic Model Calibration

Mesa Water's existing hydraulic model was calibrated using the InfoWater Pro (by Autodesk) software platform. The model was calibrated over a 24-hour demand period (extended period simulation) based on SCADA data and sixteen pressure logging data collected between July 2024 and August 2024. The extended period simulation calibration scenario includes weekday and weekend diurnal patterns for the system derived from SCADA data. The primary varied parameters for this calibration were operational controls and pipeline roughness coefficients, although other parameters were also adjusted as calibration results were generated. As-built plans were reviewed for all wells, reservoirs, and pump station facilities and utilized to update the facility geometry as needed. Details regarding the model update and calibration process are included in **Appendices E** and **L**.

Besides the extended period calibration scenario, average day demand, maximum day demand, and maximum day demand plus fire flow scenarios were added to the model. The average day demand scenario was used to allocate demands and the maximum day demand scenarios were used for the distribution system evaluations.

4.2 System Evaluation Criteria

The system evaluation criteria that were utilized for the water distribution system evaluations under both existing and future demand conditions are summarized in Table 4.1.

Table 4.1 Water Distribution System Analysis Evaluation Criteria

Description	Value	Units
Minimum Pressure		
Peak Hour Demand	40	psi
Maximum Day Demand+ Fire Flow (at hydrant)	20	psi
Maximum Day Demand + Fire Flow (at the service connection/model junction)	20	psi
Maximum Pressure		
Without Service Lateral Pressure Regulator	80	psi
With Service Lateral Pressure Regulator	120	psi
Pipeline Criteria		
Maximum Velocity with Peak Hour Demand	7	fps
Maximum Velocity with Maximum Day Demand + Fire Flow	15	fps
Minimum Size for Pipeline Replacement	8	in
Fire Fighting Capabilities		
Minium Flow Requirement	1,500	gpm for 2 hours
Airport and South Coast Plaza	6,000	gpm for 4 hours

4.3 Existing Water System

Mesa Water's distribution system serves water to approximately 110,000 people through a network of approximately 317 miles of pipeline ranging from 4-inch to 42-inch in diameter. Due to minor variation in topography, the entire water system is comprised of only one pressure zone. The hydraulic profile of Mesa Water's distribution system is schematically depicted on Figure 4.1.

As shown on Figure 4.1, the system is supplied by nine active groundwater wells (No. 1B, 3B, 5, 6, 7, 9B, 11, 12, and 14). Two of these wells (No. 6 and 11) pump water from the deep amber-tinted that is treated at the MWRF. In addition to local sources, backup supply of imported water from Metropolitan through MWDOC is available from six imported water connections. These six connections are CM-2, CM-6, OC-14, and turnouts 2, 4, and 5 with the OC-44 feeder. Mesa Water also has fifteen emergency connections with Newport Beach, Santa Ana, and Irvine Ranch Water District with an additional emergency interconnection with the City of Huntington Beach that is currently in the preliminary stages of development.

The water distribution system also has two ground level storage reservoirs. Reservoir 1 has a volume of 9.5 million gallons (MG), while Reservoir 2 has a capacity of 18.7 MG. These reservoirs are replenished during low demand periods. Each reservoir has a booster pump station to supply water into the distribution system. The MWRF also has a high-lift pump station and 1.25 MG storage reservoir. The clear wells and imported water connections directly feed into the distribution system.

4.4 Hydraulic Analysis

The system was analyzed under maximum day demand and maximum day demand plus fire flow. The analysis showed that the system generally met minimum and maximum pressure and velocity criteria and was able to deliver the required fire flows through the main pipelines.

4.4.1 Water System Pressure Analysis

Based on analysis with the hydraulic model it was concluded that the existing system meets the minimum pressure criteria of 40 psi and maximum pressure criteria of 120 psi under all demand conditions. The maximum day, peak hour minimum pressure contours and maximum pressure contours are shown on Figure 4.2 and Figure 4.3, respectively. Most of the system has minimum pressures ranging from 50 psi to 100 psi.

System pressures exceed 100 psi in the northerly portion of the system in the vicinity of the wells and MWRF. The wells and MWRF discharge water into the system at about 90 to 100 psi so that the pressures in the southerly portion of the system can meet the minimum pressure requirement. The elevation difference between the northerly portion of the system and the highest point in the southerly portion of the system is approximately 84 feet. At the time of this study, the location of individual pressure regulators was not mapped. For the purposes of this analysis, it was assumed that water services in areas with pressures above 80 psi have individual pressure regulators.

4.4.2 System Velocity Analysis

The existing system generally meets the maximum velocity criteria under all demand conditions as depicted on Figure 4.4. However, there are seven pipe segments that have a maximum velocity exceeding 5 feet per second (fps), two of which exceed a maximum velocity of 7 fps in the maximum day demand and peak hour demand analysis. It was determined that these high-velocity pipelines are due to the installation of Wells 12 and 14 and that these high velocities do not negatively impact system pressures. Hence, no recommendations were made to mitigate the high velocities. However, when Well 5 will be used in the future in conjunction with Wells 12 and 14 or when the Well 5 pump is replaced with a higher capacity pump, the high velocity existing 18-inch diameter pipeline on Hyland Avenue between MacArthur Boulevard and Scenic Avenue may need to be upsized or a parallel pipeline may need to be installed.

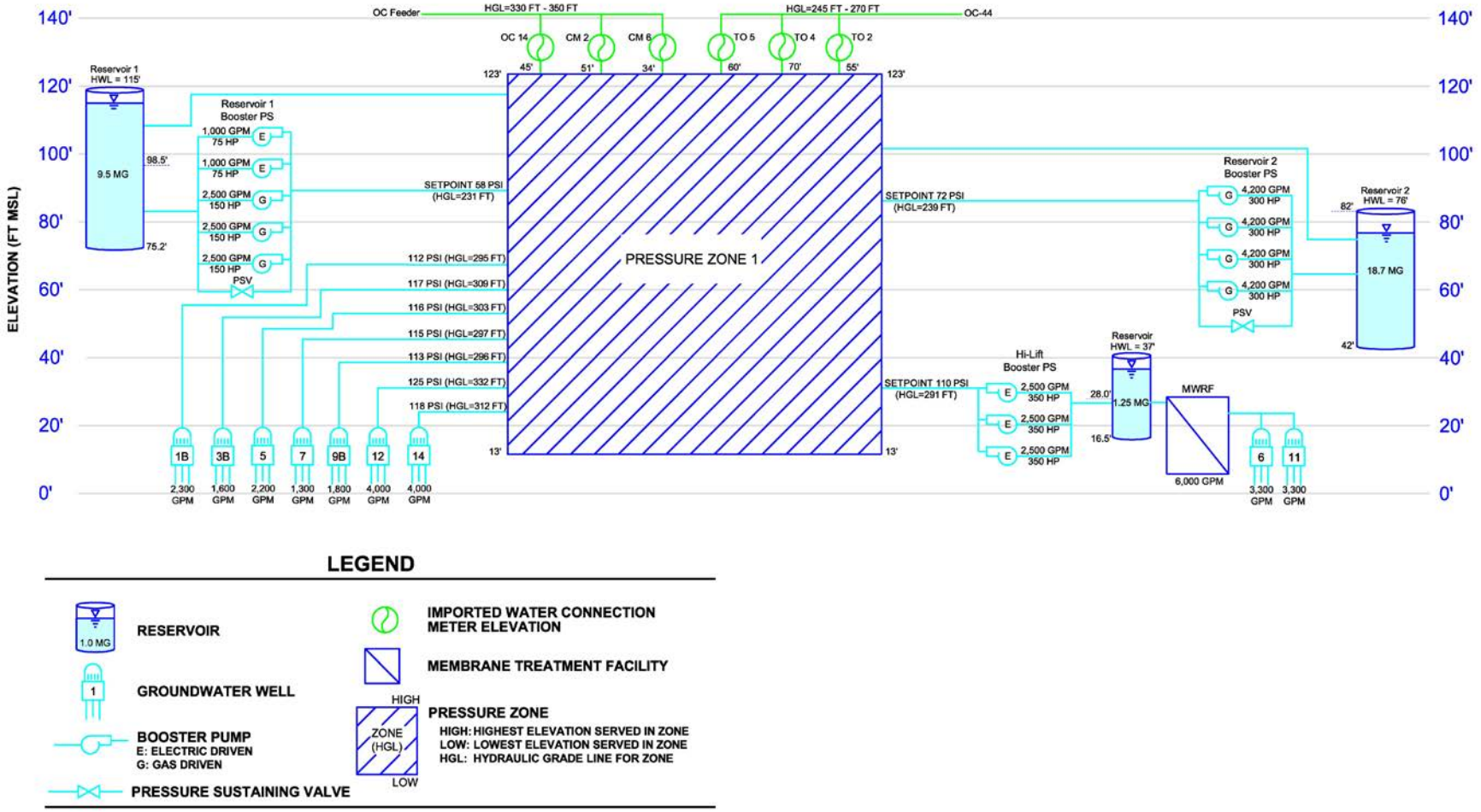


Figure 4.1 Water System Hydraulic Profile

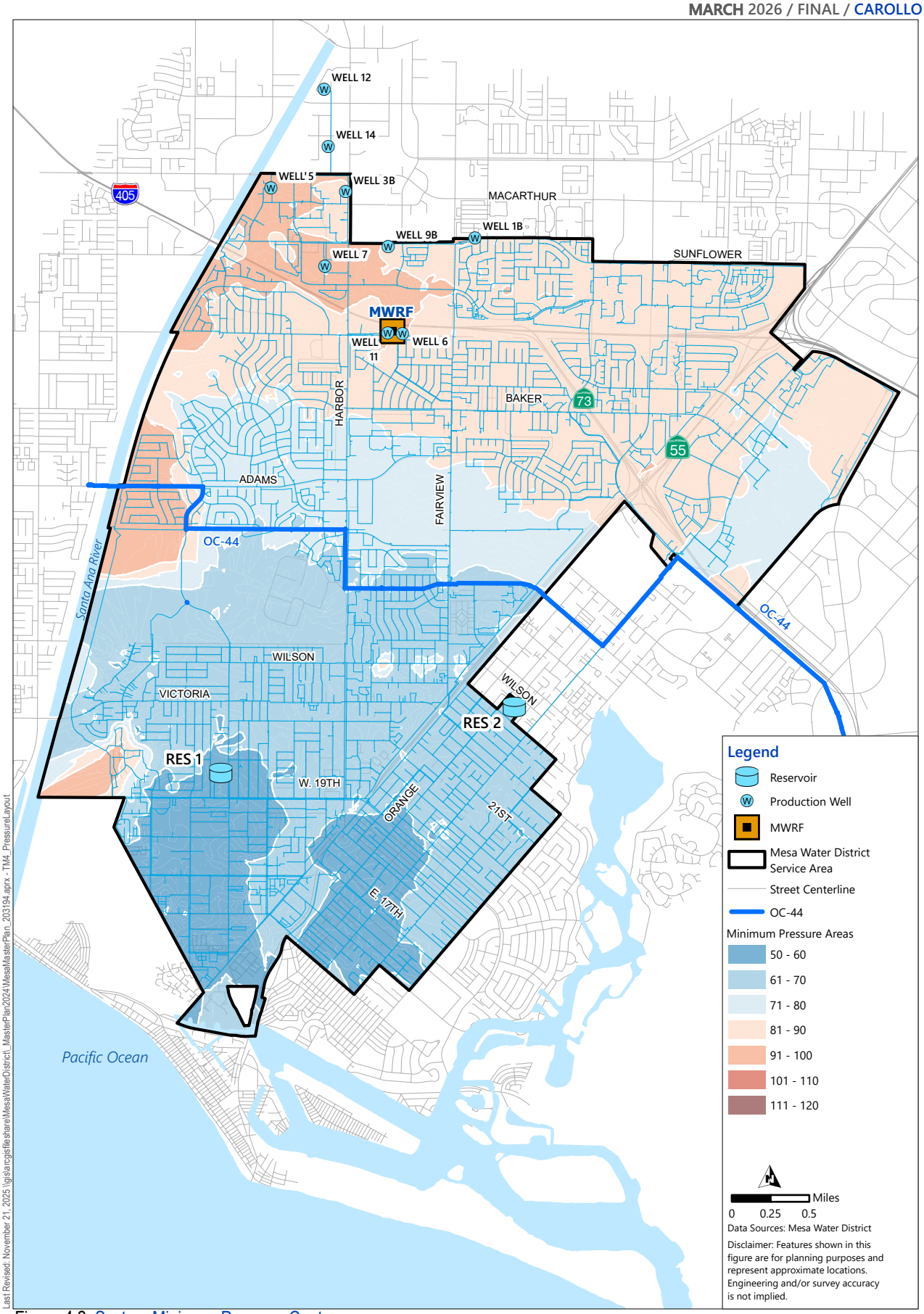


Figure 4.2 System Minimum Pressure Contours

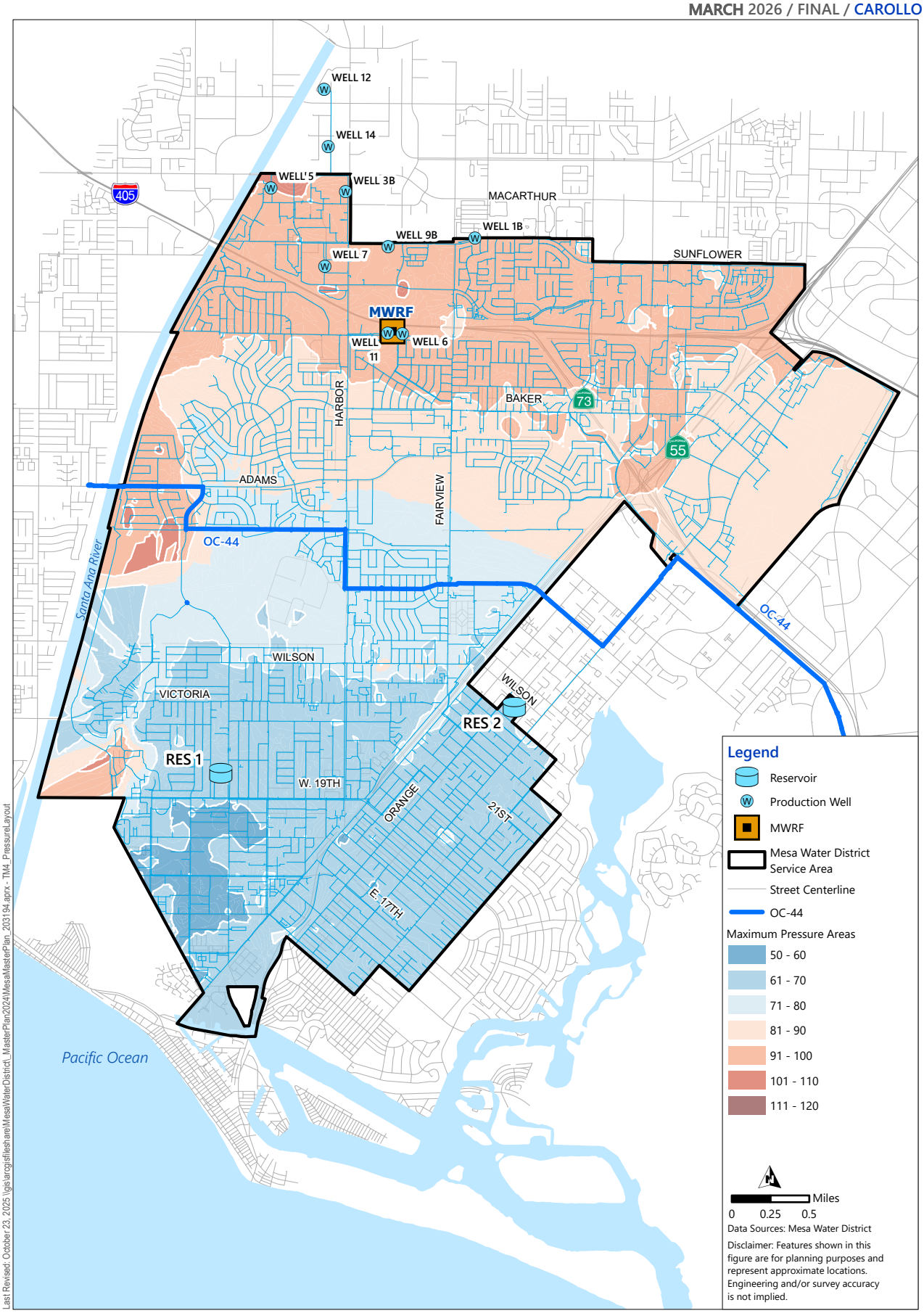


Figure 4.3 System Maximum Pressure Contours

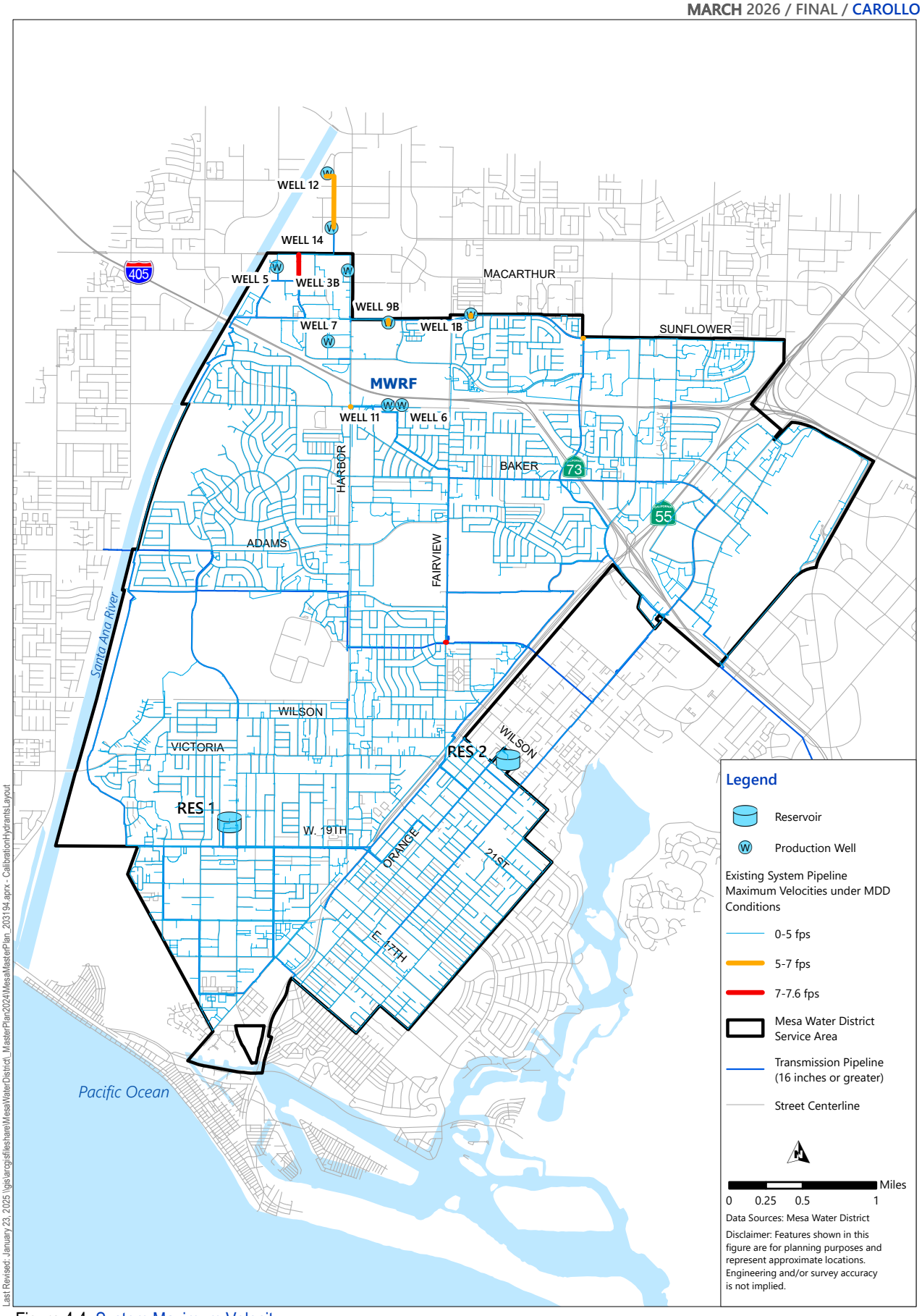


Figure 4.4 System Maximum Velocity
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4.4.3 Fire Flow Analysis

The fire flow analysis was performed under maximum day demand conditions, which typically occur during the summer. This demand condition is referred to as "maximum day demand plus fire flow".

Ten locations in the distribution system were selected for this analysis that represent a mix of spatial distribution and areas of interest, including areas with lower static head and land use types requiring high fire flow protection capacity, such as medical facilities, the airport, and schools, where the demand for reliable fire flow is critical.

The results of available fire flow at the minimum residual pressure of 20 psi both at the hydrant and the pipe are summarized in Table 4.2, while the results are spatially shown on Figure 4.5 and Figure 4.6. As shown, the available fire flow at 20 psi is above the required criteria for each of these locations in Mesa Water's distribution system pipelines. However, due to head losses in the hydrant lateral, the available flow at a single hydrant is below the required criteria at most locations. To meet the required fire flow at these locations, the system receives flow from multiple hydrants or from a dedicated fire lateral.

Table 4.2 Fire Flow Analysis Results

Model Run No.(1)	Hydrant Grid ID	Hydrant Label	Location	Fire Flow Criteria at 20 psi (gpm)	Pipeline Diameter (inches)	Available Flow (gpm) at 20 psi (Pipe)	Available Flow (gpm) at 20 psi (Hydrant)
1	62	50A	South Coast Plaza(2)	6,000	10	> 7,000	1,720
2	84	23A	John Wayne Airport Terminal(2)	6,000	12	6,650	1,675
3	68	21A	John Wayne Airport Fuel Tank Farm	6,000	8	6,450	1,675
4	13	12A	Santa Ana Riverbed (north)	Undefined	6	2,750	1,500
5	7	54A	Santa Ana Riverbed (south)(2)	Undefined	12	> 7,000	1,540
6	35	16A	Triangle Square(2)	3,000	16	> 7,000	1,360
7	22	4A	Industrial Area - Monrovia & 16th	4,000	6	6,250	1,250
8	95	41A	Industrial Area - 17th & Tustin	4,000	10	> 7,000	1,340
9	42	28A	Orange Coast College	4,000	8	4,650	1,480
10	84	39A	Estancia High School(2)	4,000	16	> 7,000	1,500

Notes:
(1) Locations correspond with numbering shown on Figure 4.5 and Figure 4.6, while details on Facility IDs are included in Table 4.4. of Technical Memorandum 4 (Appendix E).
(2) Existing fire service at location.

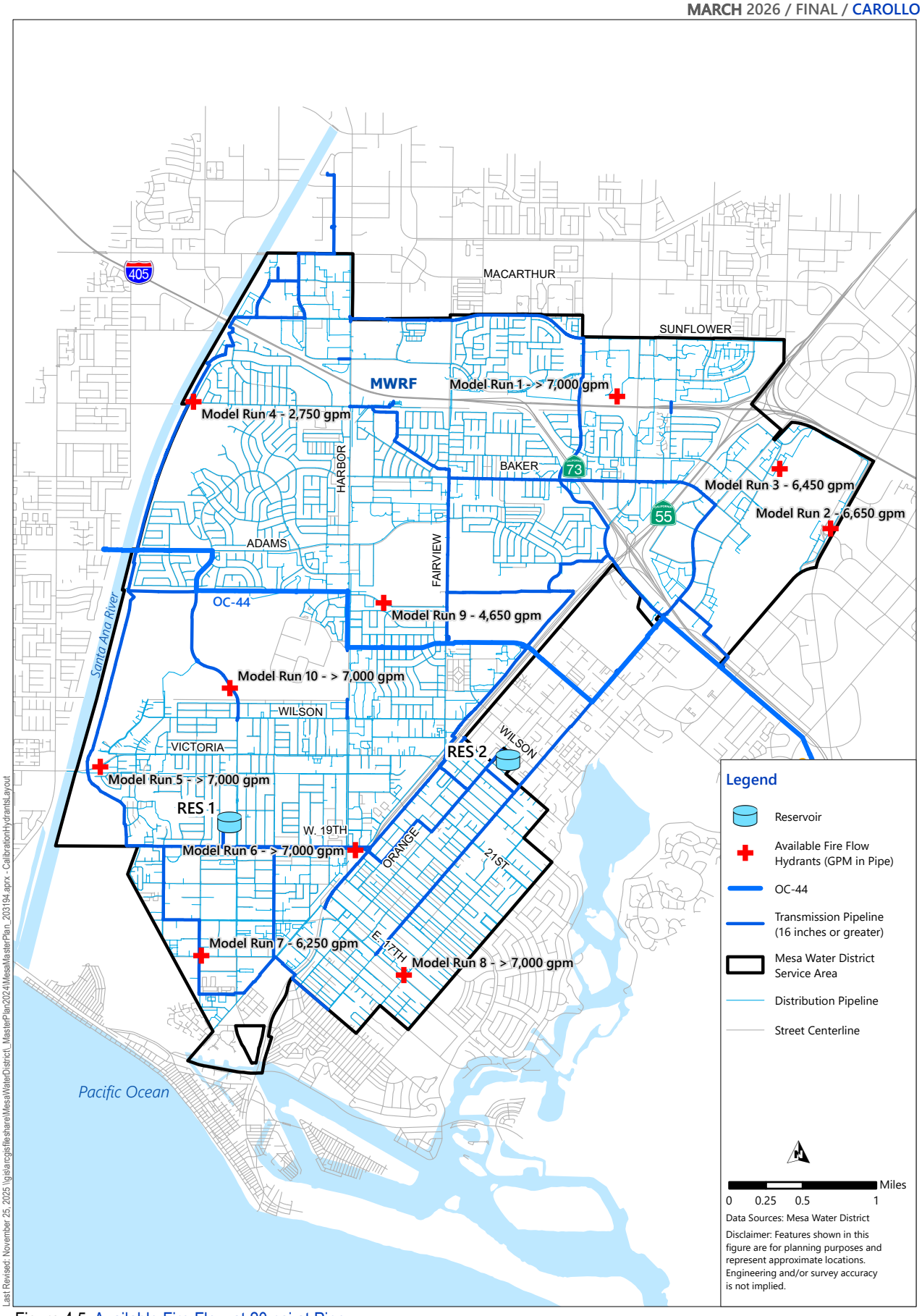

Figure 4.5 Available Fire Flow at 20 psi at Pipe

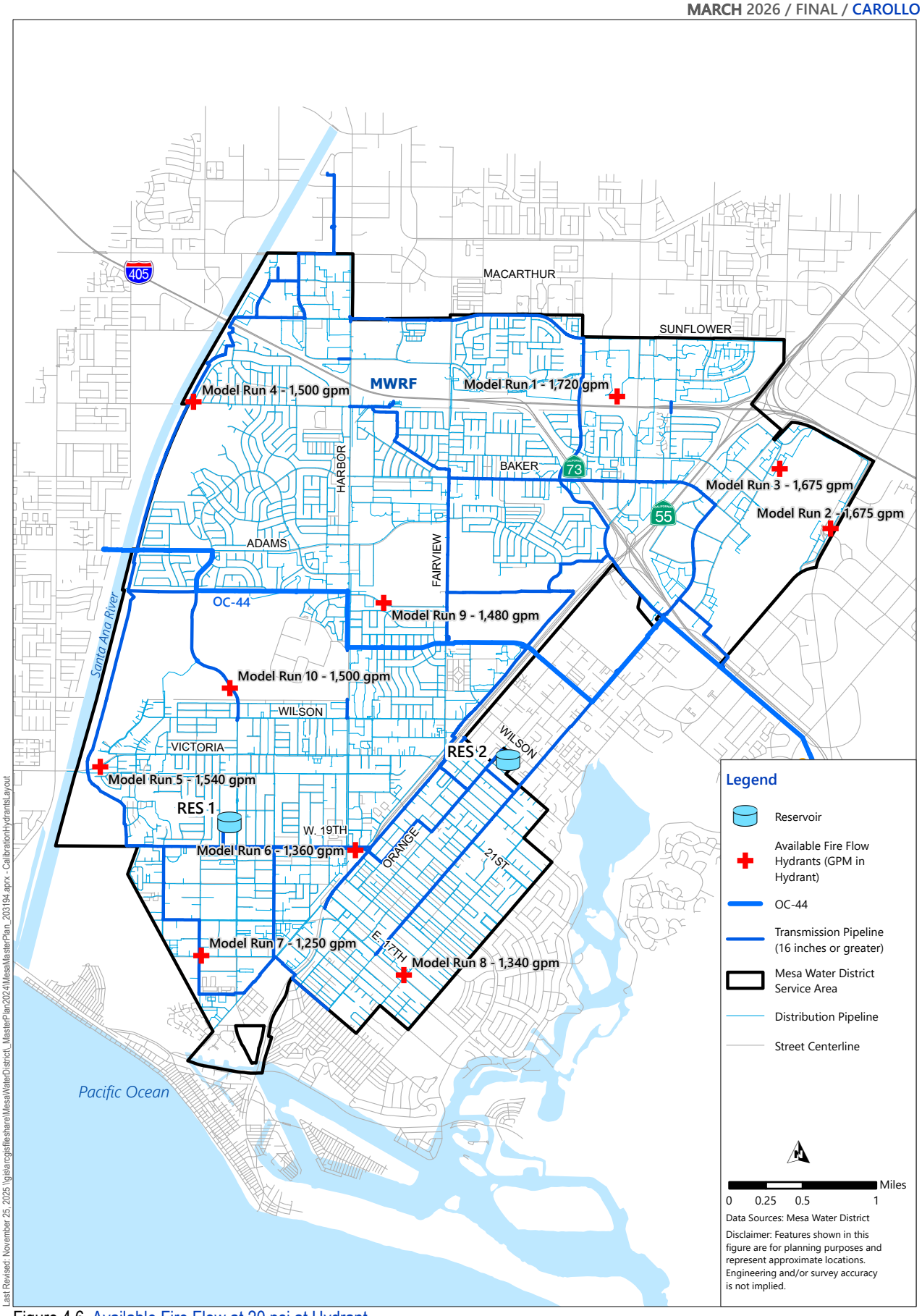

Figure 4.6 Available Fire Flow at 20 psi at Hydrant

4.5 Distribution System Capacity Enhancement Recommendations

Based on the distribution system analysis, it can be concluded that the system can meet its maximum day demand plus fire demands at the main pipe connecting to the hydrant lateral. Although the flow requirements at individual hydrants cannot be met in most cases, it is effectively addressed using the existing distribution system infrastructure. By utilizing system looping and using multiple hydrants as fire hydrants already placed every 300 feet, the hydraulic evaluation criteria is met. Moreover, there are established fire service lines at critical facilities. Collectively, the system provides adequate coverage and capacity to meet fire flow needs for the locations analyzed as part of this CIP Update. A comprehensive fire flow analysis was performed in the 2014 Water Master Plan which evaluated each hydrant and pipeline segment. The recommendations from this analysis are included in **Appendix E**.

CHAPTER 5 FACILITIES CONDITION ASSESSMENT

Desktop and field condition assessments were conducted to determine the current condition and improvement needs of Mesa Water's existing water system facilities, distribution system, and transmission systems. This information was used to generate a basis of renewal needs to be considered with other Master Plan findings, such as supply and demand forecasts.

To assess the condition of the existing facilities, various specialty subconsultants and test methods were applied. Vaults were visually inspected by V&A, Reservoirs 1 and 2 were inspected by divers from Blue Locker Diving, and visual condition of the reservoirs, wells, cathodic protection systems were assessed by senior engineers from Carollo in the structural, mechanical, and electrical and instrumentation control disciplines.

Condition assessment methods for each of the facility types are described in the following paragraphs. Details of the studies are included in **Appendices D, I,** and **J**.

5.1 Distribution System Condition Assessment

Mesa Water's Pipeline Integrity Program defines the methodology for pipeline management decisions. The pipeline integrity program defines pipeline cohort groups as pipelines of similar installation date, materials, and diameter, which were often installed as one project, and are expected to have similar performance. The pipeline integrity program uses a combination of break history and condition assessment to determine the pipeline cohort groups' remaining useful life and drive "operate" versus "replace" decisions. Mesa Water's break thresholds are provided in Table 5.1.

Table 5.1 Pipeline Integrity Program Thresholds for Condition Assessment and Replacement

Pipeline Use	Condition Assessment		Replacement Consideration		
	Number of Breaks	Breaks Per Mile Per Year Exceeds	Remaining Useful Life	Condition Related Breaks	Breaks Per Mile Per Year Exceeds
Distribution (Diameter Less than 16 inches)	3	0.2	Less than 10 Years	5	1.0
Transmission (Diameter 16 inches or greater)	2	0.2	Less than 10 Years	3	0.5

If a pipeline cohort reaches its break threshold, condition assessment is triggered. If condition assessment shows that the pipeline cohort is with 10 years of its remaining useful life and has condition-related breaks or a break rate that exceeds its assigned threshold, the pipeline is considered "failed" and therefore considered for rehabilitation or replacement.

As of May 2025, 95 percent of Mesa Water's pipelines (approximately 284 out of 299 miles) have not exceeded the threshold for triggering condition assessment. Where condition assessment has been performed, no pipelines exceeded the threshold that would trigger scheduling the pipe alignment for replacement.

To support the pipeline integrity program, Mesa Water has a proactive leak detection program to proactively find leaks that have not yet surfaced. Mesa Water contracts for acoustic leak detection at a rate of 100 miles of pipeline per year, so the 317 miles of pipeline is surveyed in approximately 3 years. The proactive leak detection program has discovered leaks on service lines and at customer meter connections but has not discovered a leak on a main pipeline. This reinforces Mesa Water's assessment that the pipelines are in good condition.

As part of this CIP Update, Carollo reviewed the pipe break history data, leak detection program reported results, and pipe integrity reports to identify distribution system piping with higher potential for failure. For asbestos cement (AC) pipe, a Pipeline Integrity Testing Program report (HDR, November 2017), was provided that describes a methodology for Mesa Water to follow for testing, analysis, and decision-making. The results of the testing, summarized in a 2021 technical memorandum to Mesa Water (HDR, February 2021), indicate that the tested AC pipe samples have remaining useful life ranging from 35 to over 150 years (assuming a linear decay rate) with an average remaining useful life of 82 years.

In addition to the AC pipe sample testing, Mesa Water also conducted a system-wide leak detection program between 2020 and 2023. The leak detection program covered the distribution and transmission pipes system-wide. The only leaks found from the acoustic testing were associated with service laterals and leaks at customer meter connections. No leaks were found on the water main piping.

Mesa Water tracks water main repairs due to breaks and leaks, categorized by cause (contractor hit, fitting failure, or other pipe failure). Pipes with a history of failure not caused by construction activity are more likely to have recurring failures. Water main repairs due to breaks and leaks are also documented in Mesa Water's GIS.

5.2 Transmission System Condition Assessment

Mesa Water's transmission system is depicted on Figure 5.1. It consists of 43 miles of pipeline that are 16-inch in diameter or greater, and the associated cathodic protection, valves, and appurtenances. The distribution of diameter and material by installation decade and quantity by length are shown in Figure 5.2 and Figure 5.3, respectively.

The evaluation of the transmission system includes summarizing the inventory of assets, developing and applying an asset management framework analytical model for the water mains, condition assessments of the cathodic protection system, air vacs and blow-offs, and recommendations for system valves.

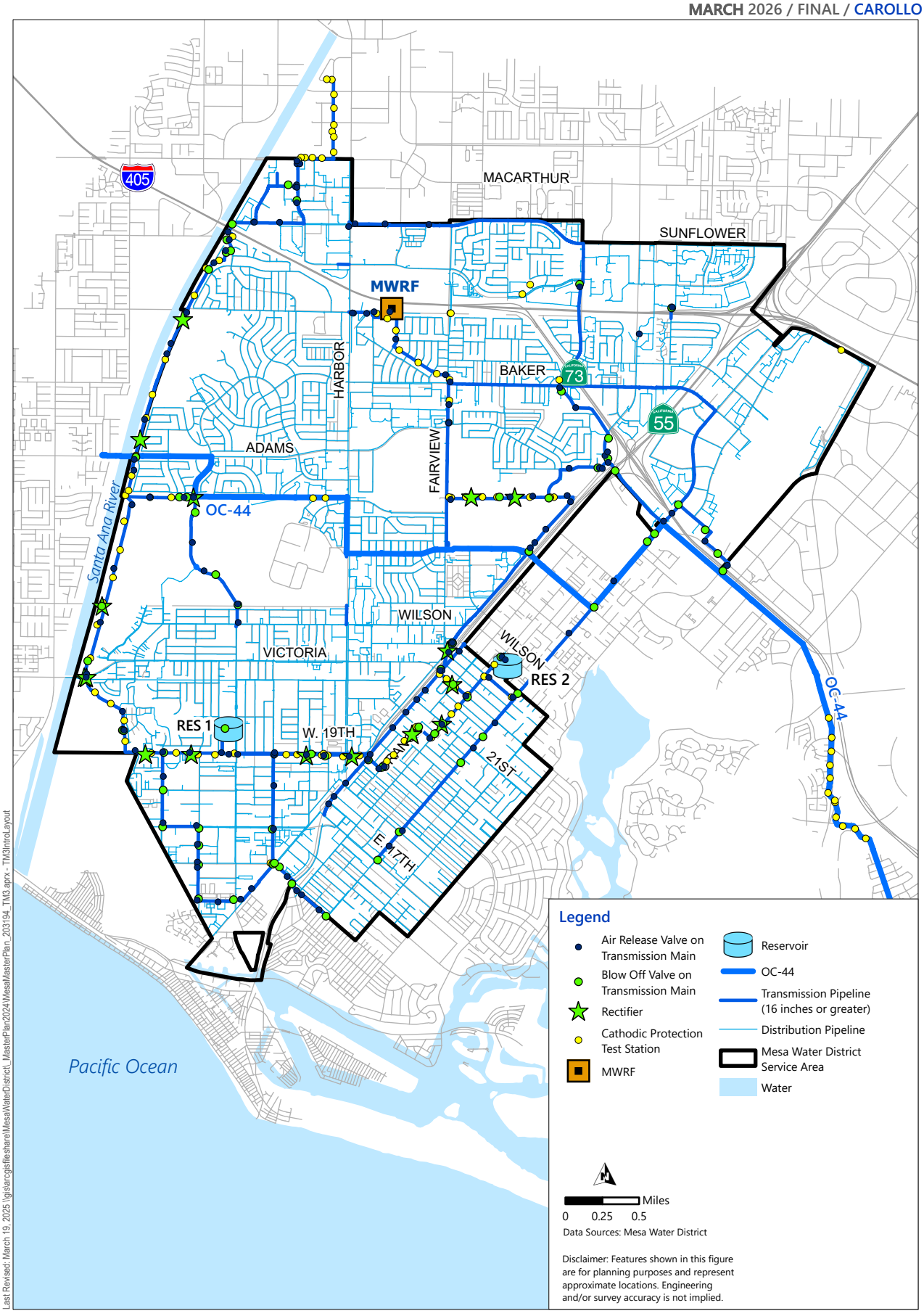

Figure 5.1 Transmission System Map
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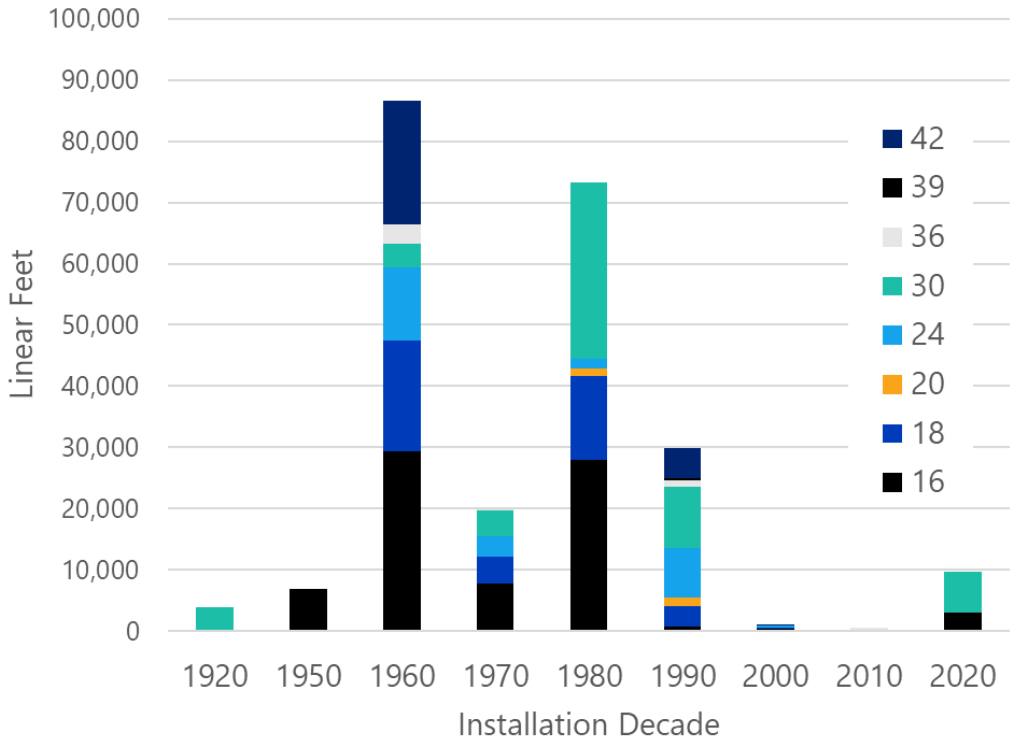


Figure 5.2 Transmission Pipeline Length by Diameter and Installation Decade

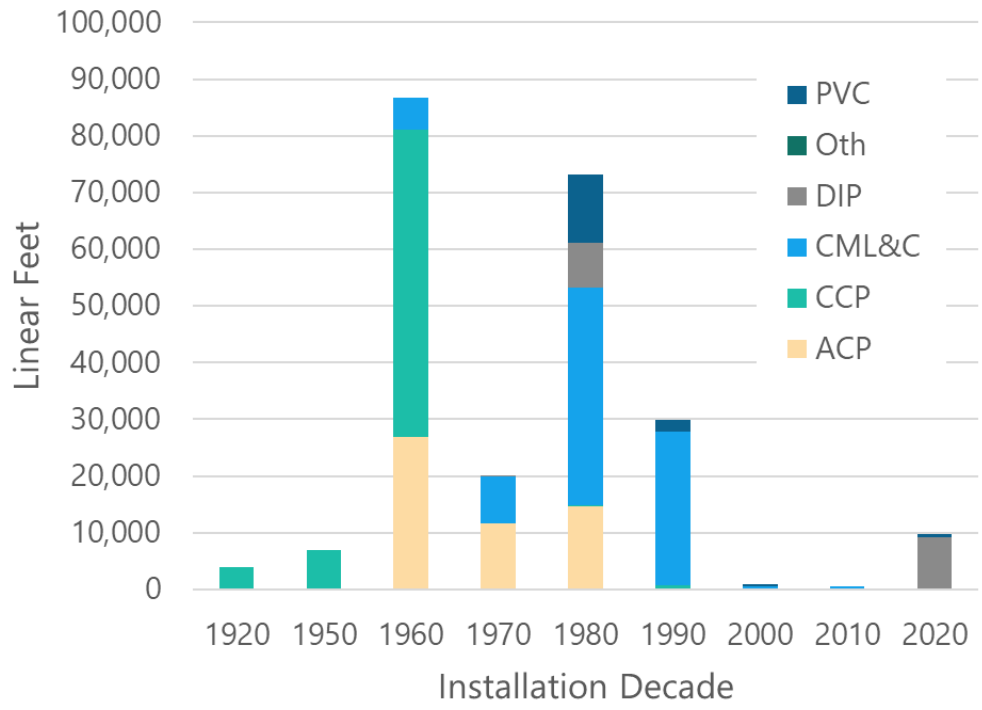


Figure 5.3 Transmission Pipeline Length by Material and Installation Decade

The likelihood of failure and consequence of failure scores from the asset management framework described in Section 7.3 were used to assign each asset to a prioritization category using the matrix illustrated in Figure 5.4. The upper right section, "Highest Priority", represents assets identified for urgent attention, whereas the bottom left, "Lowest Priority", represents assets that are new and of low consequence. The low consequence of failure assets typically includes assets that are operated as run-to-failure, and of these, those that are in good condition may also not have assigned preventative maintenance. Assets that are in higher priority categories are candidates for routine monitoring and prioritization for corrective or preventative action, which includes maintenance, rehabilitation, or replacement.

For linear assets, such as the water transmission system pipelines, Table 5.2 and Table 5.3 define the criteria and corresponding scores for each likelihood of failure factor and consequence of failure factor respectively. These criteria may also be used to assign failure scores to distribution system pipelines. Detail description of these criteria and scoring are included in **Appendix D**.

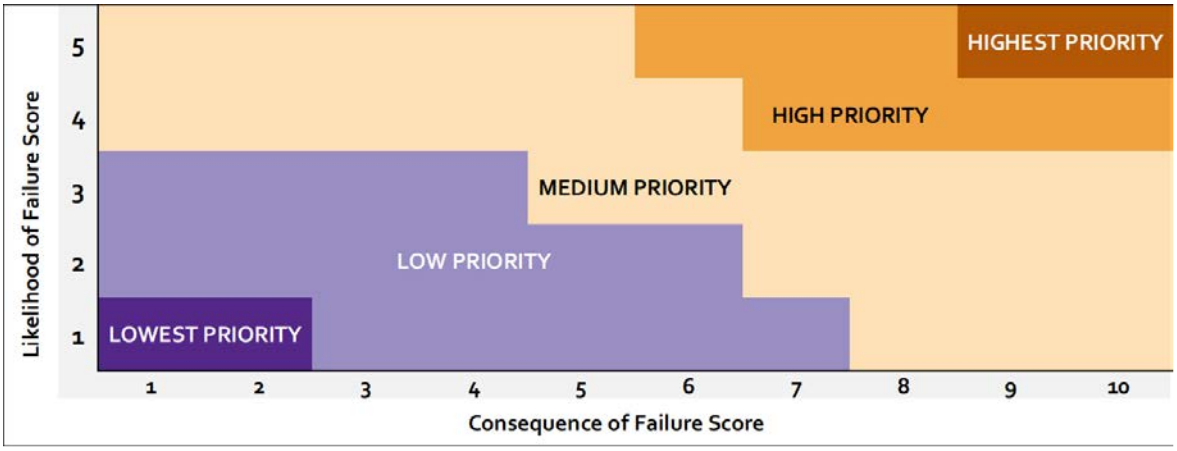


Figure 5.4 Likelihood of Failure and Consequence of Failure Matrix for Prioritization Categories

Table 5.2 Linear Likelihood of Failure Criteria

Category	Factor	Description	Score(1)				
			1	2	3	4	5
Condition	Remaining Useful Life (L1)	Remaining useful life based on pipe age and material or field inspection analysis.	> 50 years	21 to 50 years	11 to 20 years	4 to 10 years	≤ 3 years
	Pipe Integrity Program Breaks (L2)	Pipes evaluated on count or occurrence of breaks.	No Breaks	N/A	Low Breaks	N/A	High Breaks
Performance and Operations	Flow Deficiency/ Hydraulic Performance (L3)	Hydraulic model results for existing pipe capacity deficiencies.	Meets	N/A	N/A	Deficient (2035)	Deficient (now)

Notes:
(1) Likelihood of Failure score is calculated as the maximum score value of their respective factors.

Table 5.3 Linear Consequence of Failure Criteria

Category	Factor	Description	1 to 5 Score (1 to 10 equivalent shown in brackets)[2]				
			1: Negligible [1]	2: Minimal [2-3]	3: Moderate to Significant [4-7]	4: High [8-9]	5: Critical [10]
Financial Impact	Pipe Size[1](C1)	Pipes evaluated based on their diameter as a surrogate measure for financial impact from repair needs.	≤ 6 inches	8 to 12 inches	14 to 20 inches	24 to 30 inches	> 30 inches
Loss of Service	Flow Rate (C2)	Pipes evaluated based on their average flow as a surrogate measure of magnitude of service loss.	Flow Rate ≤ 200 gpm	200 gpm < Flow Rate ≤ 650 gpm	650 gpm < Flow Rate ≤ 1,850 gpm	1,850 gpm < Flow Rate ≤ 3,550 gpm	Flow Rate > 3,550 gpm
Transportation	Road Type (C3)	Pipes evaluated based on proximity to road types.	All other pipes	Intersects within a 15-foot buffer of alley road centerlines	Intersects within a 20-foot buffer of local road centerlines or within 15 foot buffer of private road centerlines	Intersects within a 30-foot buffer or arterial roads centerline	Intersects within a 200-foot buffer of interstates, freeways or expressway centerlines
Environmental	Environmentally Sensitive Area (C4)	Pipes evaluated based on a proximity to sensitive hydrological areas.	All other pipes	NA	NA	Intersects within a 500-foot buffer for Creek, Canal/ Ditch, Flood Control Structure	Intersects within a 500-foot buffer for Stream, River, Lake, Pond, Wetland, or Reservoir

Notes:
(1) The transmission system pipes are 16-inches to 36-inches in diameter. Import transmission line OC-44 has some 42-inch sections.
(2) Consequence of Failure score is calculated as the maximum score value of their respective factors using a 1 to 10 scale.

5.2.1.1 Likelihood of Failure

The overall likelihood of failure score was assigned from the maximum of the three likelihood of failure factors, namely:

- **L1 - Remaining Useful Life:** Based on the desktop analysis it was determined that only two percent of pipelines are projected to be at the end of their remaining useful life, while five percent are projected to reach the end of their remaining useful life within the next 10 years.
- **L2 - Pipe Integrity Program Breaks:** Based on break data from 2011 to 2024 shown in Figure 5.6, a total of 11 main breaks were identified on the transmission system.
- **L3 - Flow Deficiency:** Based on the hydraulic distribution system analysis conducted with the hydraulic model as described in Technical Memorandum 4 (**Appendix E**) no hydraulic deficiencies were identified for transmission system piping under current or future demand conditions.

The likelihood of failure evaluation results are summarized in Figure 5.5. As shown in Figure 5.5, only 3 percent of the total system pipeline length is assigned the highest overall likelihood of failure score of five. Additionally, Figure 5.7 displays the likelihood of failure results spatially.

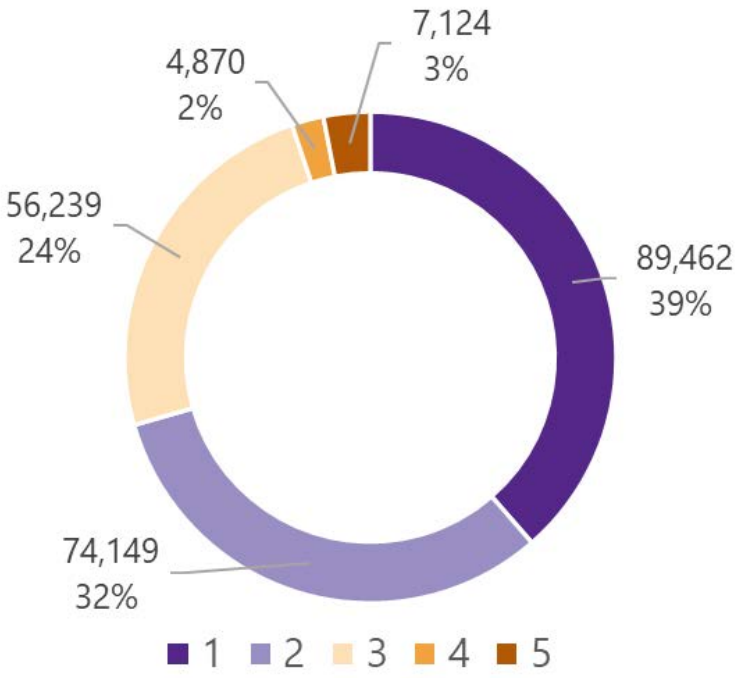


Figure 5.5 Transmission Pipeline Length (linear feet) by Overall Likelihood of Failure Score

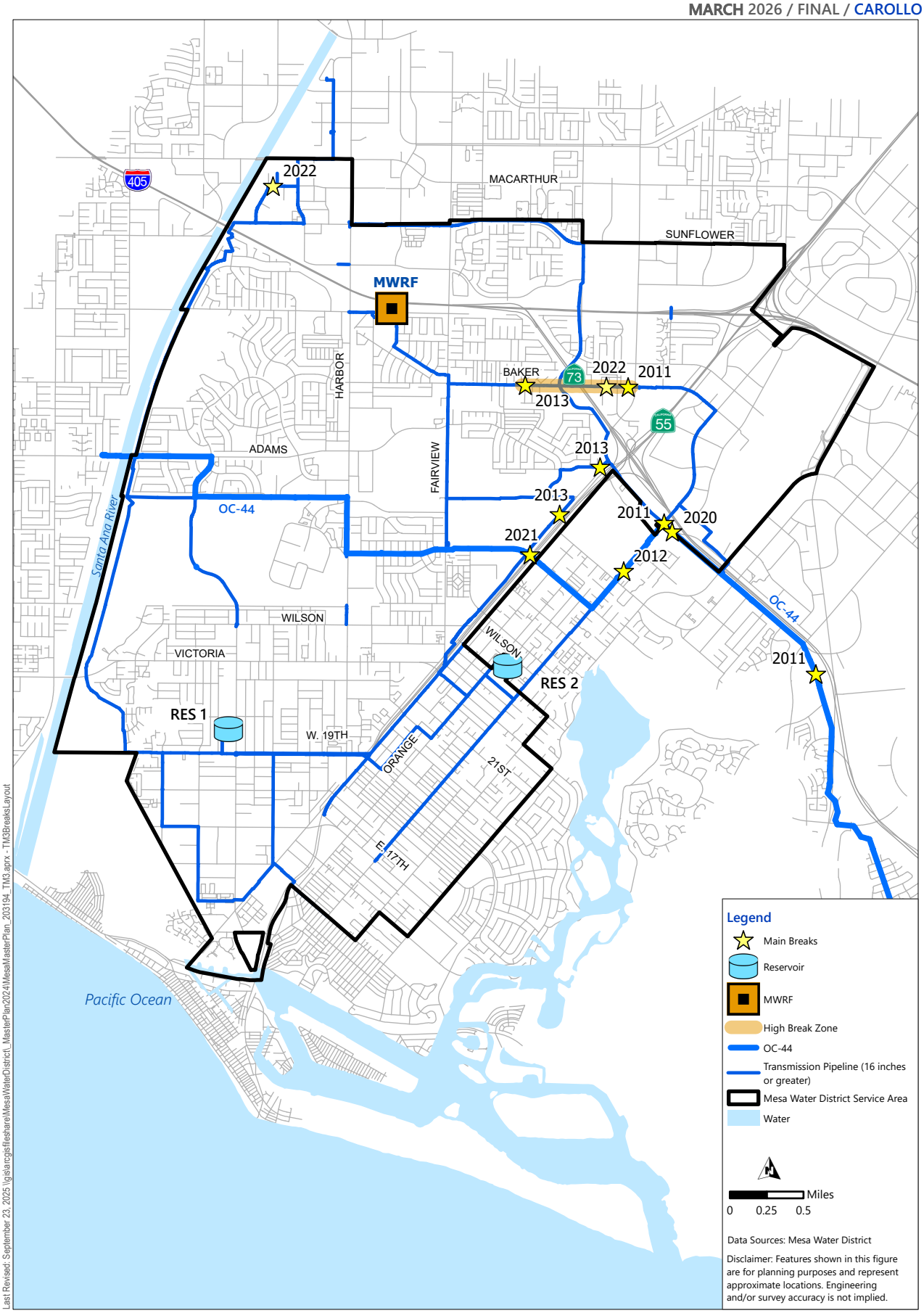


Figure 5.6 Transmission Pipeline Break Assessment (2011 - Present)

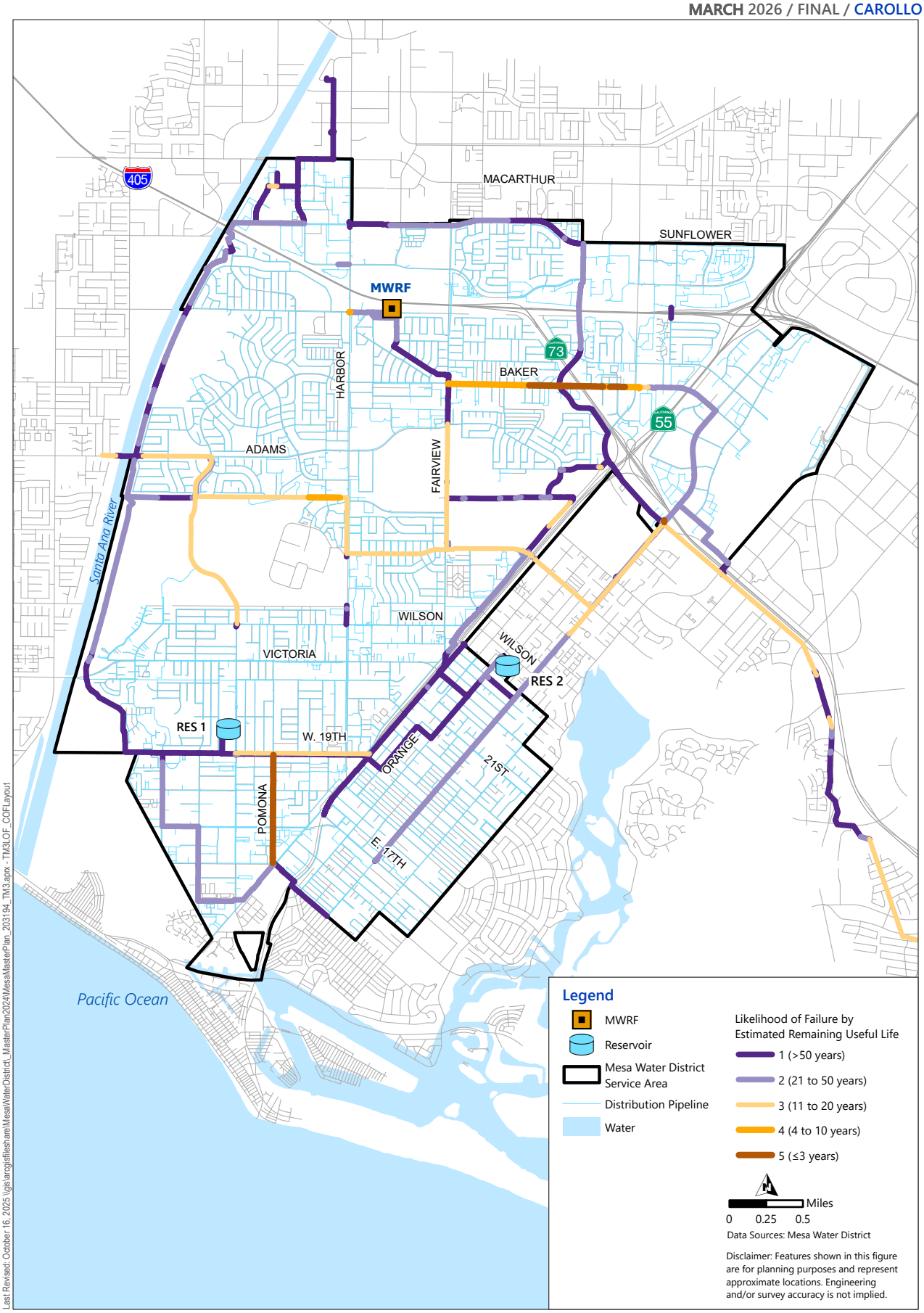


Figure 5.7 Transmission Pipeline Likelihood of Failure Map

5.2.1.2 Consequent of Failure

The overall consequence of failure score was assigned from the maximum of the four consequence of failure factors, namely:

- **C1 Pipe Size:** Since the desktop analysis is limited to transmission pipelines of 16-inches and larger, the value of C1 is three or greater per the definition listed in Table 5.3.
- **C2 Flow Rate:** Pipes were evaluated based on their average flow as a surrogate measure of magnitude of service loss, resulting in a less than 22 percent receiving a score of 4 or 5, while more than 35 percent (15 of 43 miles) received the lowest consequence score of 1.
- **C3 Road Type:** Considering the proximity of pipelines to road types, over 77 percent of Mesa Water's pipelines fall within the buffer distance definitions of arterial roads (score 4) and freeways (score 5).
- **C4 Environmentally Sensitive Area:** Considering the proximity of pipelines to sensitive hydrological areas, about 30 percent of Mesa Water's pipelines fall within the buffer distance definitions of high (score 4) or critical (score 5) impact water bodies or structures.

The overall consequence of failure results of the desktop evaluation with a breakdown by length as summarized in Figure 5.8. As shown, 23 percent of the total system pipeline length is assigned the highest overall consequence of failure score of five. Additionally, Figure 5.9 displays the likelihood of failure results spatially.

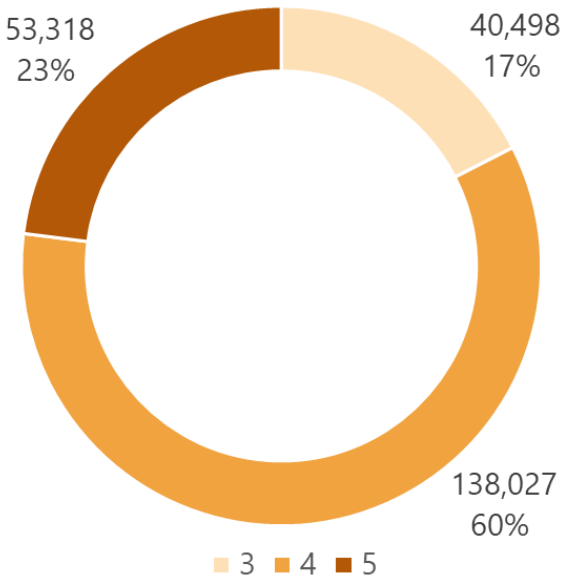


Figure 5.8 Transmission Pipeline Length (Linear Feet) by Overall Consequence of Failure Score

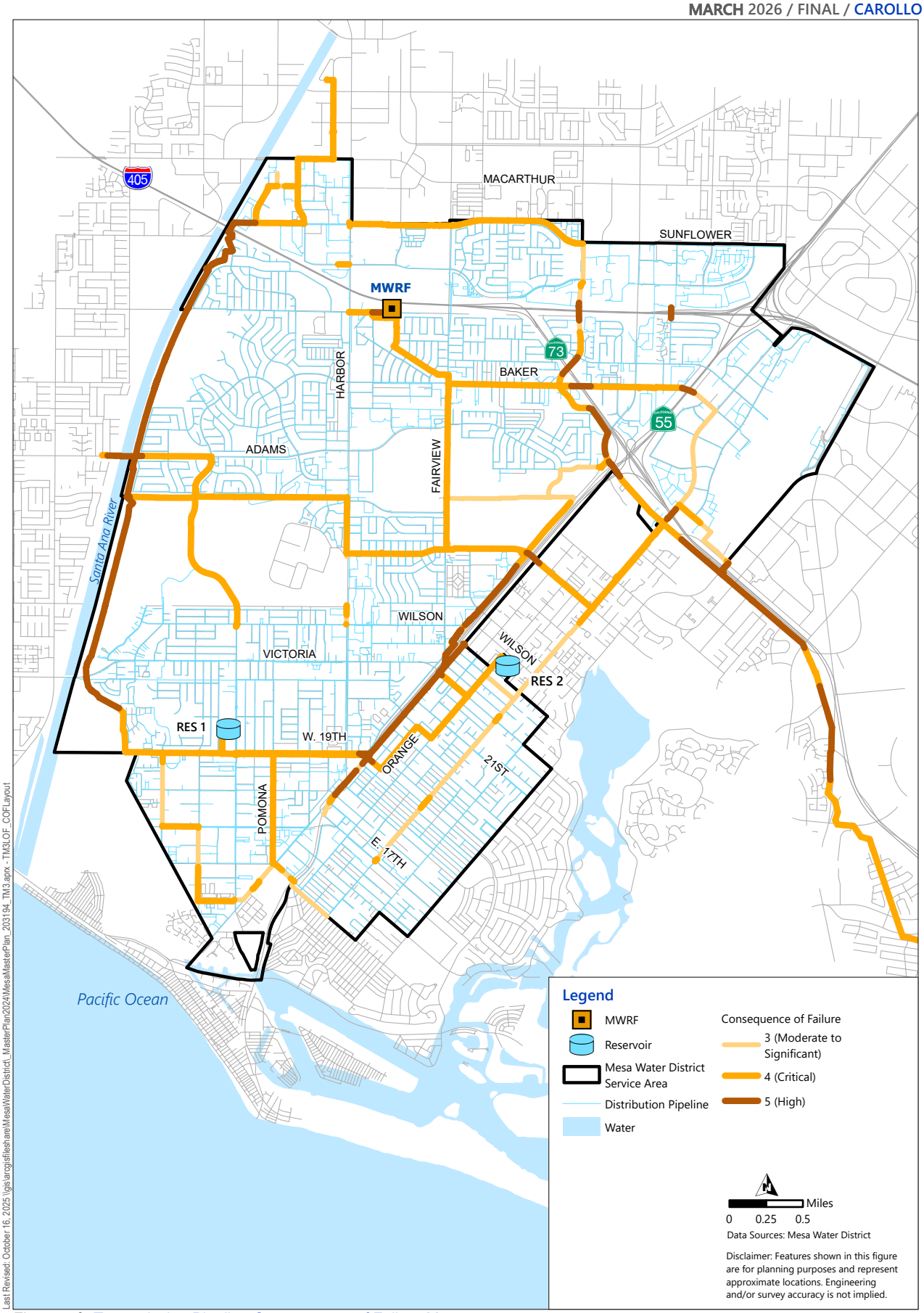


Figure 5.9 Transmission Pipeline Consequence of Failure Map

5.2.2 Prioritization Categories

The prioritization category assignments were compiled by combining the likelihood and consequence of failure scores. The results from the desktop evaluation with a breakdown by length and percent of total transmission pipe length is shown in Figure 5.10. As shown, 95 percent of the total system length falls in the low (2) to medium (3) prioritization categories, while only about five percent of transmission pipe length were classified as high or highest priority.

The locations of these high- and highest-priority pipelines are spatially shown on Figure 5.11. The highest priority pipe segments are along Baker Street and Pomona Avenue. On Baker Street, the high- to highest-priority assignments are from the high likelihood of failure score driven by the projected low remaining useful life and high break count, along with having a high consequence of failure score driven mainly by proximity to an arterial (4) or interstate (5) road type. Pomona Avenue is assigned to the highest priority category because of its high likelihood of failure score driven by being in service beyond its expected useful life (pipe was installed in 1926 with an estimated useful life of 75 years) and high consequence of failure score due to its 30-inch diameter and proximity to an arterial road type.

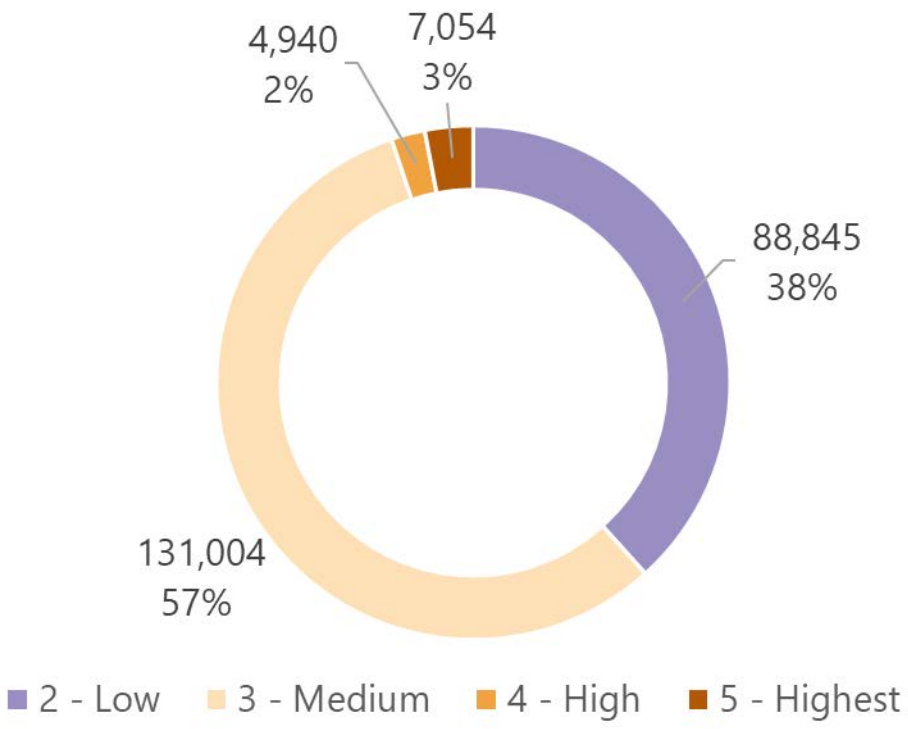


Figure 5.10 Transmission Pipeline Length (Linear Feet) by Prioritization Category

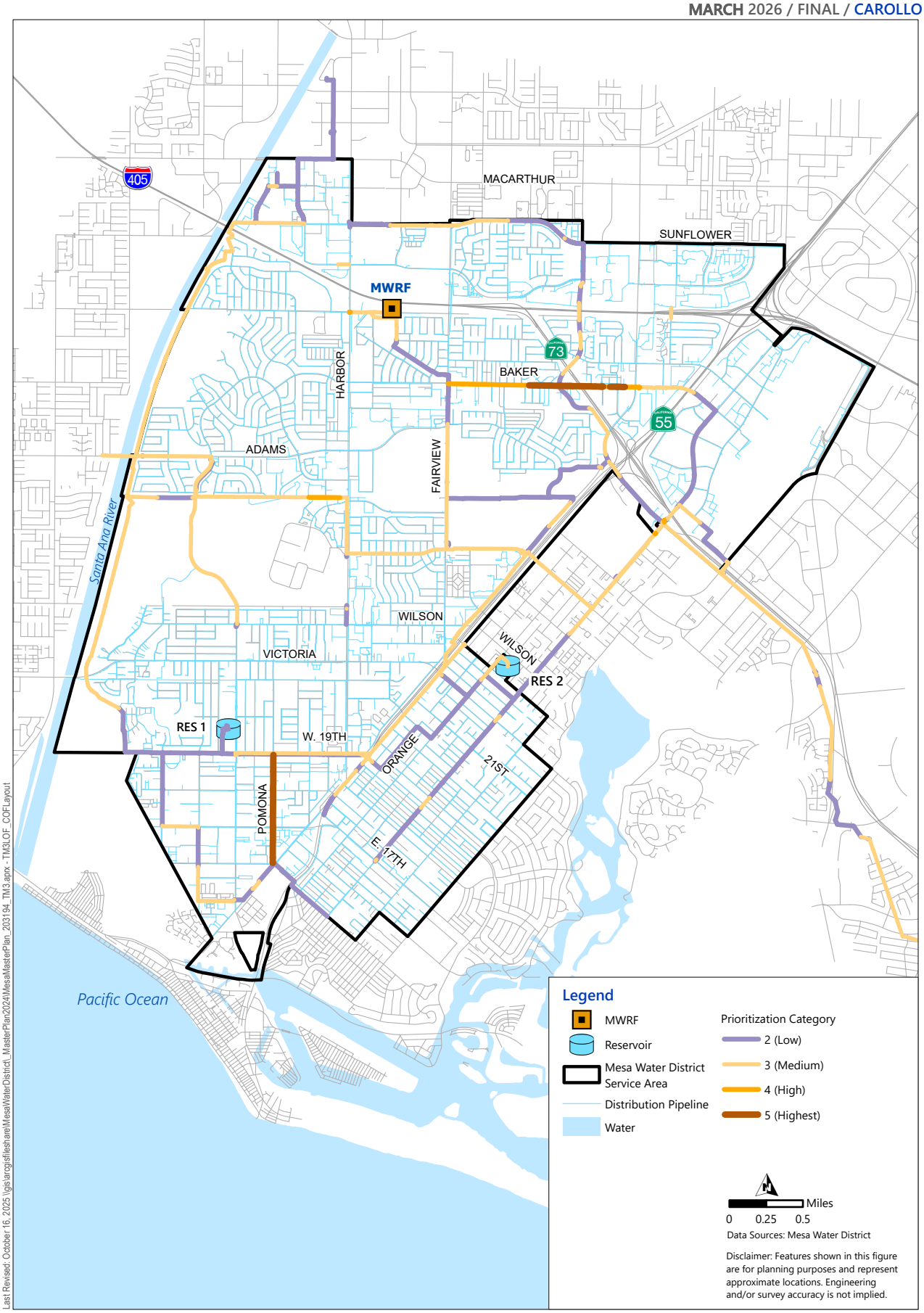


Figure 5.11 Transmission Pipeline Prioritization Map

5.2.3 Cathodic Protection Assessment

The objective of the cathodic protection system testing was to determine the remaining functionality of the cathodic protection systems, identify deficiencies, and provide recommendations for restoring the cathodic protection system to a protective status.

The cathodic protection assessment conducted as part of the CIP Update included the following activities:

- Baseline assessment (potential survey, rectifier testing, isolation testing, anode checks).
- Isolation Testing using pipe locate method from unlocatable test stations.
- Continuity testing using CS-10 to determine current requirements for adding a cathodic protection system in the future.
- Close-interval survey, which was not completed due to terrain and additional factors encountered during field inspection.
- Review of construction drawings for a cathodic protection system with 13 test stations that was installed in 2022 on a pipeline connecting Wells 12 and 14, known as the Chandler and Croddy Pipeline.

The locations of the cathodic protection test stations and rectifiers as represented in Mesa Water's GIS data along the transmission alignments are depicted on Figure 5.12. As part of the CIP Update, field condition assessment of the existing cathodic protection system for the following transmission main systems was conducted:

- **N-S Feeder:** The cathodic protection system was found to be in poor condition and in need of an overhaul. Only 18 of 36 test stations could be located, and five were deemed not part of the N-S Feeder. The entire pipeline was below the negative 850 millivolts criteria, and the soil corrosivity ranged from mild to very high. Four of the seven rectifiers were unpowered. The anode groundbed is recommended for replacement due to its condition and low output. Recommendations are phased by priority, with the highest priority being to replace all the rectifiers that are not working.
- **E-W Feeder:** The 2018 HDR Report showed that this pipeline was underperforming across the entire line, and no changes had been made to the system by Mesa Water. The 2018 HDR Report remains valid, and no additional cathodic protection assessment was conducted.

  Eastside Feeder: The 2018 HDR Report showed that this pipeline underperformed across the entire line, and no changes had been made to the system by Mesa Water. The 2018 HDR Report remains valid, and no additional cathodic protection assessment was conducted.
- **Arlington:** The cathodic protection system on this line was found to be meeting protective criteria, despite one rectifier being inoperable. It is recommended that this pipeline continue to be maintained to alleviate corrosion.
- **OC-44:** The cathodic protection system on this line was found to be meeting protective criteria at eight of the test stations, but not at STA 404+42. It is recommended that the OC-44 line continue to be tested and monitored.

- **Bristol Bear:** The functionality of the cathodic protection system for this water main appeared similar to what was reported in the 2018 HDR Report. It is recommended that these anodes be replaced, and a new test station installed for the missing station at STA 5+38.
- **Tanager Drive:** The functionality of the cathodic protection system for this water main appeared similar to what was reported in the 2018 HDR Report. It is recommended that these anodes be replaced.
- **Cape Apartments:** The functionality of the cathodic protection system for this water main appeared similar to what was reported in the 2018 HDR Report. It is recommended that these anodes be replaced, and a new test station installed for the missing station at STA 0+52.
- **Chandler and Croddy:** The cathodic protection field assessment results for this pipeline indicate that it is protected according to industry criteria, and the anodes all show that they are operative. It is recommended that during the next cathodic protection test, test boards are installed at each test station.
- **Orange Avenue:** Testing identified that continuity does exist on this pipeline, and that a cathodic protection system is likely necessary. Testing at two test stations revealed that a galvanic system with current outputs in the range of 30-60 milliampere (mA) would protect the line.
- **Conway Avenue:** Testing identified that continuity does exist on this pipeline, and that an impressed current cathodic protection system may be necessary.

Details of the transmission system, cathodic protection system assessment, including the number of test stations, rectifiers, and soil conditions are listed in Table 3.8 of Technical Memorandum 3 **(Appendix D**).

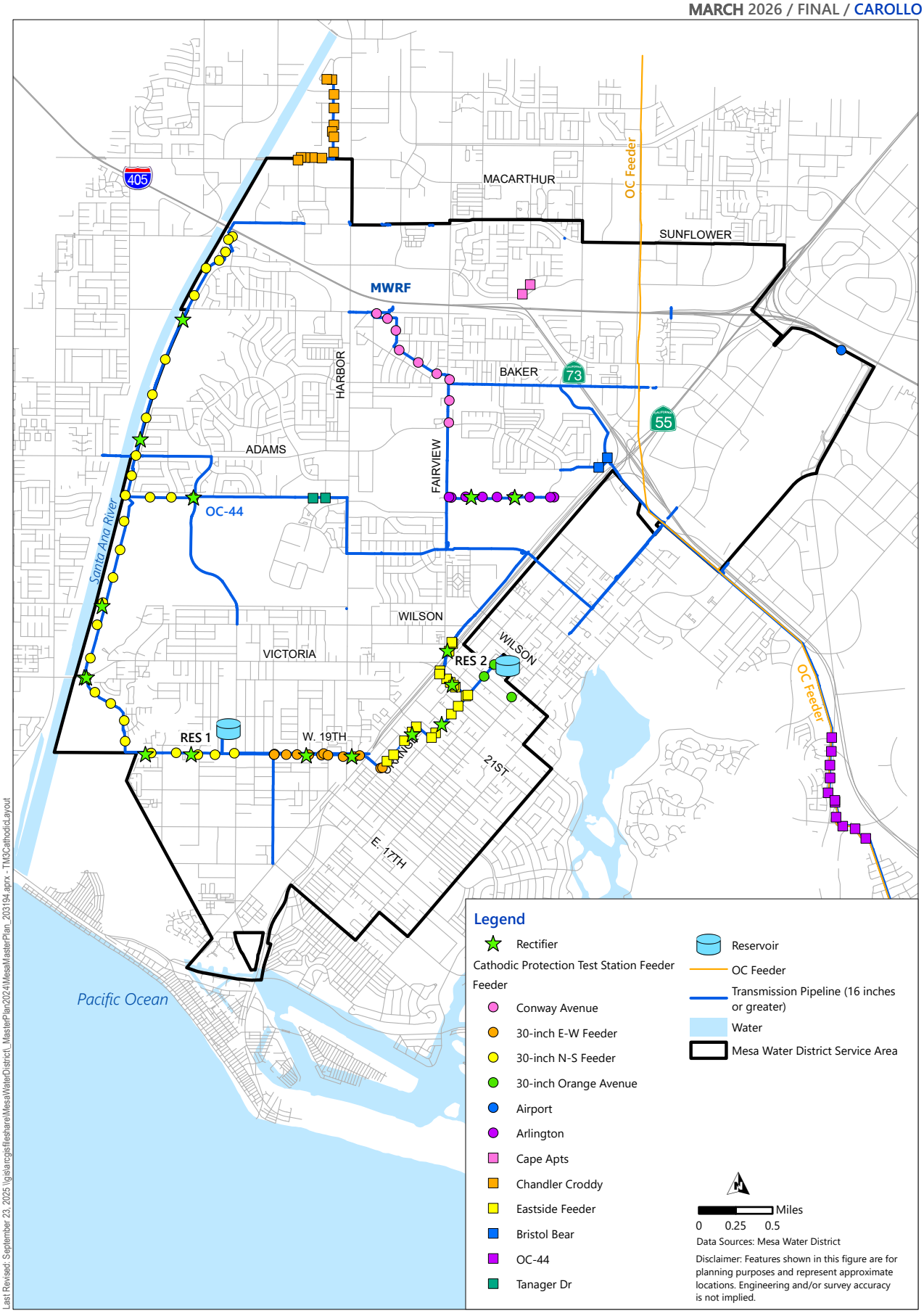


Figure 5.12 Cathodic Protection Test Station Locations by Transmission Alignment

5.3 Facilities Condition Assessment

Carollo, Blue Locker Diving, and V&A completed visual condition assessments of the Mesa Water's water system assets beginning in August 2024 and completed in December 2024. Carollo completed a visual condition assessment of the assets located at the MWRF, Wells, Reservoirs, Administrative Building, Operations Building, Yard, and Pressure Monitoring Stations. Blue Locker Diving completed a diving assessment of the two Reservoirs, and the finished water tank at the MWRF. V&A completed assessments of Pressure Monitoring Stations, Vaults and Import Stations, and Interties with Vaults.

5.3.1 Wells

The following key observations were made based on the field condition assessment and review of pertinent information for Mesa Water's groundwater wells, while details can be found in the well assessment described in Technical Memorandum 9 (**Appendix J**):

- **Well 1B:** Structural assets are in good condition, requiring only normal maintenance. Mechanical assets, including the ammonia and chlorine systems, are in excellent or good condition, needing only normal maintenance. The well pump shows corrosion, and the motor is noisy, requiring analysis, repair, or replacement. The ammonia storage tank's vacuum relief valve has corrosion and needs recoating or replacement. Electrical and instrumentation assets are generally in excellent or good condition.
- **Well 3B:** Structural assets are in good condition, needing only normal maintenance. The ammonia storage tank's vacuum relief valve shows corrosion and requires epoxy coating. The well pump housing and base plate are corroded and need new coating. The stand-by generator is in good condition. The well pump motor housing is rusting, and exposed outdoor conduit is brittle and sun-bleached, needing replacement. A desiccant monitor is not in use. Most instrumentation and controls are in excellent or good condition.
- **Well 5:** Structural assets are in good condition, needing only normal maintenance. The well pump has corrosion, missing anchor bolts, and oil/grease leakage, requiring investigation, repair, and recoating. The natural gas engine is in good condition. The Y-Strainer for the SH Meter for Pump 1 Feed needs replacement due to corrosion. The well pump level transducer may need attention to resolve the functionality once the desiccant system is back in use. Pressure switches for ammonia pumps 1 and 2 show deterioration and should be replaced. In 2018 the well was assessed to have a remaining useful life of 3 to 5 years which means that this well is due for replacement soon.
- **Well 6:** Structural assets are in good condition. Mechanical assets are in good condition. The discharge flowmeter is reported by staff to be inconsistent with other flow meter reading and should undergo a calibration check. If the meter still exhibits inconsistent readings, it should be replaced.
- **Well 7:** Structural assets are in good condition, needing only normal maintenance. The well pump motor and housing show corrosion, especially at the baseplate, requiring rust removal and new epoxy coating. The ammonia storage tank's vacuum relief valve shows corrosion, requiring inspection and remediation. The well pump level transducer enclosure is sun-bleached and should be replaced with sun-resistant material. The sodium hypochlorite (SH) meter for the pump 2 discharge pressure switch is severely corroded and should be replaced.

- **Well 9B:** Structural assets are in good condition, needing only normal maintenance. The well pump screens and foundation bolts show some corrosion, requiring repair and recoating. The discharge pressure switch for the SH meter for Pump 2 no longer works and should be replaced.
- **Well 11:** Structural and mechanical assets are in good condition.

5.3.2 MWRF

The following key observations were made based on the field condition assessment and review of pertinent information for the MWRF, while details can be found in the MWRF assessment described in Technical Memorandum 9 (**Appendix J**):

- **Chemical Building:** The building has moderate foundation cracking, and the floor drains have lifted. The chemical storage tanks and concrete enclosures are in excellent to good condition, with minor corrosion on the Caustic storage canopy and the sodium bisulfite area canopy. The mechanical and electrical assets were found to be in good condition. However, the footing for the Caustic Soda Peristaltic Pump 4 high-pressure discharge switch needs replacement.
- **Carbon Dioxide Pretreatment:** The mechanical, electrical, and instrumentation assets were found to be in good condition.
- **Degasifier:** Structural supports show signs of corrosion, and water is pooling on the slab around pumps. Some water leakage from the scrubber recirculation pumps discharge piping has been observed, and some drain and process piping shows severe corrosion. The air blowers' housings and motors and the metal guards show signs of corrosion.
- **Treatment Process Buildings:** Mechanical assets were found to be in good condition. The Primary Nanofiltration Feed Pump 1 variable frequency drive screen has malfunctioned.
- **High Lift Pump Station:** A motor base is corroding the floor level metal grating, and the exterior wall-mounted heating, ventilation, and air conditioning (HVAC) unit is showing signs of wear and corrosion. The existing evaporation cooler was found to be inoperable and the ventilation system is insufficient. High lift pumps baseplates have severe corrosion. The variable frequency drive for the High Lift Pump 2 is inoperable, and the motor for the High Lift Pump 3 sounds odd on startup.
- **Nanofiltration Pumping:** The mechanical, electrical, and instrumentation assets were found to be in good condition.
- **Vaults:** There are two bypass vaults and one meter vault. One bypass vault has leaks in the SH piping. The second bypass vault had standing water, and coating spot repairs are needed. The meter vault has moderate corrosion at the two corporation stops.
- Please note that the MWRF wells were included in the previous section.
- **Finished Water Tank:** The finished water tank at MWRF is a 1.25-million-gallon concrete storage tank. This tank was assessed via dive inspection revealing that both the interior and exterior ladders need safety climbs and the overflow and inlet piping has significant corrosion. It is recommended that the tank be taken out of service to sandblast and recoat the interior piping with an epoxy system, replace the vent screen, replace the caulking on the overflow, and check the leak detection system line.

5.3.3 Reservoirs

The following key observations were made based on the field condition assessment and review of pertinent information for the two Reservoirs, while details can be found in the reservoir assessment described in Technical Memorandum 9 (**Appendix J**):

- **Reservoir 1:** This reservoir was constructed between 1988 and 1990. It is a rectangular tank that has a capacity of 10 MG and is made of steel-reinforced concrete. The condition assessment of Reservoir 1 revealed several issues. Rebar corrosion was found in multiple spots on the interior wall, requiring repair. It is recommended that a leak test be conducted due to the hopper bottom tank design's potential for water loss. Externally, leaks were observed at most construction joints, with efflorescence visible at many overflow boxes and minor spalling in some areas of the exterior wall face. Water tends to pool around roof drains due to deficient slope around the downspout. Additionally, a vault on the site showed minor corrosion on pipes with a possible leak or groundwater infiltration requiring further investigation. It is recommended that this reservoir receive an inspection after any major earthquakes in the area.
- **Reservoir 2:** This reservoir was constructed between 1992 and 1995, and has a capacity of 18 MG. It is a circular, steel-reinforced concrete tank with 121 columns supporting the roof. The condition assessment of Reservoir 2 revealed several issues. A dive inspection noted minor hairline cracks on the floor with caulking pushing out of the joints, suggesting a leak test should be performed. An external structural assessment found minor to medium levels of corrosion on elements of the vent enclosure. The flow control vault has moderate corrosion on connectors, mounting brackets, and unistrut channels, and it is recommended that the electrical conduit components be replaced in two to five years. The subdrain vault shows severe corrosion on the check valves, galvanized steel discharge piping, pumps, flap-gate coupling on the 12-inch diameter butterfly valve, electrical conduits, and lower conduit supports, all of which are recommended for replacement in the next two years. The meter vault, however, was found to be in excellent to good condition with no immediate recommendations.

5.3.4 Booster Pump Stations

The following key observations were made based on the structural, mechanical, electrical, and instrumentation disciplinary field condition assessment and review of pertinent information for the two booster pump stations, while details can be found in the booster pump station assessment described in Technical Memorandum 9 (**Appendix J**):

5.3.4.1 Reservoir 1 Pump Station

- **Structural Assets:** The structural assets, including SH, Ammonia, and Brine Tanks, the building pump house, and the facility paving and site wall, were found to be in good condition.
- **Mechanical Assets:** Several issues were found with the existing pumping equipment. Replacement of pumps, natural gas engines, and engine control systems is in progress, with new pumps using electric motors and variable frequency drives scheduled for installation in FY2026. Engine 2 was not in operation and is more than 20 years old, making replacement parts difficult to acquire. The engine catalytic converters all show signs of corrosion, and the Catalytic converter for Engine 2 is not intact or connected to the exhaust system. Engine 3 leaks oil, and water, and requires significant maintenance.

The vertical turbine pump 1 motor base is rusted, and there is some corrosion by the shaft seal guard. The Vertical Turbine Pump 3 motor base is corroded. The liquefied petroleum gas tank at the site is showing signs of advanced aging and corrosion, and has been removed.

- **Electrical Assets:** Electric Motors 1 and 2 fail occasionally and must be reset from the variable frequency drive control panel. Turbine induction Generator 1 Motor works, but the turbine generator is inoperable. Turbine induction Generator 2 is reported to be never operable/active. The top of the enclosure for the load bank for GenSet 2 has significant signs of rusting, and the enclosure door is rusted as well.
- **Instrumentation Assets:** The instrumentation assets were in excellent to good condition.

5.3.4.2 Reservoir 2 Pump Station

- **Structural Assets:** Inside the concrete masonry unit building, in the lower area beneath the platform in the corner, there appears to be an area that gets wet often. The steel platform supports show moderate corrosion at the bottom couple of inches due to exposure to water. The SCADA tower and pedestal structure is in good condition, but there is some minor corrosion at the base. The four lube oil tanks do not appear to have any anchorage to the floor.
- **Mechanical Assets:** Two electric jockey pumps with variable frequency drives are being added in FY 2026 to improve the reaction to small pressure changes in the distribution system. Several mechanical assets show signs of corrosion and need recoating, including the Gate Valve handwheels for effluent for Engines 1, 2, 3, and 4. The 18-in. gate valve on the fill line needs recoating on the handwheel. The piping connected to the AirVac 2 in. on 18 in. fill line needs sandblasting and new coating. The right-angle gear drives valves on the engine cooling water show corrosion and need recoating. Vertical Turbine Pump 1 and Pump 2 engines need cleaning and have a leak either from the right-angle drive or water leak from seal water. The vertical turbine pump 4 shows the pump discharge housing column and baseplate flange has loss of coating and corrosion. The liquefied petroleum gas supply tank exterior, piping and valves have signs of corrosion, and has been decommissioned. The muffler and silencer and associated piping for Engine 1 located on the roof has corrosion.
- **Electrical Assets:** The electrical assets were in good condition.
- **Instrumentation Assets:** The instrumentation assets were in good condition. The chlorine system will be taken offline some time in 2025.

5.3.5 Vaults

V&A assessed vaults and import stations, and interties with vaults, and Carollo reviewed their report. The import stations and pressure reducing station vaults had a range of conditions. Vault 9, located at Bristol Street north of Red Hill Avenue, had piping in poor condition with coating failures and severe corrosion, while the piping at Vault 10 was in good condition but the pipe supports were in poor condition. The interties with vaults also varied in condition, with Vault 4 at West Sunflower Avenue east of Bristol Street having a severely corroded restraint harness and hardware, and Vault 6 at Bristol Street north of Red Hill Avenue having a control valve and gate valve in poor condition with severe corrosion. The reports recommend coating spot repairs, piping and pipe support replacements, and further inspections. At the MWRF site, the first bypass vault had leaks in the SH piping, the second bypass vault had standing water

and needed coating spot repairs, and the meter vault needed spot repairs and recoating due to moderate corrosion.

Details of vault inspections can be found in the vaults assessment described in Technical Memorandum 9 (**Appendix J**).

5.4 Facilities Condition Assessment Recommendations

Based on the comprehensive field condition assessments and complimentary desktop analysis, the following programmatic recommendations have been included in the CIP Update:

- **Distribution System:**
  - Regularly monitor the 6-inch AC pipes along Baker Street, Watson Avenue and Westbrook Place which are experiencing accelerated degradation as indicated in the pipeline integrity program acoustic analysis results.
  - Incorporate the consequence of failure and the condition of the effectiveness of the cathodic protection system into the pipeline integrity program
  - Prioritize transmission mains for inspection.
- **Transmission System:**
  - Transmission system inspection.
  - Biennial cathodic protection improvements.
- **Wells:**
  - Replace Well 5 (currently produces sand when operating at flows above 2,200 gpm) once it exceeds its remaining service life, which was estimated at 3-5 years in 2018.
  - Replace Well 7B to increase supply reliability.
- **MWRF:**
  - Recurring annual rehabilitation and repair program.
- **Reservoirs:**
  - Recurring annual rehabilitation and repair program.
- **Booster Pump Stations:**
  - Recurring annual rehabilitation and repair program.
- **Vaults:**
  - Several CIP projects for vaults were recommended, focusing on rehabilitation, repairs, and upgrades. These projects are aimed at enhancing the infrastructure and ensuring the reliable operation of Mesa Water's water transmission and distribution system.
  - The condition assessment included multiple vaults: bypass vaults, a meter vault at the MWRF, import stations and pressure reducing stations vaults, and interties with vaults.
  - The bypass vault, referred to as Vault 24, showed leaks in the SH piping.
  - Vault 25, a meter vault at the MWRF had standing water, and the piping, valves, pipe supports, mortar, and exhaust fan require attention. The vault needs spot repairs and recoating due to moderate corrosion.

- Many import stations and pressure reducing stations vaults require a range of actions, from coating spot repairs to complete piping and valve replacements, as well as addressing corrosion and structural issues.
- Interties with vaults need recoating, pipe support replacements, and repairs to address corrosion, water infiltration, and structural deficiencies.

CHAPTER 6 REGULATORY COMPLIANCE

While Mesa Water is in compliance with all state and federal regulations, it will need to take steps for continued compliance and monitor new and upcoming regulatory requirements.

6.1 Drinking Water Regulations

Drinking water is regulated federally through the Safe Drinking Water Act by the Environmental Protection Agency (EPA). In California, the State Water Board adopts drinking water standards according to the California Safe Drinking Water Act which are enforced by the Division of Drinking Water. New and upcoming drinking water regulations for contaminants that could impact Mesa Water's current and future water supply include regulations around perfluoroalkyl and polyfluoroalkyl substances (PFAS), hexavalent chromium, arsenic, manganese, microbial and disinfection byproducts, microplastics, 1,4-Dioxane, and more. Mesa Water meets all current federal and state regulations for drinking water quality but will need to monitor its wells for continued compliance. Monitoring is required for PFAS compounds, and systems have until 2029 to implement solutions for reducing PFAS concentrations. In addition, Mesa Water will need to recertify their risk and resilience assessment and emergency response plans.

6.2 Air Quality Regulations

Mesa Water falls under the jurisdiction of the South Coast Air Quality Management District, which enforces federal and state air quality standards. The regulations cover emissions from gaseous- and liquid-fueled engines, permitting programs, annual emissions reporting, and risk management programs.

Table 6.1 provides a summary of the permit exceedances by Mesa Water for oxides of nitrogen (NOx) and carbon monoxide (CO) at the stationary engines located at Reservoir 1, Reservoir 2, and Well 5 between January 2023 and September 2024.

Table 6.1 Engine Emissions Reporting Summary

Facility	Number of Engine Breakdowns	Number of NOx and/or CO Exceedance Incidents(1)	CO (ppmv)(5)
Reservoir 1(2)	1	6	250
Reservoir 2(3)	0	6	76
Well 5(4)	1	4	70

Notes:
ppmv - parts per million by volume
(1) Based on 7 Quarterly District Reports from Q1 2023 through Q3 2024.
(2) Two stationary engines located at Reservoir 1.
(3) Three stationary engines located at Reservoir 2.
(4) One stationary engine located at Well 5.
(5) Permit concentration limits are based on the configuration of stationary engines at each facility.

In all cases where there was an exceedance, Mesa Water operators returned the engine emissions to within the range limits listed in Table 5.4 within the day the incident was discovered.

Mesa Water has provided annual emissions reporting as recently as 2022 for the MWRF, Reservoirs 1 and 2, and Wells 1B, 3B, 5, 7, and 9B and it was confirmed that emissions in 2023 were below the reporting thresholds of the Annual Emissions Reporting program.

Moreover, Mesa Water has 4,000 gallon tanks of 19 percent aqueous ammonia at all seven well sites and is fully in compliance per California Accidental Release Prevention regulations. Mesa Water has submitted a Risk Management Plan for the MWRF and the well sites to the County of Orange.

6.3 Other Regulations

6.3.1 California Air Resources Board Advanced Clean Fleets Regulation

The California Air Resources Board Advanced Clean Fleets regulation, effective October 1, 2023, aims to reduce emissions from mobile sources. It requires state and local government fleets to purchase zero-emission vehicles for on-road vehicles with a gross vehicle weight rating over 8,500 pounds. Mesa Water has elected to follow the Purchase Pathway, requiring at least 50 percent of vehicle purchase orders in calendar years 2024-2026 to be zero-emission vehicles, and 100 percent starting January 1, 2027. Mesa Water plans to gradually transition its fleet to zero-emission vehicles as needed to comply with future regulations.

6.3.2 America's Water Infrastructure Act of 2018

The America's Water Infrastructure Act of 2018 mandates that water systems serving over 3,300 people develop or update risk and resilience assessments, including cybersecurity evaluations, and emergency response plans every five years. These assessments identify potential risks and a system's ability to withstand them, while emergency response plans detail strategies to improve system resilience and actions to mitigate emergency event impacts. Mesa Water, serving over 100,000 people, must recertify its risk and resilience assessment by March 31, 2025, and its emergency response plan by September 30, 2025. As of the writing of this report, Mesa Water has already submitted its risk and resilience assessment and emergency response plans.

6.4 Recommendations

Mesa Water meets all current federal and state regulations for water quality, air quality, and risk management. Several current regulations will require that Mesa Water take the following steps for continued compliance:

- **PFAS.** All Mesa Water wells sampled in 2023 and 2024 showed non-detect levels for PFAS. However, continued sampling is required to monitor for potential PFAS plumes that could impact Mesa Water's production wells in the future. Mesa Water will need to continue fulfilling National Primary Drinking Water Regulations compliance monitoring requirements and should anticipate taking action, if needed, to lower PFAS compound concentrations from groundwater supplies once California maximum contaminant levels are developed. In July, 2025, California announced proposed revisions to the PFAS regulations that include a Response Level for perfluorohexanesulfonic acid (PFHxS) at 10 nanograms per liter and a Notification Level and Response Level for perfluorohexanoic acid (PFHxA) of 1,000 nanograms per liter and 10,000 nanograms per liter, respectively.
- **Lead and Copper Rule Revisions & Lead and Copper Rule Improvements.** Mesa Water has completed a lead service line inventory and submitted it to the state in September 2024. At the time of this report, Mesa Water is also in compliance with the new Lead and Copper Rule Improvements requirements and working with a consultant to ensure all requirements under this rule are met. Based on historical lead and copper compliance data, Mesa Water is not anticipated to be impacted by the new 10 micrograms per liter (µg/L) trigger level, but could be subject to find-and-fix requirements for any individual sample results above 15 µg/L.
- **Consumer Confidence Report Revision.** Effective January 1, 2027, Mesa Water will need to issue Consumer Confidence Reports twice a year and comply with rule revisions regarding communication, delivery, and content of information of/in Consumer Confidence Reports.
- **Groundwater Rule.** Mesa Water will need to complete steps to continue compliance with Groundwater Rule if new wells are constructed.
- **Stationary Engines.** Mesa Water will need to continue fulfilling Rule 1110.2 reporting requirements for all non-electric stationary engines. Due to several air quality exceedance episodes in recent years, it is recommended that the current natural gas-powered engine at Well 5 be replaced with an electric-powered engine once it reaches its estimated useful life.
- **California Accidental Release Prevention Compliance.** The quantity and concentration of aqueous ammonia currently stored at each Mesa Water facility requires Mesa Water to maintain compliance with the California Accidental Release Prevention program. Mesa Water should consider transitioning to liquid ammonium sulfate to maintain compliance and reduce potential risks.
- **California Air Resources Board Advanced Fleet:** Due to uncertainties in California Air Resources Board Advanced Clean Fleets regulations since January 13, 2025, and in order to comply with future regulations, Mesa Water's strategy at the time of this CIP update is to gradually transition its fleet to zero-emission vehicles.

Potential future federal and state regulations could lead to additional requirements or steps for compliance:

- **Arsenic.** If Division of Drinking Water rules to reduce the maximum contaminant level for arsenic, Mesa Water will need to comply with this maximum contaminant level.

- **Manganese.** Mesa Water will need to comply with the new notification and response levels once finalized by the Division of Drinking Water. Based on the most recent samples from 2019, compliance will most likely require notifications of exceedance to the notification level.
- **Microbial And Disinfection Byproducts.** Compliance hurdles are not anticipated as a result of the United States EPA decision to revise the haloacetic acid (HAA) maximum contaminant level to encompass bromated species. If the United States EPA regulates chlorate, methods to minimize concentrations in amber Wells 6 and 11, Well 3B, and the distribution system may be needed.
- **Microplastics.** Mesa Water can anticipate receiving monitoring orders for microplastics from the State Water Resources Control Board in the near future.
- **1,4 Dioxane.** In 2024, several of Mesa Water's wells had 1,4 Dioxane concentrations over the notification level. In accordance with current state regulations, Mesa Water must notify customers of the presence of this constituent in their drinking water. Mesa Water has provided notification to its Board of Directors and local agencies regarding the detections of 1,4 dioxane above the 1 microgram per liter notification level. It is recommended that Mesa Water monitor EPA and Division of Drinking Water activity to determine whether new rules will further impact drinking water supplies.
- **Recycled Water.** At present, PFAS regulatory requirements are only applicable to potable water. However, if regulatory compliance for PFAS is extended to non-potable reuse and the recycled water used for the Green Acres Project exceeds the regulatory threshold, Mesa Water would need to utilize potable water to serve the Green Acres Project's irrigation demands. However, the development and timeline for the adoption of PFAS regulations for non-potable reuse remain uncertain at the time of this CIP update.

CHAPTER 7 ASSET MANAGEMENT ROADMAP

7.1 Purpose

The objective of any asset management program is to manage assets at their lowest lifecycle costs while maintaining expected service levels. Achieving this objective requires robust data, analysis, and decision support, making software applications an essential component of the asset management roadmap. However, several steps need to be taken before choosing the software application in an asset management program.

Formalized asset management programs are built around answering five core questions (American Water Works Association (2014). *Asset Management: A Best Practices Guide*. Denver, CO: American Water Works Association):

1. What is the current state of my assets?
2. What is my required level of service?
3. What are my business risks (business risk exposure)?
4. What are my best operations and maintenance (O&M) and CIP funding strategies (for minimum lifecycle costs)?
5. What is my best long-term funding strategy?

As part of building upon Mesa Water's existing maintenance planning and work order system and developing an asset management roadmap, Carollo evaluated different asset management software packages.

7.2 Software Applications

To answer the five core questions and conduct effective best-practice asset management planning, the following key software applications are typically used in the industry:

- Computerized Maintenance Management System (CMMS).
- Enterprise Asset Management Systems.
- GIS.
- Capital Planning or Decision Support Software Applications.

Mesa Water currently does not use an enterprise asset management system nor a dedicated capital planning software application.

There are additional software applications used in the water industry and while there may be value in incorporating data, the foundational applications to manage assets continue to be the CMMS and GIS system. It should be noted that the evaluation as part of this CIP Update was limited to CMMS with enterprise asset management functionality and capital planning decision support applications which could work with Mesa Water's existing MaintStar CMMS.

Several vendors provided demonstration of their software applications including Trimble's Cityworks, Aquanuity's AquaTwin Asset Pro, Kayuga Solution's IRIS, and Novotx's Elements XS. Vendors were asked to demonstrate their software showing a variety of information. Details of each software application and functionality are included in Technical Memorandum 7 (**Appendix H**).

7.3 Likelihood of Failure and Consequence of Failure Scoring Framework

As part of the CIP Update, workshops were conducted to support the development of a draft asset definition and likelihood of failure and consequence of failure criteria which will be used in the future in conjunction with an Asset Management Application which incorporates likelihood of failure and consequence of failure analyses to prioritize asset lifecycle activities. The findings of these discussions provided direction for the asset management framework that can be used for Mesa Water's future asset management program.

A formalized asset definition was developed to set distinction for assets (vs. components or parts) for use in the future asset management software application. The resultant draft asset definition is:

- An asset meets two or more of the following requirements:
  - Asset requires recurring or preventive maintenance.
  - Asset has an expected useful life greater than 1 year.
  - Asset performs a critical function within the system.
  - Asset would be repaired rather than replaced if it fails.

Discussion on each software application, definition of an asset for future asset management software application, and details on the likelihood and consequence of failure criteria development can be found in Technical Memorandum 7 (**Appendix H)**.

7.4 Asset Management Program Implementation Recommendations

The following recommendations outline key steps for Mesa Water to establish and enhance their asset management program and select the appropriate asset management software application to support Mesa Water's asset management objectives. A phased list of implementation activities including CIP recommendations under the technical and software project category is illustrated in Figure 7.1.

Figure 7.1 Asset Management Program Implementation Roadmap

CHAPTER 8 TECHNOLOGICAL ADVANCEMENTS

8.1 Purpose

Mesa Water strives to be at the forefront of technological advancements applicable to water utilities to improve day-to-day business practices in the next 10 years. Carollo presented several areas that Mesa Water may want to consider for future technological investments. This includes software architecture and integration, operations data management systems, artificial intelligence and machine learning platforms, specific use cases of technology applications within the water industry, and GIS improvements. Details are discussed in Technical Memorandum 6 (**Appendix G**).

8.2 Recommendations

Carollo presented a broad range of artificial intelligence, machine learning, and other advanced technology use cases to potentially implement at Mesa Water to support planning, operations, engineering, and administration workflows. However, before implementing or piloting a particular technology new to Mesa Water, it is recommended to first establish and then prioritize a list of desired use cases.

Additionally, the software systems currently in use and the business practices that they support should be considered when prioritizing advanced analytical technologies to implement. The time sensitivity for updating Mesa Water's GIS from a geometric network to a Utility Network, elevates its priority, for example. Addressing Mesa Water's GIS needs also sets Mesa Water up for success with the deployment of its other software systems, such as for the customer information system, CMMS, asset management, and public engagement, to capitalize on their GIS integration capabilities.

As Mesa Water considers implementing new, or upgrading existing software systems, including piloting the use of machine learning and other artificial intelligence tools, it is important to first establish a clear data governance, management and modernization plan as well as an Information Technology Master Plan. Both are critical precursors for systematic, prioritized, and successful adoption of advanced technologies. These plans will help with developing return on investment projections, the level of effort and resource needs for implementation, and optimal chronological implementation order. Together, these considerations can be incorporated prior to assigning priorities to individual projects.

Once priority projects are identified, Mesa Water can proceed to piloting the "low hanging fruit". In other words, the lowest investment that can generate the highest outcome. Low hanging fruit can look different for each utility, but it all begins with creating a list of possible use cases. With this in mind, the capital improvement program projects presented in the next Chapter under the Technology and Software category includes budgetary placeholders for piloting a use case to be selected by Mesa Water. These include a proposed amount to allocate for the purchasing and implementation of the new technology. The actual costs and effort by Mesa Water staff, however, will vary depending on the selected technology.

CHAPTER 9 CAPITAL IMPROVEMENT PLAN

The CIP developed serves as an update to Mesa Water's 2014 Water Master Plan. Mesa Water has successfully implemented key projects recommended in the 2014 Water Master Plan, which had a 5-year CIP of 48 million and a long-term CIP of $272 million in 2014 dollars. In fact, when reviewing the 5-year CIP from the 2014 Water Master Plan, it was concluded that a majority of the recommended CIP has been completed in just one decade. The significant investments made in the last decade have strengthened the overall performance and reliability of Mesa Water's water system infrastructure. For example, Mesa Water completed nearly all recommended upgrades to above-ground facilities, such as booster pump stations, reservoirs, and several improvements to the MWRF, such as a scrubber exhaust system, water, SCADA backup power, and programmable logic controller (PLC) replacement. Additionally, two new groundwater wells were drilled and a well automation project was implemented. Moreover, improvements and repairs were made to various vault structures, such as the Santa Ana Pressure Reducing Station, the bypass and finished water vaults, and abandonment of vault closures. And although only a few projects of the recommended distribution system projects have been implemented to-date, Mesa Water did conduct a comprehensive leak detection survey of the distribution and transmission system from 2020 to 2023. This study confirmed that Mesa Water's pipeline system is in excellent condition as no significant leaks were present, demonstrating the system's integrity.

Hence, the objective of this CIP Update project is to focus on new improvement needs since the implementation of the system enhancement recommended in the 2014 Water Master Plan, with special focus on the condition of the cathodic protection system on the transmission mains and other distribution pipeline improvement needs.

This section presents the proposed CIP through year 2036, the planning horizon of this master plan and some for projects beyond the planning horizon. This CIP is divided into three phases, namely:

- **Near-term phase:** This phase includes projects prioritized in the first five years (FY 2027-2031).
- **Mid-term phase:** This phase includes projects planned for the following five years (FY 2032 - 2036).
- **Long-term phase:** This phase includes projects that are scheduled beyond FY 2036.

All cost estimates presented in this CIP reflect 2025 dollars. However, it should be noted that the actual cost in future planning years is anticipated to be higher due to inflation.

The improvement projects included in this CIP are a compilation of the recommendations made in the various analyses conducted as part of this study and presented in detail the Technical Memoranda summarized in the previous chapters and included in **Appendices B** through **K**. In general, the origin of CIP projects can be categorized as follows:

- Water supply projects (from Technical Memorandum 2).
- Distribution system capacity improvements (from Technical Memorandum 4).
- Distribution and Transmission systems condition assessment projects (Technical Memorandum 3).
- Facilities condition assessment rehabilitation and replacement projects (from Technical Memorandum 9).

- Regulatory Compliance related projects (from Technical Memorandum 5).
- Software and Technological projects (from Technical Memoranda 6 and 7).

The CIP also includes a number of recurring repair, replacement, and inspection projects. The costs associated with these projects are included in each FY group. Some of these projects are proposed to occur on an annual basis, while others have a biennial or less frequent occurrence. Biennial projects include those related to cathodic protection testing. Annual costs are allocated for the pipeline integrity program for field assessment of distribution mains, reservoir concrete rehabilitation and coating, reservoir cleaning and diving inspections, transmission main field inspection costs, well repair and replacement, and various software and hardware related projects.

In addition to the recommended CIP projects, there are several O&M and preventative maintenance projects recommended for Mesa Water's facilities. Details of the capital improvement, including brief project descriptions, cost estimating details, and phasing are included in Technical Memorandum 10 (**Appendix K**).

For the near-term CIP, projects were identified and grouped into five FYs, namely FYs 2027 through FY 2031. As summarized in Table 9.1 and shown in Figure 9.1, the annual cost of the recommended projects in the near-term phase ranges from $2.9 million to $4.4 million with a combined cost of $17.7 million.

The near-term CIP includes a total of 45 projects, including four recurring projects. The location of projects by planning year are depicted on Figure 9.3 through Figure 9.7.

The distribution of near-term CIP costs by facility type is graphically shown in Figure 9.2. As shown, distribution system improvement projects represent the highest cost category, totaling $8.2 million, which accounts for 46 percent of the near-term CIP, followed by technology and software ($5.4 million or 30 percent of total near-term CIP) and transmission improvements ($2.3 million or 13 percent of total near-term CIP).

Table 9.1 Near-Term CIP Summary by Type and Planning Year

Facility Type	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total[1]	Total CIP (%)
MWRF	$30,000	$210,000	$0	$0	$0	$240,000	1%
Booster Pumps	$0	$0	$0	$0	$0	$0	0%
Wells	$100,000	$100,000	$100,000	$100,000	$130,000	$530,000	3%
Reservoirs	$0	$200,000	$0	$0	$0	$200,000	1%
Fire Flow	$0	$0	$0	$0	$0	$0	0%
Transmission (incl. cathodic protection)	$1,427,000	$30,000	$80,200	$461,000	$320,800	$2,319,000	13%
Distribution System[2]	$1,750,000	$1,500,000	$1,934,000	$1,500,000	$1,500,000	$8,184,000	46%
Vaults	$0	$775,000	$0	$0	$0	$775,000	4%
Tech & Software	$1,014,000	$1,539,500	$942,000	$860,000	$1,000,000	$5,355,500	30%

Facility Type	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	Total[(1)]	Total CIP (%)
Clean Fleet	$80,000	$0	$0	$0	$0	$80,000	0%
Studies	$0	$0	$0	$0	$0	$0	0%
Total[(1)]	$4,401,000	$4,354,500	$3,056,200	$2,921,000	$2,950,800	$17,683,500	100%

Notes:
(1) All costs shown in this table and technical memorandum are planning level costs presented in current dollars (Los Angeles January 2025 Engineering News-Record Construction Cost Index of 15592 and subject to future cost escalation.
(2) Actual expenditures may vary as specific distribution system pipeline replacement needs will be in accordance with recommendations identified through Mesa Water's Pipeline Integrity Program.

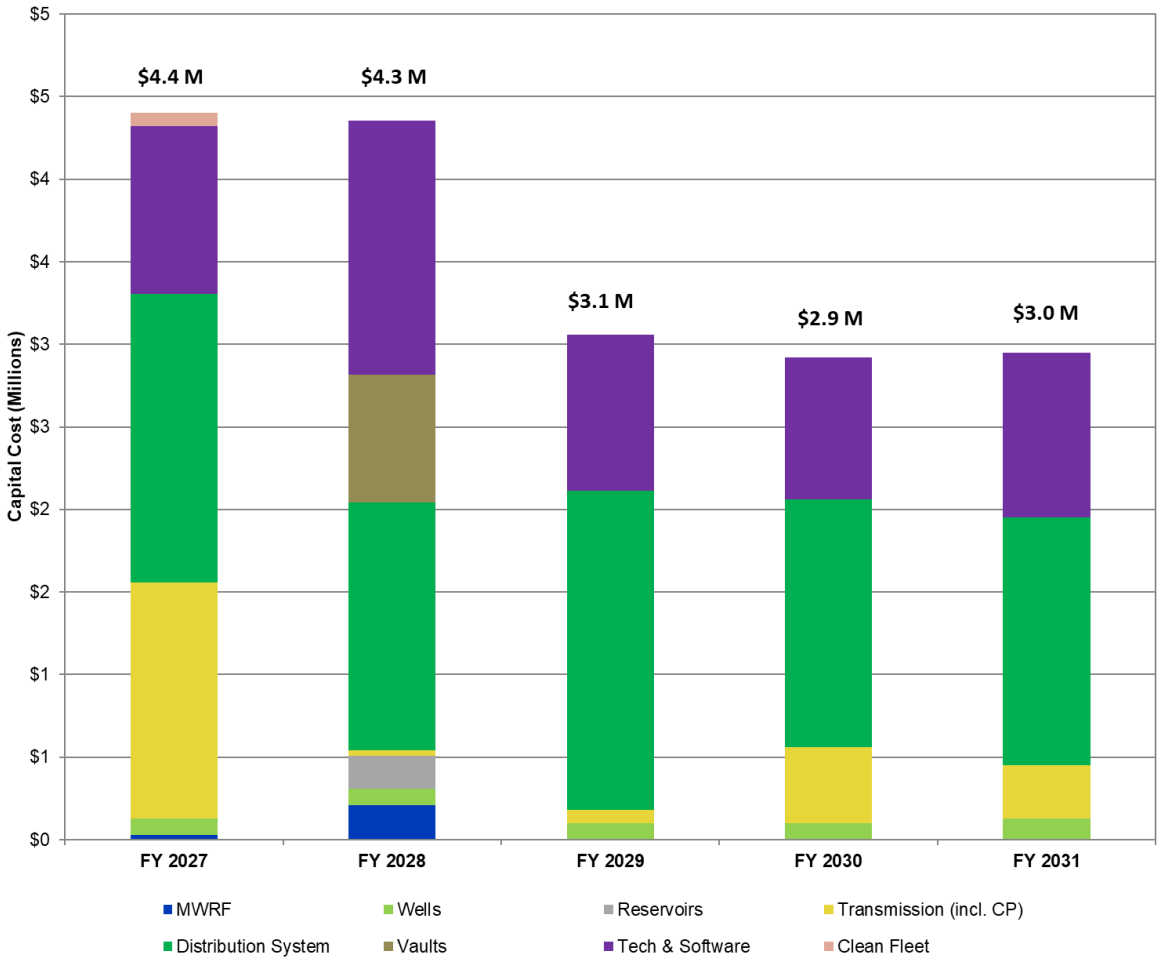


Figure 9.1 Near-Term CIP by Planning Year

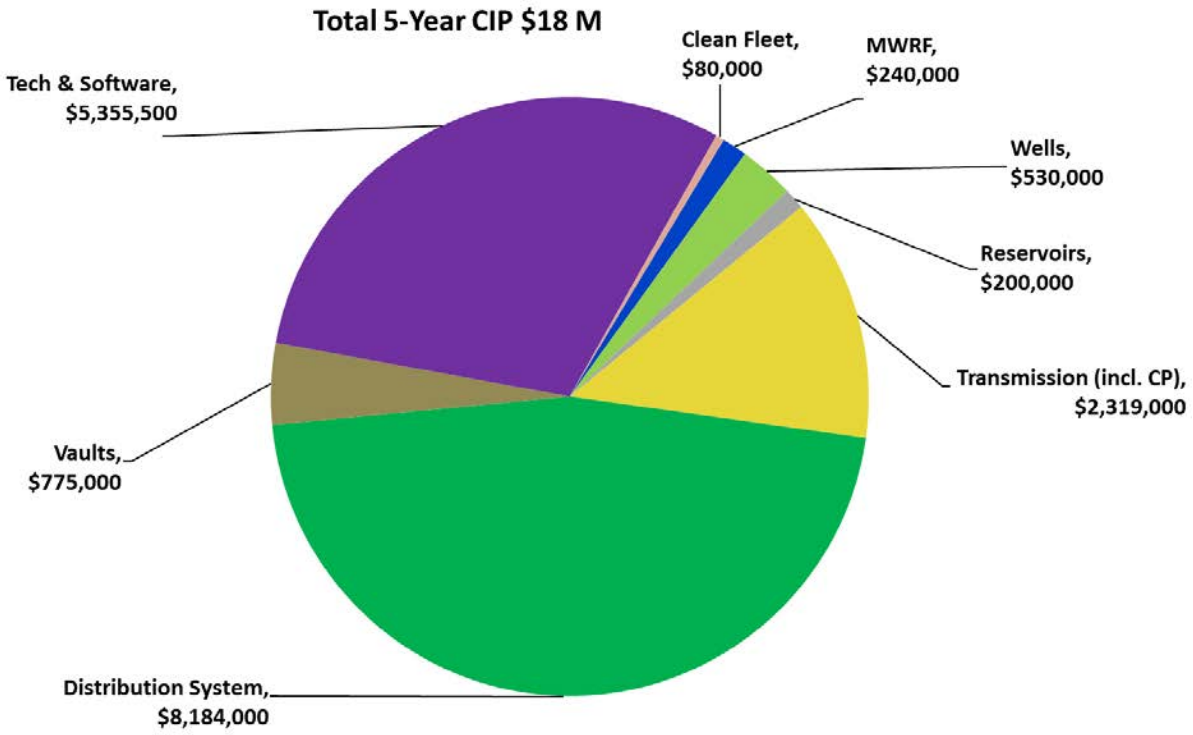
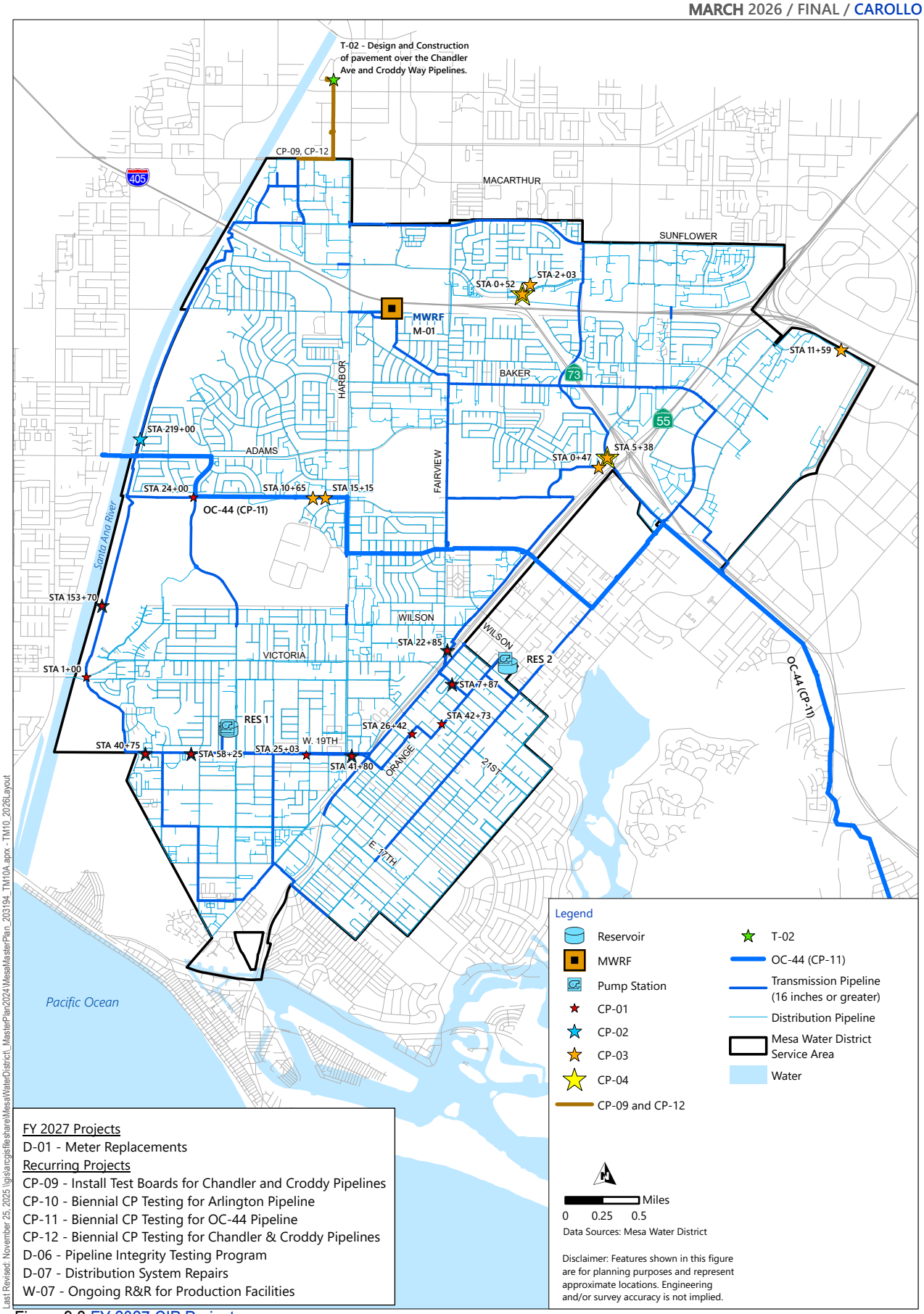


Figure 9.2 Near-Term CIP by Project Category



FY 2027 Projects
D-01 - Meter Replacements
Recurring Projects
CP-09 - Install Test Boards for Chandler and Croddy Pipelines
CP-10 - Biennial CP Testing for Arlington Pipeline
CP-11 - Biennial CP Testing for OC-44 Pipeline
CP-12 - Biennial CP Testing for Chandler & Croddy Pipelines
D-06 - Pipeline Integrity Testing Program
D-07 - Distribution System Repairs
W-07 - Ongoing R&R for Production Facilities

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Figure 9.3 FY 2027 CIP Projects
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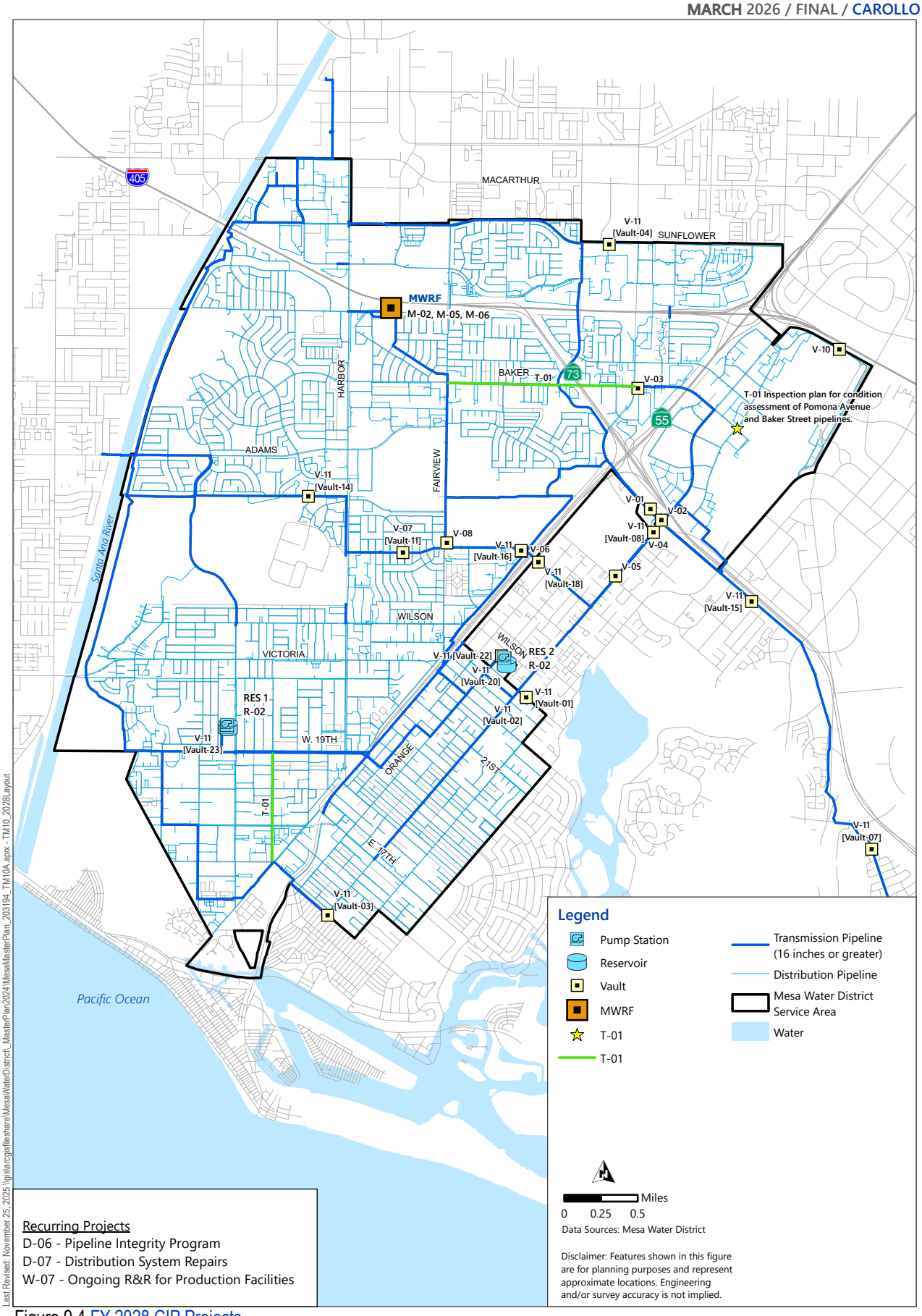

Figure 9.4 FY 2028 CIP Projects

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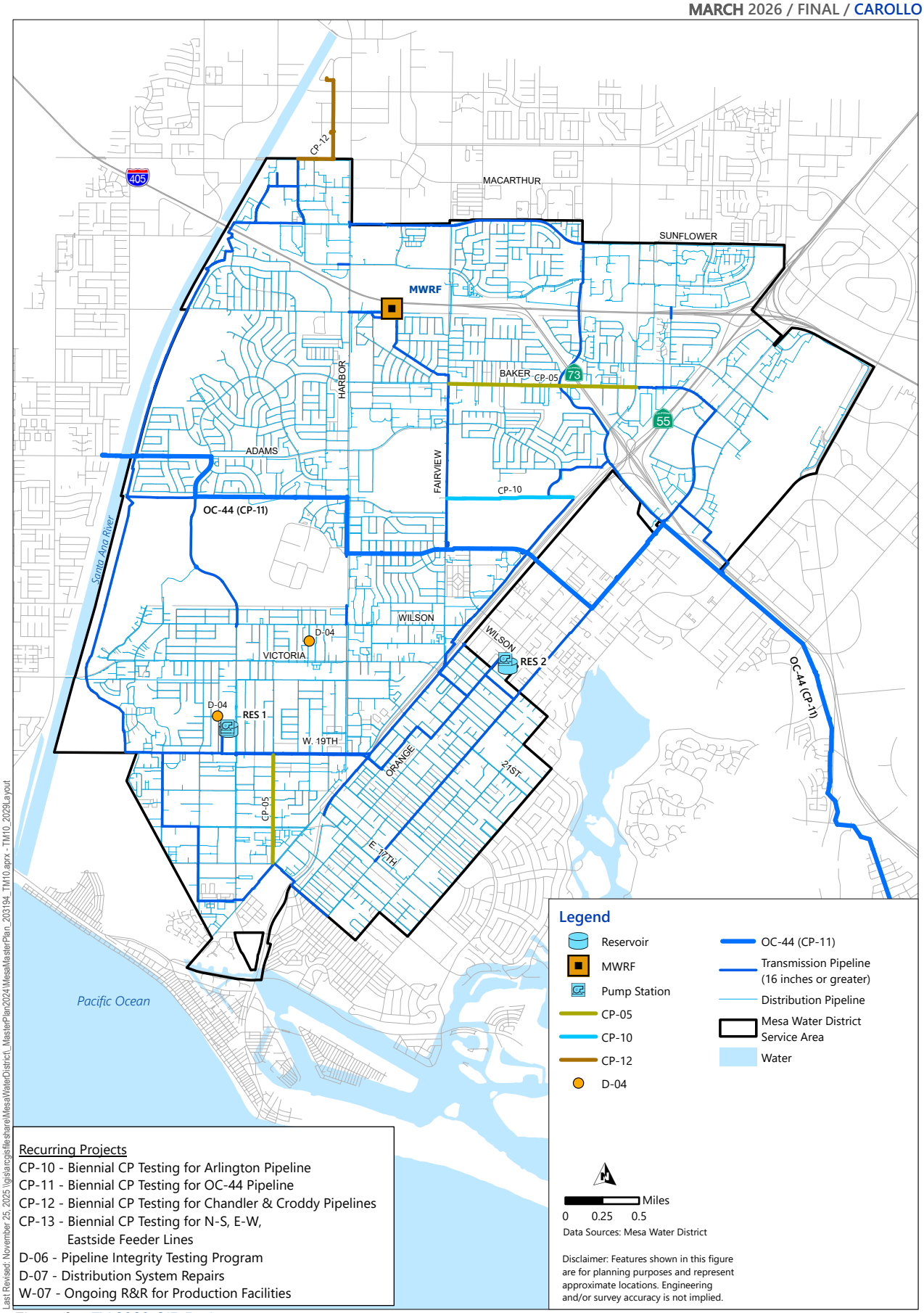

Recurring Projects
CP-10 - Biennial CP Testing for Arlington Pipeline
CP-11 - Biennial CP Testing for OC-44 Pipeline
CP-12 - Biennial CP Testing for Chandler & Croddy Pipelines
CP-13 - Biennial CP Testing for N-S, E-W, Eastside Feeder Lines
D-06 - Pipeline Integrity Testing Program
D-07 - Distribution System Repairs
W-07 - Ongoing R&R for Production Facilities

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Figure 9.5 FY 2029 CIP Projects
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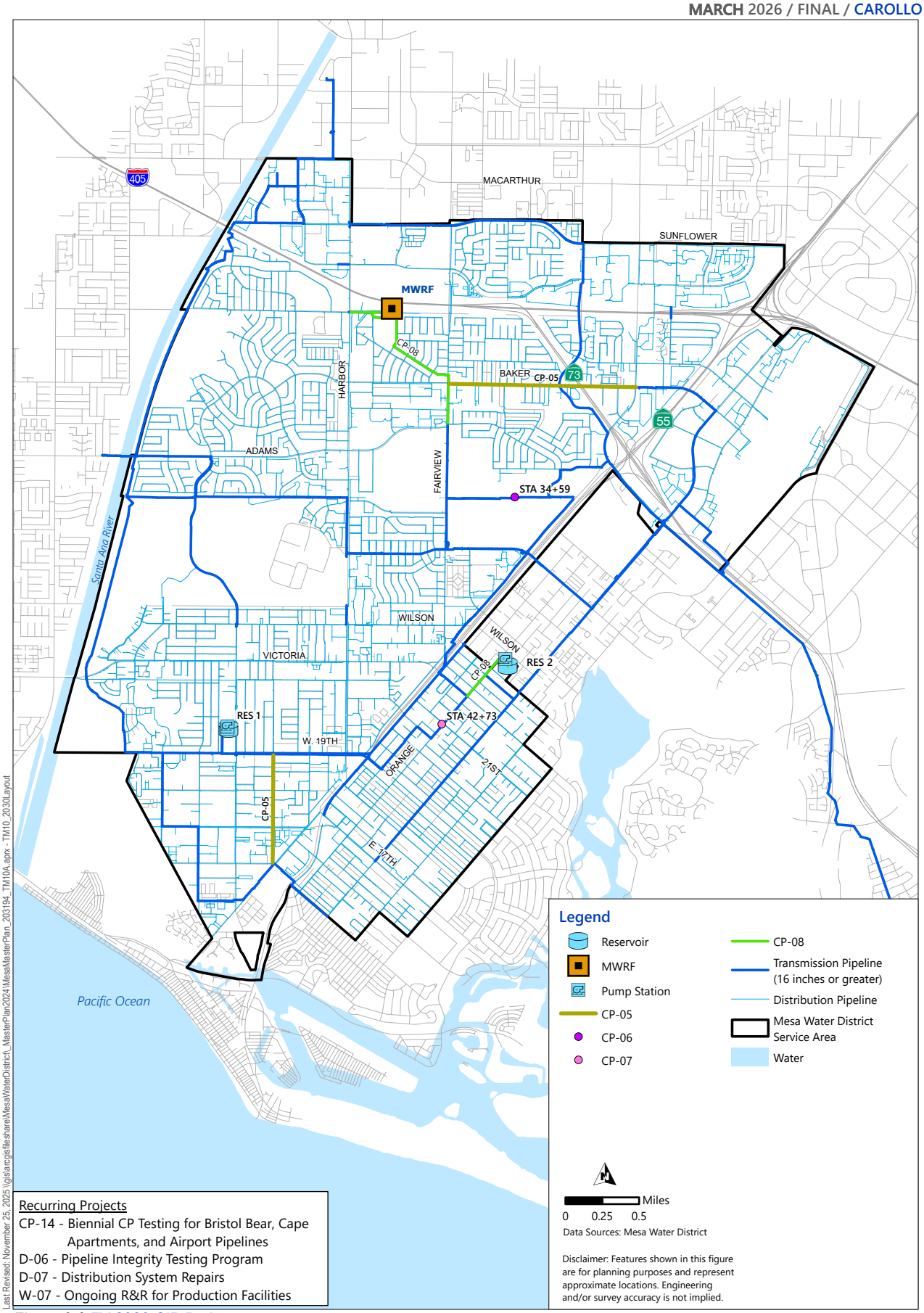

Recurring Projects
CP-14 - Biennial CP Testing for Bristol Bear, Cape Apartments, and Airport Pipelines
D-06 - Pipeline Integrity Testing Program
D-07 - Distribution System Repairs
W-07 - Ongoing R&R for Production Facilities

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Figure 9.6 FY 2030 CIP Projects
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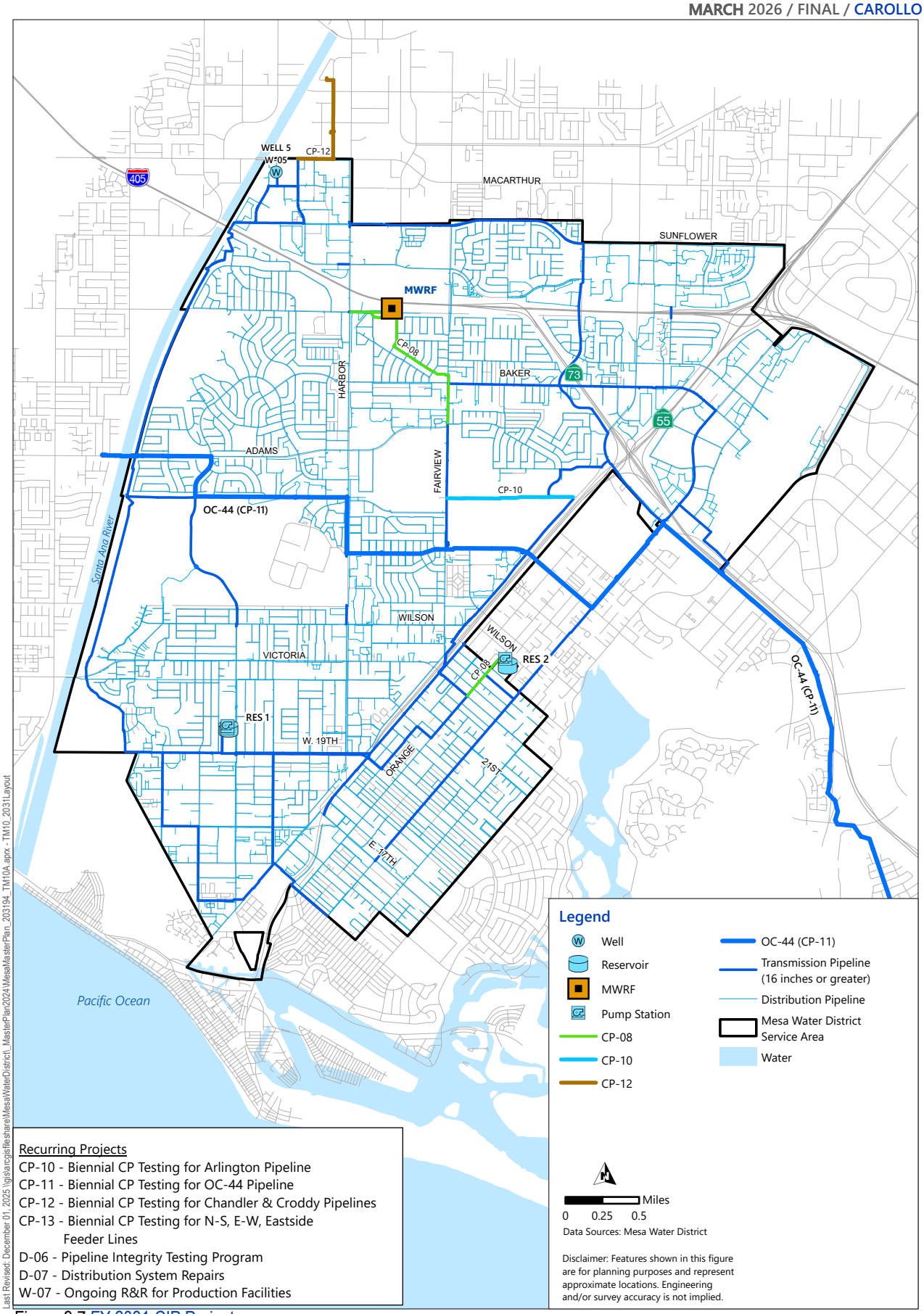
CAPITAL IMPROVEMENT PROGRAM UPDATE



Recurring Projects
CP-10 - Biennial CP Testing for Arlington Pipeline
CP-11 - Biennial CP Testing for OC-44 Pipeline
CP-12 - Biennial CP Testing for Chandler & Croddy Pipelines
CP-13 - Biennial CP Testing for N-S, E-W, Eastside Feeder Lines
D-06 - Pipeline Integrity Testing Program
D-07 - Distribution System Repairs
W-07 - Ongoing R&R for Production Facilities

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Figure 9.7 FY 2031 CIP Projects
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9.1 Mid-Term CIP (FY 2032 - 2036)

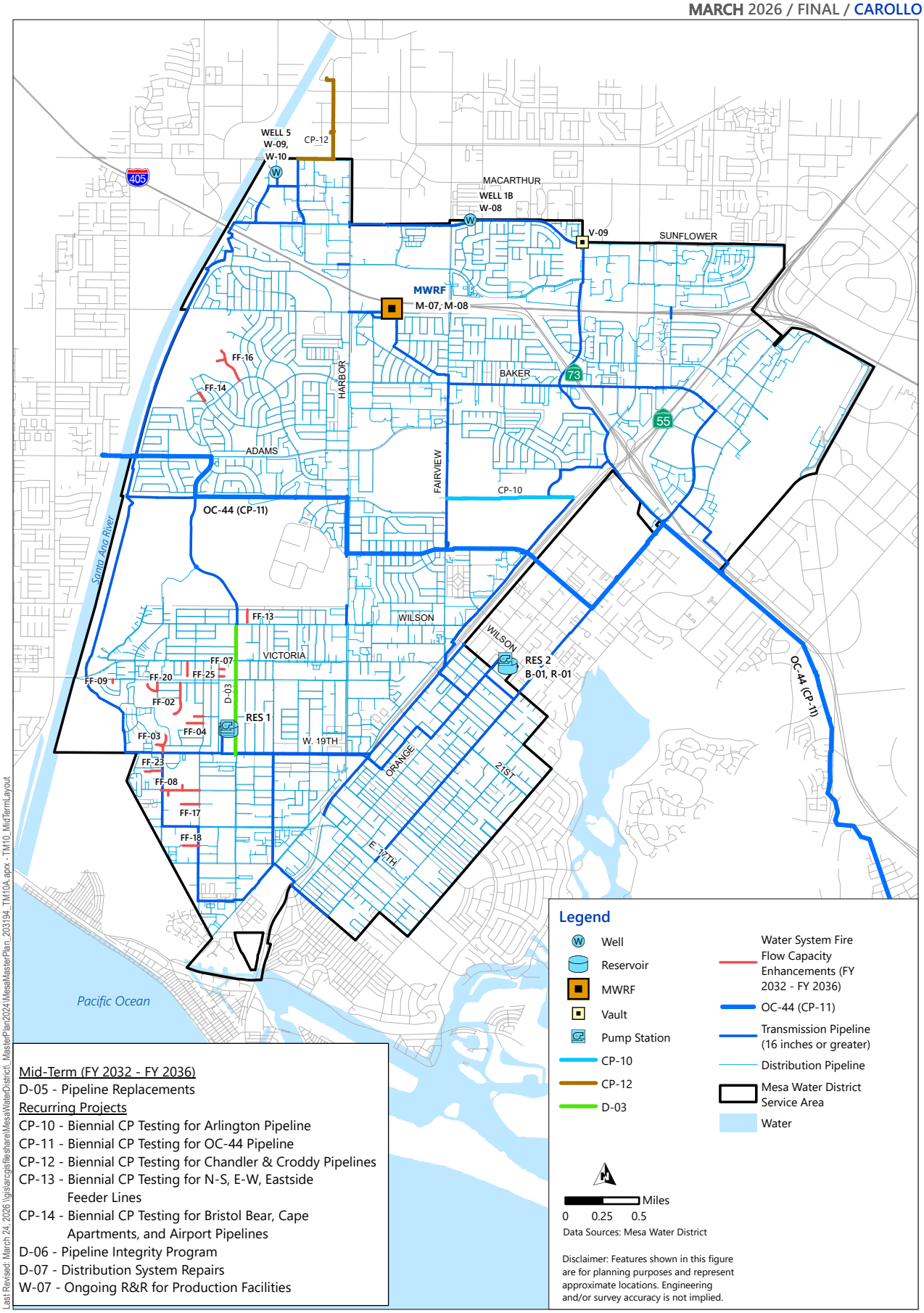
The mid-term CIP projects were identified and grouped into FYs 2032 to 2036 as shown in Table 9.2. The estimated cost of the mid-term projects totals $53.2 million, with distribution system projects (including fire flow capacity enhancement projects) representing the highest cost category, followed by booster pump improvements, well projects, and technology and software projects. There are 33 projects proposed in Mid-Term CIP projects, including three recurring projects. The locations of facilities of these Mid-Term improvement projects are shown in Figure 9.8.

Table 9.2 Mid-Term CIP Projects

Project ID and Short Description	FY 2032 - FY 2036 ($)
B-01 - Booster Pump Station Upgrades	$10,000,000
CF-02 - ZEVs Group 2 (Pickup and Work Trucks)	$625,000
CF-03 - ZEVs Group 2-PE (Broom and Dump Trucks)	$500,000
CF-05 - Electric Vehicle (EV) Charging Infrastructure	$835,000
CP-10 - Biennial CP Testing for Arlington Pipeline(1)	$0
CP-11 - Biennial CP Testing for OC-44 Pipeline(1)	$0
CP-12 - Biennial CP Testing for Chandler and Croddy Pipelines(1)	$0
CP-13 - Biennial CP Testing for N-S, E-W, Eastside Feeder Lines(1)	$0
CP-14 - Biennial CP Testing for Bristol Bear, Tanager, Cape Apartments and Airport pipelines(1)	$0
D-03 - Replace 14-Inch Cement Mortar Lined and Coated Steel Water Main Along Placentia Avenue	$7,014,000
D-05 - Pipeline Replacements based on Pipeline Integrity Program findings	$10,003,000
D-06 - Annual Pipeline Integrity Testing Program	$1,000,000
D-07 - Routine Capital - Ongoing Distribution System Repairs	$6,000,000
FF-02 - Republic Ave, Southeast of Oak St	$782,000
FF-03 - Whittier Ave and Arbor St, North of W. 19th St	$601,000
FF-04 - Evergreen Pl and W. 20th St, West of Monrovia Ave and Ohms Way	$601,000
FF-07 - Pine Pl and Plum Pl, Northeast of Federal Ave	$301,000
FF-08 - W. 18th St, Whittier Ave to Monrovia Ave	$1,082,000
FF-09 - Balmoral Pl, South of Seabluff Dr and next to Bristol and 55 Frwy	$120,000
FF-13 - Pamela Ln, Southeast of Joann St	$301,000
FF-14 - Clubhouse Rd, Kauai Dr to Lanai Dr	$301,000
FF-16 - Capri Ln, West of Mesa Verde Dr	$1,022,000
FF-17 - Sunset Dr, Southwest of Monrovia Ave	$421,000
FF-18 - Newhall St, Southeast of Monrovia Ave	$361,000
FF-20 - Linden Pl and State Ave	$481,000
FF-22 - Hamilton St and Sydney Ln off Thurin Ave	$661,000
FF-25 - President Pl, Southeast of Victoria St	$361,000
M-07 - Air Compressor System Relocation	$120,000

Project ID and Short Description	FY 2032 - FY 2036 ($)
M-08 - Replace Nanofiltration Units	$1,700,000
R-01 - Replace Facilities and Appurtenances at Vault No. 21 (R2-700-008)	$868,000
TS-02 - Technological Advancements Pilot Study	$75,000
TS-03 - Asset Management Consulting Services	$150,000
TS-04 - Asset Management Software Implementation	$2,000,000
V-09 - New Joint Intertie With City of Santa Ana	$752,000
W-07 - Ongoing R&R for Production Facilities(2)	$500,000
W-08 - Investigate and Repair Well 1B Pump & Motor to Mitigate Operational Noise	$330,000
W-09 - Replace Well 5 with Well 5B	$2,510,000
W-10 - Replace Well 5 Engine with Hybrid Engine	$850,000
Grand Total	$53,228,000

Notes:
ID – identification
(1) Project is part of Pipeline Integrity Testing Program under D-06. (Refer to Section 10.10 of Technical Memorandum 10).
(2) Includes projects W-01 through W-04, M-04, and R-03 (Refer to Section 10.10 of Technical Memorandum 10).



Mid-Term (FY 2032 - FY 2036)
D-05 - Pipeline Replacements
Recurring Projects
CP-10 - Biennial CP Testing for Arlington Pipeline
CP-11 - Biennial CP Testing for OC-44 Pipeline
CP-12 - Biennial CP Testing for Chandler & Croddy Pipelines
CP-13 - Biennial CP Testing for N-S, E-W, Eastside Feeder Lines
CP-14 - Biennial CP Testing for Bristol Bear, Cape Apartments, and Airport Pipelines
D-06 - Pipeline Integrity Program
D-07 - Distribution System Repairs
W-07 - Ongoing R&R for Production Facilities

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Figure 9.8 Mid-Term CIP Projects
MESA WATER DISTRICT
CAPITAL IMPROVEMENT PROGRAM UPDATE

9.2 Long-Term CIP

The long-term CIP projects as shown in Table 9.3 include projects beyond FY 2036 and totaled $58.5 million, with most costs allocated to distribution system (including fire flow capacity enhancement) improvements, followed by MWRF and well facility improvements.

Due to uncertainties, the Local Supply Improvement Project, which has a total estimated capital cost of $317.5 million, is not included in this total. As this project involves multiple project partners, Mesa Water's cost share is estimated to be $63.5 million (20 percent) based on the anticipated supply yield distribution. If this project is included, the total CIP cost for projects beyond FY 2036 would increase to $122 million in 2025 dollars.

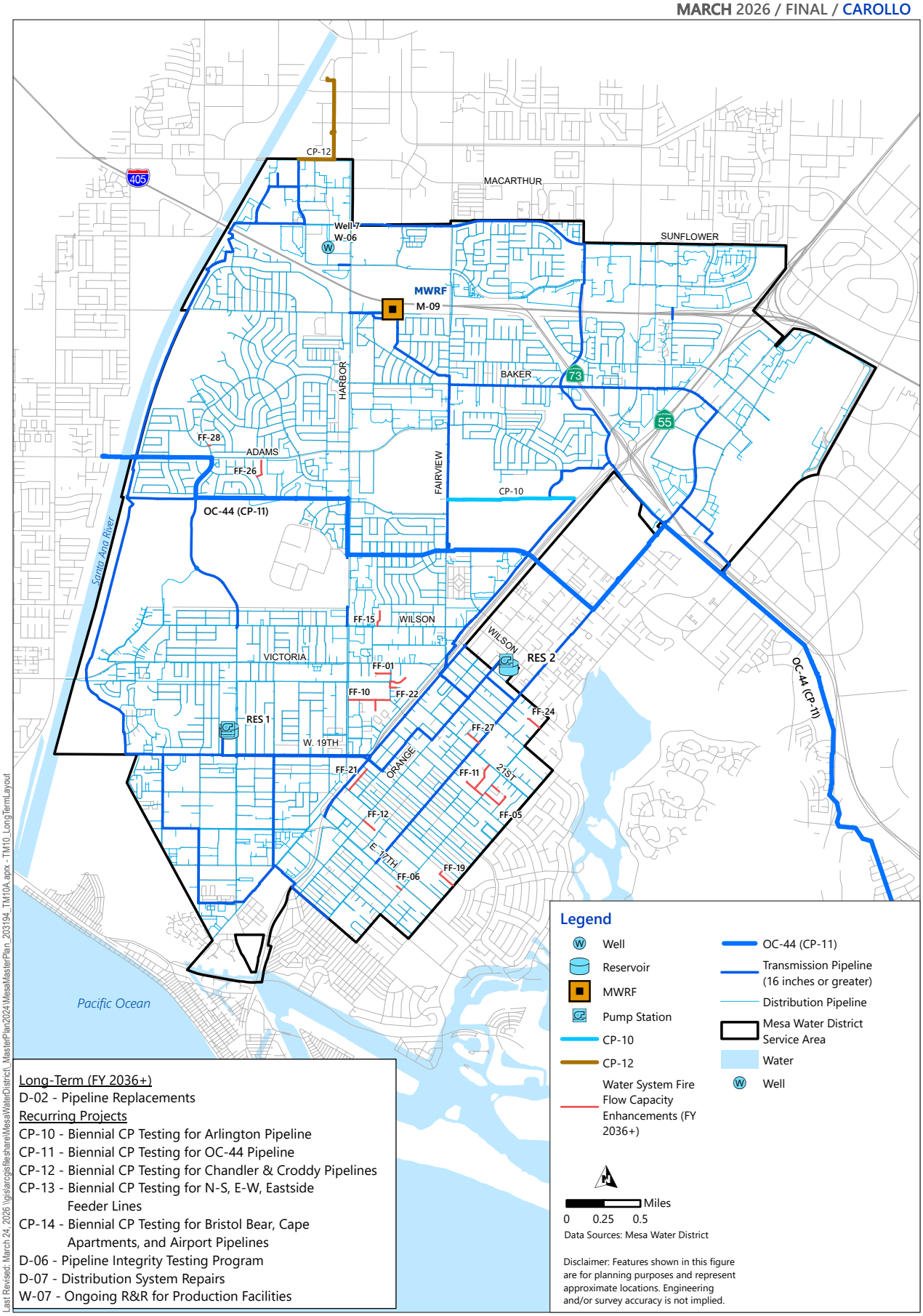
There are 23 projects proposed in Long-Term CIP projects, including three recurring projects. The locations of facilities of these Long-Term improvement projects are shown in Figure 9.9. Pipeline replacement projects are placeholders that will extend beyond FY 2036.

Table 9.3 Long-Term CIP Projects

Project ID and Short Description	FY 2036 + ($)
CF-02 - ZEVs Group 2 (Pickup and Work Trucks)	$500,000
CF-03 - ZEVs Group 2-PE (Broom and Dump Trucks)	$1,000,000
CP-10 - Biennial CP Testing for Arlington Pipeline(1)	$0
CP-11 - Biennial CP Testing for OC-44 Pipeline(1)	$0
CP-12 - Biennial CP Testing for Chandler and Croddy Pipelines(1)	$0
CP-13 - Biennial CP Testing for N-S, E-W, Eastside Feeder Lines(1)	$0
CP-14 - Biennial CP Testing for Bristol Bear, Tanager, Cape Apartments and Airport pipelines(1)	$0
D-02 - Pipeline Replacements	$18,921,000
D-06 - Annual Pipeline Integrity Testing Program	$1,000,000
D-07 - Routine Capital - Ongoing Distribution System Repairs	$6,000,000
FF-01 - Ralcam Pl, West of Thurin Ave	$361,000
FF-05 - Emerson St, East of Tustin Ave and E Bay St and Palomo Dr	$842,000
FF-06 - Off Tustin Ave, between E. 17th St and Alley	$180,000
FF-10 - W. Bay St, Harbor Blvd to Thurin Ave	$1,142,000
FF-11 - Garden Ln and Woodland Pl, between Tustin Ave and 21st St	$1,142,000
FF-12 - East of Orange Ave, Rochester St	$361,000
FF-15 - W. Wilson St, between College Ave and Fordham Dr	$361,000
FF-19 - Alley from E 18th St to Irvine Ave	$481,000
FF-21 - Alley, between E. 18th St and Flower St	$601,000
FF-23 - Parkhill Dr.	$361,000
FF-24 - Vista Baya, West of Tustin Ave	$361,000
FF-26 - Bluebird Ci, North of Hummingbird Dr	$421,000
FF-27 - Lilac Ln, West of Santa Ana Ave	$361,000
FF-28 - Mesa Verde Dr./Boa Vista Cir	$60,000

Project ID and Short Description	FY 2036 + ($)
M-09 - MWRF Expansion with Additional Treatment Train	$20,000,000
ST-03 - Water Master Plan Update	$1,000,000
W-06 - Replace Well 7 with Well 7B	$2,510,000
W-07 - Ongoing R&R for Production Facilities(2)	$500,000
Grand Total	$58,466,000

Notes:
ID – identification
(1) Project is part of Pipeline Integrity Testing Program under D-06. (Refer to Section 10.10 of Technical Memorandum 10).
(2) Includes projects W-01 through W-04, M-04, and R-03 (Refer to Section 10.10 of Technical Memorandum 10).



Long-Term (FY 2036+)
D-02 - Pipeline Replacements
Recurring Projects
CP-10 - Biennial CP Testing for Arlington Pipeline
CP-11 - Biennial CP Testing for OC-44 Pipeline
CP-12 - Biennial CP Testing for Chandler & Croddy Pipelines
CP-13 - Biennial CP Testing for N-S, E-W, Eastside Feeder Lines
CP-14 - Biennial CP Testing for Bristol Bear, Cape Apartments, and Airport Pipelines
D-06 - Pipeline Integrity Testing Program
D-07 - Distribution System Repairs
W-07 - Ongoing R&R for Production Facilities

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Figure 9.9 Long-Term CIP Projects
MESA WATER DISTRICT
CAPITAL IMPROVEMENT PROGRAM UPDATE

9.3 Ten-Year CIP (FY 2027 - FY 2036)

The total estimated ten-year CIP costs is summarized by planning phase in Table 9.4. As shown, the combined cost of the 10-year CIP (both near-term and mid-term projects) is estimated to be nearly $71 million. This equates to an average annual CIP of approximately $7 million per year in the next ten years in 2025 dollars.

As shown in Figure 9.10, the distribution system improvement projects represent the highest cost category, totaling $32.2 million, which accounts for 45 percent of the 10-year CIP. When combined with fire flow capacity enhancement projects ($7.4 million or 10 percent), the distribution system pipeline projects account for over half (55 percent) of the total 10-year CIP, followed by booster pump improvements (10.0 million or 14 percent of total 10-year CIP) and technology and software improvements ($7.6 million or 11 percent of the total 10-year CIP).

Table 9.4 10-Year CIP Cost Estimates

Facility Type	Near-Term FY2027-2031	Mid-Term FY 2032- 2036 (1)	10-Year CIP (FY 2027-2036)	10-Year CIP (%)
MWRF	$240,000	$1,820,000	$2,060,000	3%
Booster Pumps	$0	$10,000,000	$10,000,000	14%
Wells	$530,000	$4,190,000	$4,720,000	7%
Reservoirs	$200,000	$868,000	$1,068,000	2%
Fire Flow	$0	$7,396,000	$7,396,000	10%
Transmission (incl. cathodic protection)	$2,319,000	$0	$2,319,000	3%
Distribution System(2)	$8,184,000	$24,017,000	$32,201,000	45%
Vaults	$775,000	$752,000	$1,527,000	2%
Tech & Software	$5,355,500	$2,225,000	$7,580,500	11%
Clean Fleet	$80,000	$1,960,000	$2,040,000	3%
Studies	$0	$0	$0	0%
Total Cost by Phase	$17,683,500	$53,228,000	$70,911,500	100%
Average Cost by FY	$3,500,000	$10,600,000	$7,100,000	N/A

Notes:
(1) Costs shown are planning level costs presented in current dollars (Los Angeles January 2025 Engineering News-Record Construction Cost Index of 15592 and subject to future cost escalation.
(2) Dependent upon Pipeline Integrity Program.

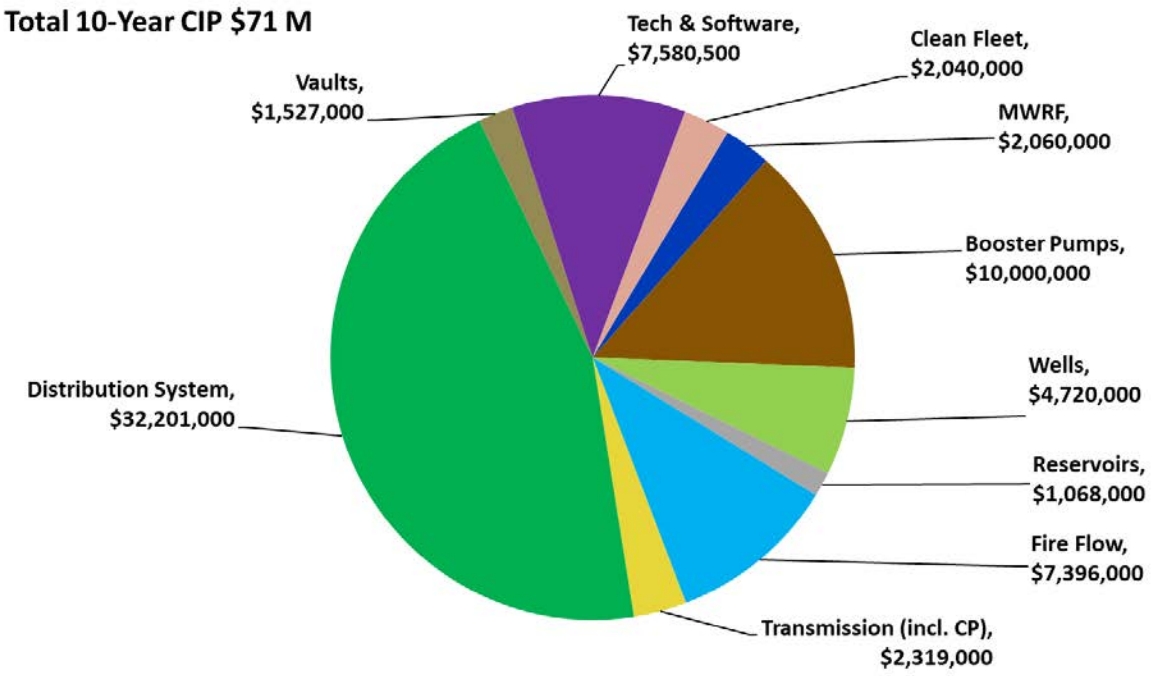


Figure 9.10 10-Year CIP Cost Distribution by Facility Type

9.4 Combined CIP (FY 2027 - FY 2036+)

As shown in Table 9.5, the combined estimated CIP from FY 2027 through FY 2036 and beyond is $129 million in 2025 dollars. The cost estimates by planning phase are also graphically presented in Figure 9.11. Although there is no period defined for the long-term phase (beyond FY 2036), it is assumed that it would take approximately 5 years to implement the projects included in the long-term phase if a similar expenditure of roughly $9 million per year would be maintained, excluding inflation corrections. About 83 percent of the costs are allocated for existing customers and 17 percent for future users. However, if Mesa Water's cost share of $63.5 million for the Local Supply Improvement Project would be added to the CIP, the cost for future ratepayers would increase from 17 to 44 percent, substantially.

Table 9.5 CIP Cost Estimates by Facility Type and Planning Period

Facility Type	Near-Term (FY 2027-2031)	Mid-Term (FY 2032-2036)	Long-Term[1] (beyond FY 2036)	Total CIP[2] (FY 2027-2036+)	Total CIP[3] (%)
MWRF	$240,000	$1,820,000	$20,000,000	$22,060,000	17%
Booster Pumps	$0	$10,000,000	$0	$10,000,000	8%
Wells[5]	$530,000	$4,190,000	$3,010,000	$7,730,000	6%
Reservoirs	$200,000	$868,000	$0	$1,068,000	1%
Fire Flow	$0	$7,396,000	$7,035,000	$14,431,000	11%
Transmission (incl. CP)	$2,319,000	$0	$0	$2,319,000	2%
Distribution System[4]	$8,184,000	$24,017,000	$25,921,000	$58,122,000	45%
Vaults	$775,000	$752,000	$0	$1,527,000	1%

Facility Type	Near-Term (FY 2027-2031)	Mid-Term (FY 2032-2036)	Long-Term[1] (beyond FY 2036)	Total CIP[2] (FY 2027-2036+)	Total CIP[3] (%)
Tech & Software	$5,355,500	$2,225,000	$0	$7,580,500	6%
Clean Fleet	$80,000	$1,960,000	$1,500,000	$3,540,000	3%
Studies	$0	$0	$1,000,000	$1,000,000	1%
Total Cost by Phase	$17,683,500	$53,228,000	$58,466,000	$129,377,500	100%
Annual Cost by FY[1]	$3,500,000	$10,600,000	$11,700,000	$8,600,000	N/A

Notes:
CP - Cathodic Protection
(1) Recurring programmatic project cost and the average annual cost ($/FY) for the Long-Term CIP Phase is based on a 5-year period.
(2) Costs shown are planning level costs presented in current dollars (Los Angeles January 2025 Engineering News-Record Construction Cost Index of 15592 and subject to future cost escalation.
(3) Total may not add up due to rounding.
(4) Dependent on Pipeline Integrity Program.
(5) Excludes Local Supply Improvement Project to treat brackish groundwater wells.

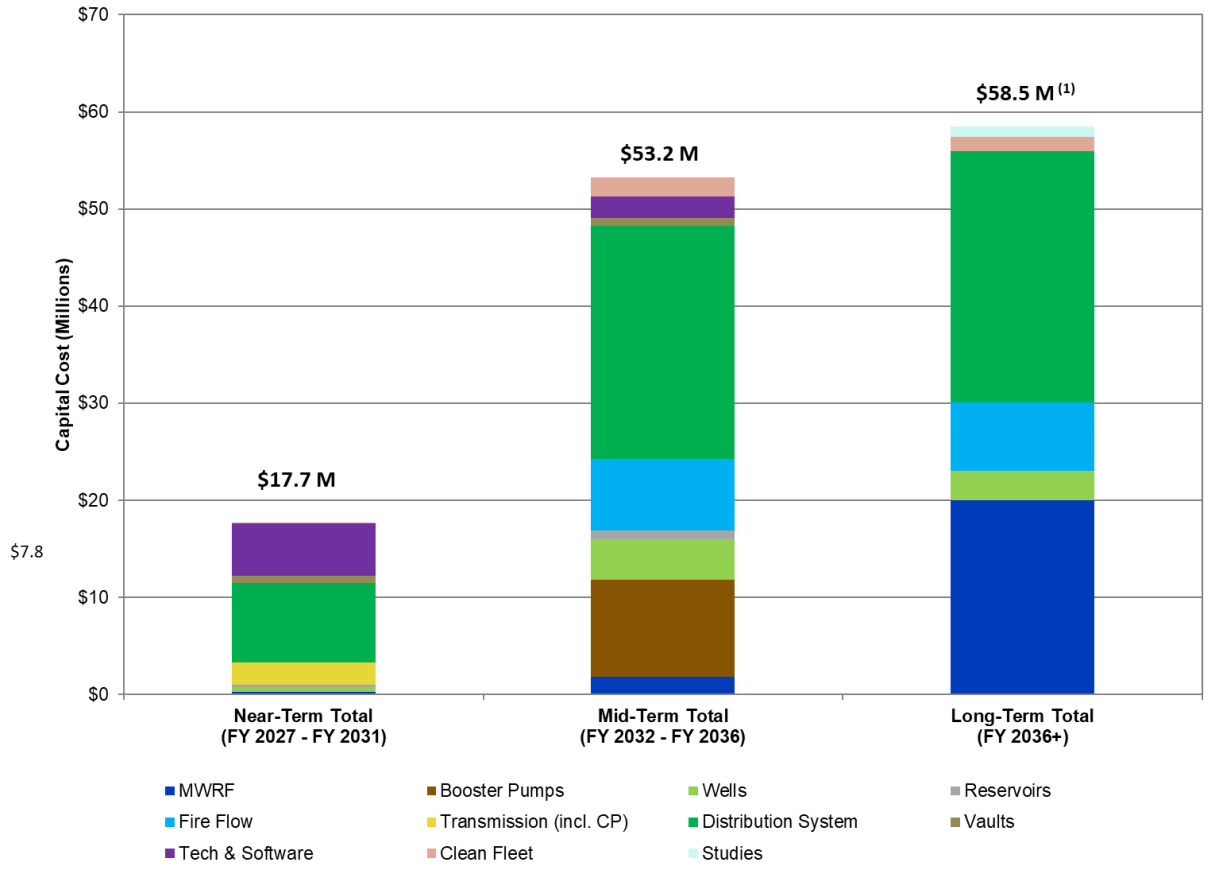
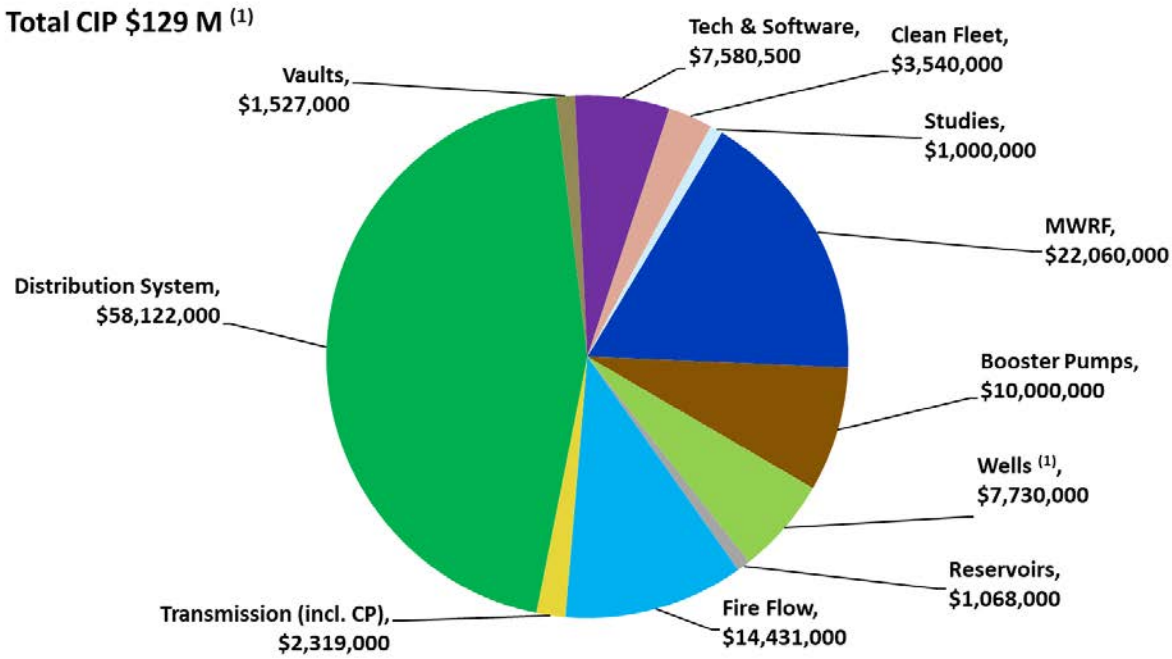


Figure 9.11 Total CIP by Planning Phase

The distribution of the combined CIP costs by facility type is graphically shown in Figure 9.12. As shown, distribution system improvement projects represent the highest cost category, totaling $58 million (excluding $14.4 million in fire flow capacity enhancement projects), which accounts for nearly 45 percent of the total combined CIP, followed by MWRF improvements ($22.1 million or 17 percent of the total combined CIP).



Notes: (1) Excludes Local Supply Improvement Project to treat brackish groundwater wells.

Figure 9.12 Total CIP Cost Distribution by Facility Type

A detailed breakdown of all recommended projects by facility type and planning year is shown in Table 9.6. As projects are phased in FYs, the first half of the year runs from July through December, while the second half of the FY runs from January to June.

Table 9.6 Detailed Capital Improvement Plan Recommendations from FY2027 through FY2036 and beyond

Improv. ID	Existing or Future	Location	Source [3]	Facility Type	Type of Improvement	Project Phase	Description	New Size/Diam. (in)	Remove / Replace	Unit	Unit Cost ($)	Baseline Construction Cost ($)	Capital Improvement Cost [1,2] ($)	Phasing: Ongoing FY 2026 ($)	Near-Term FY 2027 ($)	Near-Term FY 2028 ($)	Near-Term FY 2029 ($)	Near-Term FY 2030 ($)	Near-Term FY 2031 ($)	Mid-Term FY 2032-FY 2036 ($)	Long-Term FY 2036+ ($)	Combined CIP (excl. FY 2026) FY 2027 through FY 2036+	Cost Allocation: Existing Users %	Future Users %	Existing Users $	Future Users $
													167.0%													
Water System Fire Flow Capacity Enhancement Projects																										
Distribution System Pipelines										**Length (ft)**	**$/ft**															
FF-01	Existing	Ralcam Pl, West of Thurin Ave	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000								$ 361,000	**$ 361,000**	100%	0%	$ 361,000	$ -
FF-02	Existing	Republic Ave, Southeast of Oak St	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,300	$ 360	$ 468,000	$ 782,000							$ 782,000		**$ 782,000**	100%	0%	$ 782,000	$ -
FF-03	Existing	Whittier Ave and Arbor St, North of W. 19th St	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,000	$ 360	$ 360,000	$ 601,000							$ 601,000		**$ 601,000**	100%	0%	$ 601,000	$ -
FF-04	Existing	Evergreen Pl and W. 20th St, West of Monrovia Ave and Ohms Way	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,000	$ 360	$ 360,000	$ 601,000							$ 601,000		**$ 601,000**	100%	0%	$ 601,000	$ -
FF-05	Existing	Emerson St, East of Tustin Ave and E Bay St and Palomo Dr	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,400	$ 360	$ 504,000	$ 842,000								$ 842,000	**$ 842,000**	100%	0%	$ 842,000	$ -
FF-06	Existing	Off Tustin Ave, between E. 17th St and Alley	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	300	$ 360	$ 108,000	$ 180,000								$ 180,000	**$ 180,000**	100%	0%	$ 180,000	$ -
FF-07	Existing	Pine Pl and Plum Pl, Northeast of Federal Ave	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	500	$ 360	$ 180,000	$ 301,000							$ 301,000		**$ 301,000**	100%	0%	$ 301,000	$ -
FF-08	Existing	W. 18th St, Whittier Ave to Monrovia Ave	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,800	$ 360	$ 648,000	$ 1,082,000							$ 1,082,000		**$ 1,082,000**	100%	0%	$ 1,082,000	$ -
FF-09	Existing	Balmoral Pl, South of Seabluff Dr and next to Bristol and 55 Frwy	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	200	$ 360	$ 72,000	$ 120,000							$ 120,000		**$ 120,000**	100%	0%	$ 120,000	$ -
FF-10	Existing	W. Bay St, Harbor Blvd to Thurin Ave	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,900	$ 360	$ 684,000	$ 1,142,000								$ 1,142,000	**$ 1,142,000**	100%	0%	$ 1,142,000	$ -
FF-11	Existing	Garden Ln and Woodland Pl, between Tustin Ave and 21st St	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,900	$ 360	$ 684,000	$ 1,142,000								$ 1,142,000	**$ 1,142,000**	100%	0%	$ 1,142,000	$ -
FF-12	Existing	East of Orange Ave, Rochester St	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000								$ 361,000	**$ 361,000**	100%	0%	$ 361,000	$ -
FF-13	Existing	Pamela Ln, Southeast of Joann St	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	500	$ 360	$ 180,000	$ 301,000							$ 301,000		**$ 301,000**	100%	0%	$ 301,000	$ -
FF-14	Existing	Clubhouse Rd, Kauai Dr to Lanai Dr	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	500	$ 360	$ 180,000	$ 301,000							$ 301,000		**$ 301,000**	100%	0%	$ 301,000	$ -
FF-15	Existing	W. Wilson St, between College Ave and Fordham Dr	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000								$ 361,000	**$ 361,000**	100%	0%	$ 361,000	$ -
FF-16	Existing	Capri Ln, West of Mesa Verde Dr	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,700	$ 360	$ 612,000	$ 1,022,000							$ 1,022,000		**$ 1,022,000**	100%	0%	$ 1,022,000	$ -
FF-17	Existing	Sunset Dr, Southwest of Monrovia Ave	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	700	$ 360	$ 252,000	$ 421,000							$ 421,000		**$ 421,000**	100%	0%	$ 421,000	$ -
FF-18	Existing	Newhall St, Southeast of Monrovia Ave	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000							$ 361,000		**$ 361,000**	100%	0%	$ 361,000	$ -
FF-19	Existing	Alley from E 18th St to Irvine Ave	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	800	$ 360	$ 288,000	$ 481,000								$ 481,000	**$ 481,000**	100%	0%	$ 481,000	$ -
FF-20	Existing	Linden Pl and State Ave	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	800	$ 360	$ 288,000	$ 481,000							$ 481,000		**$ 481,000**	100%	0%	$ 481,000	$ -
FF-21	Existing	Alley, between E. 18th St and Flower St	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,000	$ 360	$ 360,000	$ 601,000								$ 601,000	**$ 601,000**	100%	0%	$ 601,000	$ -
FF-22	Existing	Hamilton St and Sydney Ln off Thurin Ave	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	1,100	$ 360	$ 396,000	$ 661,000							$ 661,000		**$ 661,000**	100%	0%	$ 661,000	$ -
FF-23	Existing	Parkhill Dr.	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000								$ 361,000	**$ 361,000**	100%	0%	$ 361,000	$ -
FF-24	Existing	Vista Baya, West of Tustin Ave	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000								$ 361,000	**$ 361,000**	100%	0%	$ 361,000	$ -
FF-25	Existing	President Pl, Southeast of Victoria St	2014 WMP	Pipe	Fire Flow	FY 2032 - FY 2036	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000							$ 361,000		**$ 361,000**	100%	0%	$ 361,000	$ -
FF-26	Existing	Bluebird Ci, North of Hummingbird Dr	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	700	$ 360	$ 252,000	$ 421,000								$ 421,000	**$ 421,000**	100%	0%	$ 421,000	$ -
FF-27	Existing	Lilac Ln, West of Santa Ana Ave	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	600	$ 360	$ 216,000	$ 361,000								$ 361,000	**$ 361,000**	100%	0%	$ 361,000	$ -
FF-28	Existing	Mesa Verde Dr./Boa Vista Cir	2014 WMP	Pipe	Fire Flow	FY 2036+	Fire Flow Capacity Enhancements that overlap with available flow < 1500 gpm	8"	Replace	100	$ 360	$ 36,000	$ 60,000								$ 60,000	**$ 60,000**	100%	0%	$ 60,000	$ -
																						$ -				
Subtotal												**$ 8,640,000**	**$ 14,431,000**	$ -	$ -	$ -	$ -	$ -	$ -	**$ 7,396,000**	**$ 7,035,000**	**$ 14,431,000**	N/A	N/A	**$ 14,431,000**	**$ -**
Fire Flow Capacity Enhancement Projects Total												**$ 8,640,000**	**$ 14,431,000**	$ -	$ -	$ -	$ -	$ -	$ -	**$ 7,396,000**	**$ 7,035,000**	**$ 14,431,000**	**N/A**	**N/A**	**$ 14,431,000**	**$ -**
Repair and Rehabilitation Projects																						**$ -**				
Transmission System										**Unit (LS)**	**$/unit**											**$ -**				
CP-01	Existing	N-S, E-W, Eastside Feeders	TM-3	Rectifier	R&R	FY 2027	Replace the broken rectifiers on the N-S Feeder, E-W Feeder, and Eastside Feeder.		Replace	1	$ 58,000	$ 28,000	$ 47,000		$ 97,000							**$ 97,000**	100%	0%	$ 97,000	$ -
CP-02	Existing	N-S, E-W, Eastside Feeders	TM-3	Deep Well Anode	R&R	FY 2027	Replace the deep well anode groundbeds that have depleted or are near depletion on the N-S Feeder, E-W feeder, and Eastside Feeder.		Replace	1	$ 154,000	$ 154,000	$ 257,000		$ 257,000							**$ 257,000**	100%	0%	$ 257,000	$ -
CP-03	Existing	Bristol Bear, Tanager Drive, Cape Apartments, Airport Pi	TM-3	Galvanic Anodes	R&R	FY 2027	Replace the galvanic anodes on the Bristol Bear (MC-887), Tanager Drive, Cape Apartments, and Airport pipelines.		Replace	1	$ 36,000	$ 36,000	$ 60,000		$ 60,000							**$ 60,000**	100%	0%	$ 60,000	$ -
CP-04	Existing	Bristol Bear, Cape Apartments	TM-3	CP Test Station	R&R	FY 2027	Replace the missing CP test stations on the Bristol Bear (MC-887) and Cape Apartments pipeline.		Replace	1	$ 8,000	$ 8,000	$ 13,000		$ 13,000							**$ 13,000**	100%	0%	$ 13,000	$ -
CP-05	Existing	Pomona Avenue and Baker Street	TM-3 & District Sheet	CP System	R&R	FY 2029 - FY 2030	Design and install a CP system for the Pomona Avenue and Baker Street pipelines.		New	1	$ 240,000	$ 240,000	$ 401,000				$ 80,200	$ 320,800				**$ 401,000**	100%	0%	$ 401,000	$ -
CP-06	Existing	Arlington Pipeline	TM-3	Rectifier	R&R	FY 2030	Replace the rectifier on the Arlington pipeline at location 34+59.		Replace	1	$ 8,000	$ 8,000	$ 13,000					$ 13,000				**$ 13,000**	100%	0%	$ 13,000	$ -
CP-07	Existing	Eastside Feeder (STA 42+73)	TM-3	Deep Well Anode	R&R	FY 2030	Replace the deep well anode groundbed on the Eastside Feeder at location 42+73.		Replace	1	$ 28,000	$ 28,000	$ 47,000					$ 47,000				**$ 47,000**	100%	0%	$ 47,000	$ -
CP-08	Existing	Conway Avenue, Orange Avenue	TM-3 & District Sheet	CP System	R&R	FY 2030 - FY 2031	Design and install a CP system for the Conway Avenue and Orange Avenue pipelines.		New	1	$ 240,000	$ 240,000	$ 401,000					$ 80,200	$ 320,800			**$ 401,000**	100%	0%	$ 401,000	$ -
CP-09[4]	Existing	Chandler and Croddy	TM-3	CP System	Inspection	FY 2027	Install test boards during the next CP system testing cycle on the Chandler and Croddy pipeline.		Inspection	1	$ 8,000	N/A										**$ -**	100%	0%	$ -	$ -
CP-10[4]	Existing	Arlington Pipeline	TM-3	CP System	Inspection	FY 2027 - 2036+	Biennial CP testing for Arlington pipeline		Inspection	1	$ 13,000	N/A										**$ -**	100%	0%	$ -	$ -
CP-11[4]	Existing	OC-44	TM-3	CP System	Inspection	FY 2027 - 2036+	Biennial CP testing for OC-44 pipeline		Inspection	1	$ 13,000	N/A										**$ -**	100%	0%	$ -	$ -
CP-12[4]	Existing	Chandler and Croddy	TM-3	CP System	Inspection	FY 2027 - 2036+	Biennial CP testing for Chandler & Croddy pipeline		Inspection	1	$ 13,000	N/A										**$ -**	100%	0%	$ -	$ -
CP-13[4]	Existing	N-S, E-W, Eastside Feeders	TM-3	CP System	Inspection	FY 2029 - 2036+	Biennial CP Testing for N-S, E-W, Eastside Feeder Lines		Inspection	1	$ 39,000	N/A										**$ -**	100%	0%	$ -	$ -
CP-14[4]	Existing	Bristol Bear, Tanager, Cape Apartments and Airport pipel	TM-3	CP System	Inspection	FY 2030 - 2036+	Biennial CP Testing starting in FY 2030 for 4 transmission alignments		Inspection	1	$ 52,000	N/A										**$ -**	100%	0%	$ -	$ -
T-01	Existing	Pomona Avenue and Baker Street	TM-3	Transmission Main	Inspection	FY 2028	Develop inspection plan for condition assessment of Pomona Avenue and Baker Street pipelines.		Study	1	$ 30,000	N/A	$ 30,000				$ 30,000					**$ 30,000**	100%	0%	$ 30,000	$ -
T-02	Existing	Chandler and Croddy	District Spreadsheet	Transmission Main	R&R	FY 2026 - FY 2027	Design and Construction of pavement over the Chandler Ave and Croddy Way Pipeline and Storm Drain.		Replace	1	$ 1,000,000	N/A	$ 2,000,000	$ 1,000,000	$ 1,000,000							**$ 1,000,000**	100%	0%	$ 1,000,000	$ -
Subtotal												**$ 772,000**	**$ 3,319,000**	**$ 1,000,000**	**$ 1,427,000**	**$ 30,000**	**$ 80,200**	**$ 461,000**	**$ 320,800**	**$ -**	**$ -**	**$ 2,319,000**	N/A	N/A	**$ 2,319,000**	**$ -**
Distribution System										**Unit (LS)**	**$/unit**											**$ -**				
D-01	Existing	District-wide	District Spreadsheet	Distribution Main	R&R	FY 2026 - FY 2027	Replacement of meter end points (Neptune meters).		Replace	1	$ 250,000	N/A	$ 500,000	$ 250,000	$ 250,000							**$ 250,000**	100%	0%	$ 250,000	$ -
D-02	Existing	District-wide	2014 WMP	Distribution Main	R&R	FY 2036+	Pipeline Replacements based on PIP findings in the long-term phase		Replace	1	$ 11,330,000	$ 11,330,000	$ 18,921,000								$ 18,921,000	**$ 18,921,000**	100%	0%	$ 18,921,000	$ -
D-03	Existing	Placentia Avenue	2014 WMP	Distribution Main	R&R	FY 2032- FY 2036	Placentia Avenue Steel Main Replacement	16"	Replace	5,000	$ 840	$ 4,200,000	$ 7,014,000							$ 7,014,000		**$ 7,014,000**	100%	0%	$ 7,014,000	$ -
D-04	Existing	Southeast Area (along Anaheim Avenue just South of W Wilson Street and along W 20th St west of Federal Avenue)	2014 WMP	Distribution Main	R&R	FY 2029	Pipe Relocations due To Tree Roots		Replace	1	$ 260,000	$ 260,000	$ 434,000				$ 434,000					**$ 434,000**	100%	0%	$ 434,000	$ -
D-05	Existing	District-wide	2014 WMP	Distribution Main	R&R	FY 2032 - FY 2036	Pipeline Replacements based on PIP findings in the mid-term phase		Replace	1	$ 5,990,000	$ 5,990,000	$ 10,003,000							$ 10,003,000		**$ 10,003,000**	100%	0%	$ 10,003,000	$ -
D-06	Existing	District-wide	District Spreadsheet	Distribution Main	Inspection	FY 2026 - FY 2036+	Annual Pipeline Integrity Testing Program (Non-destructive). $200-300K/yr and $1M in mid- and long-term phases.		Inspection	per year	$ 300,000	N/A	$ 3,700,000	$ 200,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,000,000	$ 1,000,000	**$ 3,500,000**	100%	0%	$ 3,500,000	$ -
D-07	Existing	District-wide	District Spreadsheet	Distribution Main	R&R	FY 2027 - FY 2036+	Routine Capital: Ongoing repair and replacement of distribution system appurtenances including hydrants, valves, customer meters.		Replace	per year	$ 1,200,000	N/A	$ 19,250,000	$ 1,250,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 1,200,000	$ 6,000,000	$ 6,000,000	**$ 18,000,000**	100%	0%	$ 18,000,000	$ -
																						$ -				
Subtotal												**$ 21,780,000**	**$ 59,822,000**	**$ 1,700,000**	**$ 1,750,000**	**$ 1,500,000**	**$ 1,934,000**	**$ 1,500,000**	**$ 1,500,000**	**$ 24,017,000**	**$ 25,921,000**	**$ 58,122,000**	**N/A**	N/A	**$ 58,122,000**	**$ -**

Improv. ID	Existing or Future	Location	Source [3]	Facility Type	Type of Improvement	Project Phase	Description	New Size/Diam. (in)	Remove / Replace	Unit	Unit Cost ($)	Baseline Construction Cost ($)	Capital Improvement Cost [1,2] ($)	Ongoing	Phasing							Combined CIP (excl. FY 2026)	Cost Allocation			
															Near-Term					Mid-Term	Long-Term		Existing Users %	Future Users %	Existing Users $	Future Users $
														FY 2026 ($)	FY 2027 ($)	FY 2028 ($)	FY 2029 ($)	FY 2030 ($)	FY 2031 ($)	FY 2032-FY 2036 ($)	FY 2036+ ($)	FY 2027 through FY 2036+				
Vaults										**Unit (LS)**	**$/unit**											$ -				
V-01	Existing	EI-IR3-700-001 (Vault 6 - Bristol Street north of Red Hill Avenue)	TM-9	Interties and Arterial Lines	R&R	FY 2028	1.Recoat the steel piping with an epoxy coating or wrap it with petrolatum tape. 2.Replace the gate valve and control valve. 3.Replace the vent pipe. 4.Patch the opening around the northeast pipe penetration. Install corrosion inhibitor on the reinforcing steel prior to patching. 5.Do not use or remove the u-shaped rebar from the ceiling. 6.Recoat the access hatch. 7.Replace the topside posts. Perform crack injections on the cracks around the post penetrations.		Replace	1	$ 44,500	$ 44,500	$ 74,000			$ 74,000							**$ 74,000**	100%	0%	$ 74,000	$ -
V-02	Existing	IS-CM2-700-003 (Vault 9 - off Bristol Street north of Red Hill Avenue)	TM-9	Import Stations and Pressure Reducing Station	R&R	FY 2028	1.Replace the piping and pipe supports. 2.Verify the valves are fully operable. If they are, recoat. 3.Remove the abandoned anchorage from the concrete walls. Patch with repair mortar. 4.Replace the electrical equipment within the vault. Use PVC lined and coated conduit..		Replace	1	$ 21,300	$ 21,300	$ 36,000			$ 36,000							**$ 36,000**	100%	0%	$ 36,000	$ -
V-03	Existing	IS-OC14-700-003 (Vault 10 - off Baker Street east of Bristol Street)	TM-9	Import Stations and Pressure Reducing Stations	R&R	FY 2028	1.Recoat the piping and valves. 2.Replace the pipe supports. 3.Replace the exhaust fan. 4.Anchor the ladder to the concrete wall at the location where anchorage is missing. 5.Install conduit covers on the electrical conduits. 6.Clean the exposed metal per SSPC SP2 and apply mortar over the area of exposed reinforcement in the manhole chimney		Replace	1	$ 5,300	$ 5,300	$ 9,000			$ 9,000							**$ 9,000**	100%	0%	$ 9,000	$ -
V-04	Existing	AL-OC44-SA_PEG-700-001 (Vault 11-Santa Ana Avenue north of Pegasus Street)	TM-9	Interties and Arterial Lines	R&R	FY 2028	1.Replace the 30-inch piping, 4-inch bypass piping, and associated plug valves.		Replace	1	$ 50,000	$ 50,000	$ 84,000			$ 84,000							**$ 84,000**	100%	0%	$ 84,000	$ -
V-05	Existing	IS-MESA-700-003 (Vault 12 - Santa Ana Avenue north of Mesa Drive)	TM-9	Import Stations and Pressure Reducing Stations	R&R	FY 2028	1.Replace the Unistrut channels and base plates. 2.Replace the exhaust fan hardware. 3.Coat the sump pump pipe wall bracket and grating. 4.Perform coating spot repairs on the piping and valves		Replace	1	$ 1,700	$ 1,700	$ 3,000			$ 3,000							**$ 3,000**	100%	0%	$ 3,000	$ -
V-06	Existing	IS-FN-700-003 (Vault 13 - Fair Drive of Newport Boulevard)	TM-9	Import Stations and Pressure Reducing Stations	R&R	FY 2028	1.Recoat the 14-inch butterfly valve. 2.Replace the davit arm sleeve. 3.Perform coating spot repairs on the piping and valves 4.Replace the sump pump grating.		Replace	1	$ 3,800	$ 3,800	$ 6,000			$ 6,000							**$ 6,000**	100%	0%	$ 6,000	$ -
V-07	Existing	AL-OC44-FAIR_AND-700-001 - (Vault 17 - Fair Drive east of Loyola Road)	TM-9	Interties and Arterial Lines	R&R	FY 2028	1.Investigate the cause of the standing water within the vault. It is possible that the corroded 36 inch pipe is leaking near the wall penetration. 2.Replace the piping, valves, and pipe supports. 3.Perform epoxy crack injection at the cracks with infiltration on the ceiling.		Replace	1	$ 12,700	$ 12,700	$ 21,000			$ 21,000							**$ 21,000**	100%	0%	$ 21,000	$ -
V-08	Existing	IS-FF-700-003 - (Vault 19 - Fairview Road north of Fair Drive)	TM-9	Import Stations and Pressure Reducing Stations	R&R	FY 2028	1.Coat the ladder. 2.Replace the davit arm sleeve and resurface the concrete in the surrounding area. 3.Recoat the exhaust fan and replace the hardware. 4.Replace the electrical conduits. 5.Replace the sump pump pipe wall bracket and recoat the grating. 6.Perform coating spot repairs on the piping and valves.		Replace	1	$ 4,100	$ 4,100	$ 7,000			$ 7,000							**$ 7,000**	100%	0%	$ 7,000	$ -
V-09	Future	Near "Bristol Village", on the northern border of Mesa Water service area, at Sunflower & Bear	District Spreadsheet	Intertie	Supply Reliability	FY 2032 - FY 2036	Joint project with the City of Santa Ana to install a new intertie.	12"	New	1	$ 450,000	$ 450,000	$ 752,000							$ 752,000		**$ 752,000**	0%	100%	$ -	$ 752,000
V-10	Existing	EI-IR1-700-001 (Vault 5 - Airport Way at the Airport)	District Spreadsheet	Intertie @ Airport	R&R	FY 2028	Assess and Repair Vault		Replace	1	$ 75,000	$ 75,000	$ 125,000			$ 125,000						**$ 125,000**	100%	0%	$ 125,000	$ -
V-11	Existing	Various Locations	TM-9	Intertie	O&M	FY 2028	Various Vault Related O&M Projects		Replace	1	$ 243,700	$ 243,700	$ 410,000			$ 410,000						**$ 410,000**	100%	0%	$ 410,000	$ -
																						$ -				
Subtotal												**$ 912,100**	**$ 1,527,000**	**$ -**	**$ -**	**$ 775,000**	**$ -**	**$ -**	**$ -**	**$ 752,000**	**$ -**	**$ 1,527,000**	**N/A**	N/A	**$ 775,000**	**$ 752,000**
Booster Pumps										**Unit (LS)**	**$/unit**											$ -				
B-01	Existing	Reservoir 1 and 2 Pump Stations	2014 WMP & Distrct			FY 2026, FY 2032 - FY 2036	Booster Pump Station Upgrades			1	$ 19,250,000	N/A	$ 19,250,000	$ 9,250,000						$ 10,000,000		**$ 10,000,000**	100%	0%	$ 10,000,000	$ -
																						$ -				
Subtotal												**$ -**	**$ 19,250,000**	**$ 9,250,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 10,000,000**	**$ -**	**$ 10,000,000**	**N/A**	N/A	**$ 10,000,000**	**$ -**
Wells										**Unit (LS)**	**$/unit**											$ -				
W-01 [5]	Existing	Well 3B	TM-9	Pump & Motor and Conduit	O&M	FY 2027	Replace existing corroded shaft metal grating with new epoxy coated grating or with a new Type 316 stainless steel grating. Replace brittle conduit with a new conduit PVC jacket housing.		Replace	1	$ 1,000	N/A										**$ -**	100%	0%	$ -	$ -
W-02 [5]	Existing	Well 9B	TM-9	Digital Discharge Pressure Switch	O&M	FY 2027	Discharge Pressure Switch for the SH Meter on SH Motor Pump 2 should be replaced.		Replace	1	$ 1,000	N/A										**$ -**	100%	0%	$ -	$ -
W-03 [5]	Existing	Well 5	TM-9	Pressure Switch Pedestal	O&M	FY 2027	Replace Ammonia Pump 1 and 2 Pressure Switches		Replace	2	$ 1,000	N/A										**$ -**	100%	0%	$ -	$ -
W-04 [5]	Existing	Well 5	TM-9	Strainer	O&M	FY 2027	Replace SH Mer Pump 1 Feed Y-Strainer due to excessive corrosion.		Replace	1	$ 8,000	N/A										**$ -**	100%	0%	$ -	$ -
W-05	Existing	Well 5	TM-2	Well	R&R	FY 2031	Inspect Well 5 - Pull pump and perform a well video inspection to make a decision on rehabilitation/replacement options.		Inspection	1	$ 30,000	N/A	$ 30,000						$ 30,000			**$ 30,000**	100%	0%	$ 30,000	$ -
W-06	Existing	Well 7	TM-2	Well	Supply Reliability	FY 2036+	Replace Well 7 with well 7B due to RUL of 3-5 years in 2018		Replace	1	$ 1,500,000	$ 1,500,000	$ 2,510,000								$ 2,510,000	**$ 2,510,000**	100%	0%	$ 2,510,000	$ -
W-07	Existing	All Wells	2014 WMP	Well	Supply Reliability	ALL	Ongoing R&R for Production Facilities		Replace	per year	varies	N/A	$ 1,680,000	$ 180,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 100,000	$ 500,000	$ 500,000	**$ 1,500,000**	100%	0%	$ 1,500,000	$ -
W-08	Existing	Well 1B	TM-9	Pump & Motor	R&R	FY 2032 - FY 2036	Investigate and Repair Well 1B Pump to Mitigate Operational Noise		Replace	1	$ 200,000	$ 200,000	$ 330,000							$ 330,000		**$ 330,000**	100%	0%	$ 330,000	$ -
W-09	Existing	Well 5	TM-2	Well	Supply Reliability	FY 2032 - FY 2036	Replace to Well 5 with Well 5B once Well 5 reaches its EUL (and engine inspections).		Replace	1	$ 1,500,000	$ 1,500,000	$ 2,510,000							$ 2,510,000		**$ 2,510,000**	100%	0%	$ 2,510,000	$ -
W-10	Existing	Well 5	TM-5	Hybrid Engine	Regulatory Compliance	FY 2032 - FY 2036	Replace Well 5 engine with hybrid (electric/natural gass backup) engine once Well 5 engine reaches its EUL (combine with W-09)		Replace	1	$ 850,000	$ 850,000	$ 850,000							$ 850,000	$ -	**$ 850,000**	100%	0%	$ 850,000	$ -
W-11	Future	Wells	TM-2	Brackish Groundwater Desalination Facility	Supply Reliability	FY 2036+	Local Supply Improvement Project - Treatment for Brackish Groundwater Wells		New	1	$ 63,500,000	N/A	$ 63,500,000								$ 63,500,000	**$ 63,500,000**	0%	100%	$ -	$ 63,500,000
Subtotal												**$ 4,050,000**	**$ 71,410,000**	**$ 180,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 100,000**	**$ 130,000**	**$ 4,190,000**	**$ 66,510,000**	**$ 71,230,000**	**N/A**	N/A	**$ 7,730,000**	**$ 63,500,000**
Reservoir										**Unit (LS)**	**$/unit**															
R-01	Existing	Reservoir 2 Vault 21	TM-9	Reservoir Vault	R&R	FY 2032 - FY 2036	Replace submersible pumps, check valves, galvanized steel discharge piping, vent pipe hardware, flap gate coupling, 12-inch butterfly valve, electrical components, lower conduit supports, ladder, and grating.		Replace	1	$ 520,000	$ 520,000	$ 868,000							$ 868,000		**$ 868,000**	100%	0%	$ 868,000	$ -
R-02	Existing	All Reservoirs	District Spreadsheet	Reservoirs	R&R	FY 2028	Ongoing Concrete Rehab and Coating for Reservoirs		Replace	1	$ 200,000	N/A	$ 200,000			$ 200,000						**$ 200,000**	100%	0%	$ 200,000	$ -
R-03	Existing	All Reservoirs	2014 WMP	Reservoirs	R&R	ALL	Ongoing Cleaning & Diving Inspections for Reservoirs		Inspection	per year	$ 40,000	N/A	$ -													
																						$ -				
Subtotal												**$ 520,000**	**$ 1,068,000**	**$ -**	**$ -**	**$ 200,000**	**$ -**	**$ -**	**$ -**	**$ 868,000**	**$ -**	**$ 1,068,000**	**N/A**	N/A	**$ 1,068,000**	**$ -**

Improv. ID	Existing or Future	Location	Source [3]	Facility Type	Type of Improvement	Project Phase	Description	New Size/Diam. (in)	Remove / Replace	Unit	Unit Cost ($)	Baseline Construction Cost ($)	Capital Improvement Cost [1,2] ($)	Phasing								Combined CIP (excl. FY 2026)	Cost Allocation			
														Ongoing	Near-Term				Mid-Term	Long-Term			Existing Users %	Future Users %	Existing Users $	Future Users $
														FY 2026 ($)	FY 2027 ($)	FY 2028 ($)	FY 2029 ($)	FY 2030 ($)	FY 2031 ($)	FY 2032-FY 2036 ($)	FY 2036+ ($)	FY 2027 through FY 2036+				
MWRF										**Unit (LS)**	**$/unit**											$ -				
M-01	Existing	MWRF	TM-5	Ammonia Storage Tank	R&R	FY 2027	Coating existing ammonia storage tank to be compatibe with liquid ammonia sulfate storage		Replace	1	$ 30,000	N/A	$ 30,000		$ 30,000							$ 30,000	100%	0%	$ 30,000	$ -
M-02	Existing	Process Building	TM-9	HVAC	R&R	FY 2028	HVAC Improvements		Replace	1	$ 65,000	$ 65,000	$ 110,000			$ 110,000						$ 110,000	100%	0%	$ 110,000	$ -
M-03	Existing	Mesa Water Education Center	District Spreadsheet	MWRF	R&R	FY 2026	MWRF Front Entry Flag		New	1	$ 100,000	N/A	$ 100,000	$ 100,000								$ -	100%	0%	$ -	$ -
M-04 [5]	Existing	Chemical Building	TM-9	High-Pressure Discharge Switch Footing	O&M	FY 2027	Caustic Soda Peristaltic Pump No. 4 High-Pressure Discharge Switch Footing		Replace	1	$ 1,000	N/A										$ -	100%	0%	0	$ -
M-05	Existing	Plant	2014 WMP	MWRF	R&R	FY 2028	Bypass and Finished Water Vaults Rehabilitation		Replace	1	$ 50,000	$ 50,000	$ 84,000			$ 84,000						$ 84,000	100%	0%	$ 84,000	$ -
M-06	Existing	MWRF Vaults 24, 25, 26	TM-9	MWRF	O&M	FY 2028	MWRF Vaults Requiring O&M		Replace	1	$ 9,800	$ 9,800	$ 16,000			$ 16,000						$ 16,000	100%	0%	$ 16,000	$ -
M-07	Existing	Plant	2014 WMP	MWRF	R&R	FY 2032 - FY 2036	Air Compressor System Relocation		Replace	1	$ 70,000	$ 70,000	$ 120,000							$ 120,000		$ 120,000	100%	0%	$ 120,000	$ -
M-08	Existing	Plant	TM-2	MWRF	R&R	FY 2032 - FY 2036	Nanofiltration Membrane Units Replacements		Replace	1	$ 1,000,000	$ 1,000,000	$ 1,700,000							$ 1,700,000		$ 1,700,000	100%	0%	$ 1,700,000	$ -
M-09	Future	Plant	TM-2	Treatment Train	Supply Reliability	FY 2036+	MWRF expansion with an additional third train. This project is likely beyond the 10-year horizon of this CIP Update with the BPP being at 85%. If the BPP trends down in the future, this may be a viable option to keep in view for the future		New	1	$ 12,000,000	$ 12,000,000	$ 20,000,000								$ 20,000,000	$ 20,000,000	0%	100%	$ -	$ 20,000,000
																						$ -				
Subtotal												**$ 13,194,800**	**$ 22,160,000**	**$ 100,000**	**$ 30,000**	**$ 210,000**	**$ -**	**$ -**	**$ -**	**$ 1,820,000**	**$ 20,000,000**	**$ 22,060,000**	**N/A**	N/A	**$ 2,060,000**	**$ 20,000,000**
R & R Total												**$ 41,228,900**	**$ 178,556,000**	**$ 12,230,000**	**$ 3,307,000**	**$ 2,815,000**	**$ 2,114,200**	**$ 2,061,000**	**$ 1,950,800**	**$ 41,647,000**	**$ 112,431,000**	**$ 166,326,000**	**N/A**	**N/A**	**$ 82,074,000**	**$ 84,252,000**
Miscellaneous Projects																										
Studies										**Unit (LS)**	**$/unit**											$ -				
ST-01	Existing	N/A	District Spreadsheet		Study	FY 2026	Feasibility study for supplying water to the City of Newport Beach and City of Huntington Beach.		Study	1	$ 75,000	N/A	$ 75,000	$ 75,000								$ -	100%	0%	$ -	$ -
ST-02	Existing	N/A	TM-2		Study	FY 2026	Local Supply Improvement Project Expansion (LSIP)		Study	1	$ 200,000	N/A	$ 200,000	$ 200,000								$ -	100%	0%	$ -	$ -
ST-03	Future	N/A	2026 CIP		Study	FY 2036+	Water Master Plan Update		Study	1	$ 1,000,000	N/A	$ 1,000,000								$ 1,000,000	$ 1,000,000	0%	100%	$ -	$ 1,000,000
Subtotal												**$ -**	**$ 1,275,000**	**$ 275,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,000,000**	**$ 1,000,000**	**N/A**	N/A	**$ -**	**$ 1,000,000**
Clean Fleet										**Unit (LS)**	**$/unit**											$ -				
CF-01	Existing	N/A	District Spreadsheet		Vehicles	FY 2026 - FY 2027	Purchase New F-150 Truck		New	1	$ 130,000	N/A	$ 130,000	$ 50,000	$ 80,000							$ 80,000	100%	0%	$ 80,000	$ -
CF-02	Existing	N/A	TM-5		Vehicles	FY 2032- FY 2036	ZEVs for Group 2 (Pickup Truck and Work Truck)		R&R	5	$ 125,000	N/A	$ 625,000							$ 625,000		$ 625,000	100%	0%	$ 625,000	$ -
CF-02	Existing	N/A	TM-5		Vehicles	FY 2036+	ZEVs for Group 2 (Pickup Truck and Work Truck)		R&R	4	$ 125,000	N/A	$ 500,000								$ 500,000	$ 500,000	100%	0%	$ 500,000	$ -
CF-03	Existing	N/A	TM-5		Vehicles	FY 2032- FY 2036	ZEVs for Group 2-PE (Boom Truck and Dump Truck)		R&R	2	$ 250,000	N/A	$ 500,000							$ 500,000		**500000**	100%	0%	$ 500,000	$ -
CF-03	Existing	N/A	TM-5		Vehicles	FY 2036+	ZEVs for Group 2-PE (Boom Truck and Dump Truck)		R&R	4	$ 250,000	N/A	$ 1,000,000								$ 1,000,000	$ 1,000,000	100%	0%	$ 1,000,000	$ -
CF-04	Existing	MWRF	District Spreadsheet	EV Charging Station	Study	FY 2026	Feasibility study and preliminary cost estimate of constructing electric vehicle (EV) charging stations.		Study	1	$ 75,000	N/A	$ 75,000	$ 75,000								$ -	100%	0%	$ -	$ -
CF-05	Existing	N/A	TM-5		Charging Infrastructure	FY 2032- FY 2036	EV Charging Infrastructure		New	1	$ 500,000	$ 500,000	$ 835,000							$ 835,000		$ 835,000	100%	0%	$ 835,000	$ -
																						$ -				
Subtotal												**$ 500,000**	**$ 3,665,000**	**$ 125,000**	**$ 80,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,960,000**	**$ 1,500,000**	**$ 3,540,000**	**N/A**	N/A	**$ 3,540,000**	**$ -**
Technological & Software Related Projects										**Unit (LS)**	**$/unit**											$ -				
TS-01	Existing	N/A	District Spreadsheet		Study	FY 2026 - FY 2028	Development of vision and scope of work for SCADA master plan.		Study	1	$ 600,000	N/A	$ 600,000	$ 100,000		$ 500,000						$ 500,000	100%	0%	$ 500,000	$ -
TS-02	Existing	N/A	TM-6		Study	FY 2032- FY 2036	Technology implementation pilot study		Study	1	$ 75,000	N/A	$ 75,000							$ 75,000		$ 75,000	100%	0%	$ 75,000	$ -
TS-03	Existing	N/A	TM-7		Services	FY 2032- FY 2036	Consulting services to support asset management gap assessment, strategy, levels of service, KPIs etc.		Asset Management	1	$ 150,000	N/A	$ 150,000	$ -	$ -					$ 150,000		$ 150,000	100%	0%	$ 150,000	$ -
TS-04	Existing	N/A	TM-7		Services	FY 2032- FY 2036	Asset Management Software & Implementation, depending on Mesa Water's chosen path after gap assessments		Asset Management	1	$ 2,000,000	N/A	$ 2,000,000							$ 2,000,000		$ 2,000,000	100%	0%	$ 2,000,000	$ -
TS-05	Existing	N/A	District Spreadsheet		Services	FY 2026 - FY 2031	Information Technology Systems: Software and Hardware from FY2026-FY2031		Asset Management	per year	varies	N/A	$ 5,934,500	$ 1,079,000	$ 1,014,000	$ 1,039,500	$ 942,000	$ 860,000	$ 1,000,000			$ 4,855,500	100%	0%	$ 4,855,500	$ -
																						$ -				
Subtotal												**$ -**	**$ 8,759,500**	**$ 1,179,000**	**$ 1,014,000**	**$ 1,539,500**	**$ 942,000**	**$ 860,000**	**$ 1,000,000**	**$ 2,225,000**	**$ -**	**$ 7,580,500**	**N/A**	N/A	**$ 7,580,500**	**$ -**
Miscellaneous Projects Total												**$ 500,000**	**$ 13,699,500**	**$ 1,579,000**	**$ 1,094,000**	**$ 1,539,500**	**$ 942,000**	**$ 860,000**	**$ 1,000,000**	**$ 4,185,000**	**$ 2,500,000**	**$ 12,120,500**	**N/A**	**N/A**	**$ 11,120,500**	**$ 1,000,000**
Grand Total CIP												**$ 50,368,900**	**$ 206,686,500**	**$ 13,809,000**	**$ 4,401,000**	**$ 4,354,500**	**$ 3,056,200**	**$ 2,921,000**	**$ 2,950,800**	**$ 53,228,000**	**$ 121,966,000**	**$ 192,877,500**	**N/A**	**N/A**	**$ 107,625,500**	**$ 85,252,000**

Notes:
(1) Costs are based on 2025 dollars and subject to future cost escalation
(2) Engineering News Record Construction Cost Index (ENR CCI) number of 15,592 (Los Angeles Index, January 2025)
(3) 2014 WMP - 2014 Water Master Plan
2025 CIP - 2025 Capital Improvement Program
TM-2 (Supply Analysis)
TM-3 (Transmission & CP System)
TM-5 (Regulatory Compliance)
TM-6 (Technological Advancements)
TM-7 (Asset Mgmt. Roadmap)
TM-9 (Condition Assessment)
District - Mesa Water District
(4) These projects will be implemented as part of Project D-06 (Annual Pipeline Integrity Program)
(5) These projects will be implemented as part of Project W-07 (Annual Rehabilitation and Replacement (R&R) projects for production facilities.

MesaWater DISTRICT

Dedicated to Satisfying our Community's Water Needs

MEMORANDUM

TO: Board of Directors

FROM: Karyn Igar, P.E., Principal Engineer

DATE: April 8, 2026

SUBJECT: Chandler & Croddy Wells and Pipeline Project

RECOMMENDATION

a. Award a contract to All American Asphalt for $1,391,292 and a contingency of $139,129 for a total contract amount not to exceed $1,530,421 to provide Construction of the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract;
b. Award a contract to MCM Consulting, Inc. for $186,800 and a contingency of $18,680 for a total contract amount not to exceed $205,488 to provide Construction Management and Inspection Services of the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract; and
c. Amend the contract with Tetra Tech for an additional $26,680 for a total contract amount not to exceed $147,680 to provide Engineering Services During Construction for the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract.

STRATEGIC PLAN

Goal #1: Provide an abundant, local, reliable and safe water supply.
Goal #2: Perpetually renew and improve our infrastructure.

PRIOR BOARD ACTION/DISCUSSION

At its August 10, 2017 meeting, the Board of Directors (Board) awarded a contract to Tetra Tech, Inc. (Tetra Tech) for $920,000 and a 10% contingency for a contract amount not to exceed $1,012,000 to provide professional engineering design and permitting services for the West Chandler Avenue Well, the South Croddy Way Well and the Pipeline Project.

At its February 8, 2018 meeting, the Board awarded a contract to Butier Engineering, Inc. for $972,480 and a 10% contingency for a contract amount not to exceed $1,069,728 to provide professional Construction Management Services for the Chandler & Croddy Wells and Pipeline Project.

At its April 27, 2021 meeting, the Board awarded a contract to Ferreira Construction Co. Inc. for $3,938,360 and a 10% contingency of $393,836 for a contract amount not to exceed $4,332,196 to provide Pipeline Construction to the Chandler & Croddy Wells and Pipeline Project.

At its January 22, 2025 meeting, the Board approved the Cooperative Cost Reimbursement Agreement with the City of Santa Ana for the Croddy Way Street Improvements Project.

At its May 28, 2025 meeting, the Board approved a contract with Tetra Tech, Inc. for $110,000 and a 10% contingency of $11,000 for a total contract amount not to exceed $121,000 to provide design services for the Chandler Avenue and Croddy Way Pavement Replacement.

At its February 12, 2025 meeting, the Board received an Information Item that the Request for Bid (RFB) for Chandler Avenue and Croddy Way Pavement Replacement, and a Request for Proposal (RFP) for Construction Management and Inspection were being released and a request for contract awards would follow.

At its March 25, 2026 meeting, the Board approved a contract amendment with Butier Engineering Inc. in the amount of $55,000 to provide additional Construction Management and Inspection Services for the Chandler & Croddy Wells and Pipeline Project.

BACKGROUND

In 2014, Mesa Water District's (Mesa Water®) Board set a goal to provide 115% of water demands from local, reliable water supplies. To achieve this goal, Mesa Water purchased two properties outside the service area in the City of Santa Ana (City) in 2017 with the intention to drill two new water production wells. Croddy Well No. 14 came online in May 2023 and Chandler Well No. 12 came online in April 2024. The pipeline to connect Well Nos. 12 and 14 to the Mesa Water distribution system is complete and operational. Since completion, Well Nos.12 and 14 have been contributing 4,000 gallons per minute (gpm) each to meet customer demands. These two new facilities have improved Mesa Water's local reliability and helped achieve the goal of providing 115% of water demands from local, reliable water supplies.

DISCUSSION

During construction of the pipeline, the City directed the pipeline contractor to completely reconstruct Chandler Avenue and Croddy Way from Mesa Water's Well No. 12 site to the intersection of Croddy Way and MacArthur Boulevard to the standards of an arterial street, curb to curb. Staff worked with the City to reduce the scope and cost of the pavement replacement.

Mesa Water and the City signed a cost agreement on January 22, 2025 that assigns the cost to Mesa Water for pavement reconstruction for the lanes that were disturbed to construct Mesa Water's transmission line and storm drain and assigns the remainder of the pavement reconstruction cost to the City. This cost-sharing arrangement results in Mesa Water paying for approximately 70% of the pavement reconstruction and the City paying for the remaining 30%. The agreement includes an amount not to exceed $1,949,000 for Mesa Water's portion of the project costs and an amount not to exceed $897,000 for the City's portion. The agreement also includes Mesa Water managing the project.

Construction Contract Award

On May 28, 2025, the Board approved a contract with Tetra Tech to develop bid documents for the Chandler Avenue and Croddy Way Pavement Replacement. The RFB was released on PlanetBids on February 24, 2026. Five bids were received by the March 24, 2026 bid deadline. Table 1 summarizes the bids.

Table 1. Summary of Construction Bids

Bidder	Bid Amount	Optional Items	Total
All American Asphalt	$1,369,942.00	$ 21,350.00	$ 1,391,292.00
R.J. NOBLE COMPANY	$1,558,478.00	$ 53,019.50	$ 1,611,497.50
PALP dba Excel Paving Company	$1,571,012.00	$ 24,260.00	$ 1,595,272.00
Gentry General Engineering, Inc.	$1,597,779.00	$ 47,658.00	$ 1,645,437.00
Hardy & Harper, Inc.	$1,614,620.00	$ 41,620.00	$ 1,656,240.00

All American Asphalt (All American) had the lowest bid and is highly recommend by the City. All American's bid form was reviewed by Legal Counsel and the design engineer. Staff recommends the Board award a contract to All American for $1,391,292 and a contingency of $139,129 for a total contract amount not to exceed $1,530,421 to provide Construction of the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract.

Construction Management and Inspection Contract Award

Staff developed an RFP for Construction Management and Inspection Services and released it on PlanetBids on February 24, 2026. Three proposals were received by the March 20, 2026 due date and were reviewed by a selection committee from Mesa Water and the City. Table 2 summarizes the proposal scores, rankings and costs.

Table 2. Summary of Construction Management Proposals

Proposer	Average Score (out of 100 points)	Rank	Cost
MCM Consulting, Inc.	88	1	$186,800
Willdan	85	2	$144,064
Hoch Consulting	71	3	$150,184

MCM Consulting received the highest proposal score from the selection committee. Staff recommends the Board award a contract to MCM Consulting, Inc. for $186,800 and a contingency of $18,680 for a total contract amount not to exceed $205,488 to provide Construction Management and Inspection Services of the Chandler Avenue and Croddy Way

Pavement Replacement, and authorize the execution of the contract.

Engineering Services During Construction Contract Amendment

Tetra Tech, Inc. (Tetra Tech) was awarded a contract in May 2025 to provide Design Services for the Chandler Avenue and Croddy Way Pavement Replacement. As the project moves into the construction phase, Tetra Tech has the familiarity with the design to perform Engineering Services During Construction to respond to contractor questions and review the required contractor submittals. Staff recommends the Board amend the contract with Tetra Tech for an additional $26,680 for a total contract amount not to exceed $147,680 to provide Engineering Services During Construction for the Chandler Avenue and Croddy Way Pavement Replacement, and authorize execution of the contract.

Cooperative Cost Agreement Status

Mesa Water and the City have been working collaboratively since the Cooperative Cost Agreement was signed. The City assigned a project team to review the design documents and participate in consultant and contractor selection. Table 3 summarizes the project budget status including the requested contract awards.

Table 3. Cooperative Cost Summary

	Total Project	Mesa Water 70% Share	City of Santa Ana 30% Share
Budget	$ 2,846,000	$ 1,949,000	$ 897,000
Contracts			
American Asphalt Base Bid	$ 1,369,942	$ 958,959	$ 410,983
American Asphalt Option	$ 21,350		$ 21,350
Tetra Tech ESDC	$ 26,680	$ 18,676	$ 8,004
Tetra Tech Design	$ 110,000	$ 77,000	$ 33,000
Construction Management	$ 186,800	$ 130,760	$ 56,040
Total Contracts	$ 1,714,772	$ 1,185,395	$ 529,377
Surplus	$ 1,131,228	$ 763,605	$ 367,623

FINANCIAL IMPACT

In Fiscal Year 2026, $634,345 is budgeted for the Chandler Avenue and Croddy Way Pavement Reconstruction; $91,398 has been spent to date.

ATTACHMENTS

None.

MEMORANDUM

Dedicated to Satisfying our Community's Water Needs

TO: Board of Directors
FROM: Juan Hernandez, Assistant Water Operations Manager
DATE: April 8, 2026
SUBJECT: Heating, Ventilation and Air Conditioning Services

RECOMMENDATION

Approve an amendment to extend the contract with ACCO Engineered Systems, Inc. for 2 years for a total authorized contract amount not to exceed $150,000 annually to provide Heating, Ventilation and Air Conditioning Services at Mesa Water District's Administration and Operations Buildings, Reliability Facility, Education Center, reservoirs and well sites, and authorize execution of the contract through the term ending March 31, 2028.

STRATEGIC PLAN

Goal #1: Provide an abundant, local, reliable and safe water supply.
Goal #2: Perpetually renew and improve our infrastructure.
Goal #3: Be financially responsible and transparent.

PRIOR BOARD ACTION/DISCUSSION

At its May 28, 2025 meeting, the Board of Directors (Board) approved an amendment for an amount not to exceed $50,000 annually to the contract with ACCO Engineered Systems, Inc. (ACCO) for a total authorized contract amount not to exceed $130,000 annually to provide Heating, Ventilation and Air Conditioning (HVAC) Services at Mesa Water District's (Mesa Water®) remote sites, and authorized the General Manager to execute the contract through the term ending March 31, 2026.

BACKGROUND

In April 2021, Mesa Water entered into a competitively bid contract with ACCO for HVAC Services for the District's Administration and Operations buildings for an amount not to exceed $80,000 annually. The contract with ACCO had a five-year term (April 26, 2021 through March 31, 2026) with two optional one-year extensions. In addition to scheduled maintenance, the agreement included on-call services and compliance with all audit requirements under the South Coast Air Quality Management District's Rule 1415.

In May 2025, the Board approved a contract amendment for an amount not to exceed $50,000 annually to include supplemental HVAC services at the District's remote sites including at the Mesa Water Reliability Facility (MWRF), Mesa Water Education Center (MWEC), reservoirs and well sites. The newly amended contract was added to the established HVAC services contract at the Administration and Operations Buildings combining the total HVAC contracts for an amount not to exceed $130,000 annually.

DISCUSSION

ACCO has successfully managed the maintenance of Mesa Water's HVAC systems at all sites and demonstrated the capability of responding to service calls and repairs in a timely manner. Mesa Water has benefited from the streamlining of operations and building a partnership with ACCO, proving they are a reliable service provider. Staff recommends amending the existing ACCO contract to exercise the two optional one-year contract extensions for the HVAC services at Mesa Water's Administration and Operations Buildings, MWRF, MWEC, reservoirs and well sites for a total authorized contract amount not to exceed $150,000 annually.

FINANCIAL IMPACT

In Fiscal Year 2026, $1,400,500 is budgeted for Support Services; $998,525 has been spent to date.

ATTACHMENTS

None.

MEMORANDUM

MesaWater DISTRICT®

Dedicated to Satisfying our Community's Water Needs

TO: Board of Directors
FROM: Kurt Lind, Business Manager
DATE: April 8, 2026
SUBJECT: Customer Information System Support Services

RECOMMENDATION

Approve a contract with The Northridge Group, Inc. for $102,600 to provide readiness support services to prepare the Customer Services' and Public Affairs' departments for the SpryCIS go-live, and authorize execution of the contract.

STRATEGIC PLAN

Goal #4: Increase public awareness of Mesa Water.
Goal #5: Attract, develop and retain skilled employees.
Goal #6: Provide excellent customer service.

PRIOR BOARD ACTION/DISCUSSION

None.

BACKGROUND

The Northridge Group (NRG) will provide readiness support services for Mesa Water District's (Mesa Water®) SpryCIS go live scheduled for June 1, 2026. The program encompasses three integrated workstreams: Public Affairs messaging and campaigns, Customer Service Representative coaching and mock-call training, and structured go-live customer care support.

These efforts are scheduled to begin upon signature of the contract and culminate in operational stabilization following the June 1, 2026 go-live date. The additional support will minimize customer and operational disruptions, ensure clear and consistent messaging across all channels, prepare frontline staff for new workflows, and provide rapid issue resolution during the critical transition period.

DISCUSSION

Scope of Work
The scope covers three key change and readiness workstreams designed to identify issues prior to go-live, support the cutover and maintain consistent communications. All tasks align with the overall SpryCIS implementation.

1. Public Affairs Messaging and Campaigns (in partnership with Mesa Water's Public Affairs team)
    - Stakeholder and audience mapping (customers, community stakeholders, elected officials, regulators, internal staff, media).
    - Development of a channel strategy (website, email, bill inserts, SMS, social media, press releases, outbound calls, customer letters).

- Creation of a messaging framework, core talking points, FAQs and scripted responses.
- Campaign planning, execution and response management with a coordinated communications calendar tied to project milestones.

Key Deliverables: Stakeholder map and channel plan; messaging framework; campaign calendar (pre-go-live, and post-go-live phases); finalized content for website banners/notices, emails, bill inserts/customer letters and internal representative toolkits.

2. Office Customer Service Representative (CSR) Coaching/Training (Mock Calls)
    - Training needs assessment covering impacted processes (account setup, billing inquiries, payments, move-in/move-out, meter reads, adjustments, disputes, service orders, notifications and high-risk scenarios).
    - Development of curriculum, scenario library and mock customer calls.
    - Execution of mock-call sessions with scoring rubrics evaluating workflow accuracy, compliance, tone/empathy, resolution quality and CIS documentation.
    - Coaching, feedback, remediation plans and mid-point data reviews with management.

    Key Deliverables: Training plan and schedule (by role/cohort); scenario library (minimum 10-15 scenarios); scorecards, rubrics and coaching guides; recommendations for representative tools and scripts.

3. Go-Live Support (in partnership with Plante Moran, SpryPoint and Mesa Water)
    - Development of go-live runbooks, cutover timelines, staffing models, escalation paths, severity matrices (Sev 1–4), SLAs and decision rights.
    - Customer Care command center operations, including daily standups, cross-functional coverage, issue logging/tracking, customer-facing updates and performance monitoring (call volume, average handle time, billing accuracy, payment posting, service order completion).
    - Issue management, trend identification and transition to business-as-usual (BAU) operations.

    Key Deliverables: Go-live runbook; daily Customer Care status report templates; known issues log and workaround knowledge articles; go-live retrospective and stabilization report (metrics, open items, lessons learned and continuous improvement backlog).

Proposed Timeline

- Communications development and execution: April 10, 2026 – April 24, 2026
- CSR mock-call training and coaching: April 27, 2026 – May 29, 2026
- Go-live Customer Care support: Begins June 1, 2026 (duration to be determined jointly with Mesa Water leadership to ensure optimal stabilization)

NRG will coordinate with Mesa Water leadership to finalize exact dates and times to minimize any operational disruptions.

Benefits of Providing Additional SpryCIS Go-Live Support

Implementing this comprehensive change management program delivers measurable value by reducing risk to the SpryCIS go-live:

- Proactive Issue Identification and Resolution: Early detection of workflow gaps, system issues or training needs through mock calls and readiness assessments prevents post-go-live surprises.

- Minimized Customer Impact: Clear, consistent, multi-channel communications ensure customers understand changes (or lack thereof) in billing, account access, service requests and processes, reducing confusion, inbound call spikes and complaints.

- Enhanced Staff Readiness and Confidence: Targeted CSR coaching builds proficiency in new CIS tools, policies, scripts and soft skills, improving first-contact resolution rates and customer experience.

- Rapid Stabilization via Customer Care: Structured command-center support, real-time triage, performance monitoring and coordinated issue management accelerate return to normal operations while protecting service levels.

- Overall Risk Mitigation and Cost Avoidance: Smoother transition reduces potential revenue impacts from billing delays/errors, preserves operational efficiency and avoids escalation costs associated with unmanaged change.

- Positive Customer and Stakeholder Experience: Proactive engagement maintains trust and satisfaction during the technology upgrade.

Alignment with Mesa Water's Fiscal Year (FY) 2026 Strategic Plan

This work directly supports the District's Vision "To Be a Top Performing Public Water Agency".

- Strategic Goal #4: Increase public awareness of Mesa Water – Targeted Public Affairs campaigns and stakeholder communications build transparency and positive recognition, reinforcing community trust during the system change.

- Strategic Goal #5: Attract, develop and retain skilled employees – Comprehensive Customer Service Representative coaching and professional development strengthen staff capabilities and confidence in the new system.

- Strategic Goal #6: Provide excellent customer service – The program's focus on Customer Service Representative training, mock scenarios, Customer Care and consistent messaging enhances service delivery, streamlines customer interactions and ensures a seamless transition to the new SpryCIS platform (noted in recent Board materials as a sub-objective under Goal #6, Objective B – Enhance the customer experience).

By ensuring a successful SpryCIS implementation, these support services advance Mesa Water's commitment to operational excellence and customer-centric service as outlined in the FY 2026 Strategic Plan.

Recommendation

Approve a contract with NRG for $102,600 to provide readiness support services to prepare the Customer Services' and Public Affairs' departments for the SpryCIS go-live, and authorize execution of the contract.

FINANCIAL IMPACT

In Fiscal Year 2026, no funds were budgeted for this integration; the requested funds will come from Cash on Hand.

ATTACHMENTS

None.

MesaWater DISTRICT®

Dedicated to Satisfying our Community's Water Needs

MEMORANDUM

TO: Board of Directors
FROM: Kurt Lind, Business Manager
DATE: April 8, 2026
SUBJECT: Elite Customer Service

RECOMMENDATION

Approve a five-year contract with The Northridge Group, Inc. for $94,380 and a 10% contingency for an amount not to exceed $103,818 to conduct training and optimize the Elite Customer Service Program, and authorize execution of the contract.

STRATEGIC PLAN

Goal #5: Attract, develop and retain skilled employees.
Goal #6: Provide excellent customer service.
Goal #8: Practice continual business improvement.

PRIOR BOARD ACTION/DISCUSSION

At its September 25, 2024 meeting, the Board of Directors (Board) awarded a five-year contract to The Northridge Group, Inc. (NRG) for $179,800 and a 10% contingency for an amount not to exceed $197,780 to develop and conduct training to optimize the Elite Customer Service Program.

BACKGROUND

Mesa Water District's (Mesa Water®) Elite Customer Service Program was placed on hold in 2025 when the Chief Financial Officer separated from the District. A Chief Financial Officer has been hired and the Elite Customer Service Program has resumed. The original five-year contract with NRG has been cancelled due to a significant change in scope that improved the efficiency of assessing and scoring the Key Performance Indicators for the Elite Customer Service Program by implementing Anna AI (Anna). The amount paid against the contract was $48,300 and the outstanding balance was $149,480. The dollars that were spent were related to the development of the new Key Performance Indicators Scorecard. These KPIs will be deployed in Anna.

NRG will deploy Anna, a patented, AI-based communication assessment platform to evaluate Mesa Water's customer service team performance. The program includes monthly data analysis of 100% of customer interactions, targeted quarterly coaching and annual training focused on behavioral attributes identified as needing improvement.

This initiative will help Mesa Water deliver excellent customer service (including objectives for outstanding timely/courteous/effective service, enhanced customer experience, success measurement via Elite Customer Service Standards metrics and continuous improvement). By delivering actionable, AI-generated insights within hours, the program will elevate representative performance, customer satisfaction and overall customer experience, driving measurable progress toward Mesa Water's Vision "To Be a Top Performing Public Water Agency."

Scope of Work

The project scope, as defined in the agreement with NRG, includes the following key components:

Data Analysis

NRG will import all customer service calls monthly into the Anna platform. Anna will analyze every interaction for behavioral attributes, human sentiment, decision-making patterns, contact center efficiency metrics and operational insights. Results will be accessible in real time via the secure Anna platform.

Coaching

NRG will deliver virtual coaching sessions (up to 4 participants per session, 1 hour each) on a monthly or quarterly basis. Coaching will be specifically targeted at the behavioral attributes and performance gaps identified by Anna as needing the most improvement.

Customer Service Training

NRG will conduct one yearly on-site or virtual training session (up to 4 participants, 2 days at 3 hours per day). The curriculum will review customer experience best practices, include calibration exercises and incorporate targeted activities centered on Anna identified improvement areas:

- Real-time access to Anna platform data and insights (evaluates 100% of calls; provides actionable intelligence within hours).
- Auto-coaching tools available to Mesa Water at any time.
- Annual training program.
- Quarterly virtual coaching sessions by NRG.
- Quarterly CX (Customer eXperience) Impact Report presented via conference call to review strategy, achievements and obstacles.

NRG will collaborate closely with Mesa Water throughout the engagement.

Alignment with Mesa Water's Fiscal Year 2026 Strategic Plan

This project is strategically aligned with Mesa Water's Vision "To Be a Top Performing Public Water Agency."

- Strategic Goal #5 – Attract, develop and retain skilled employees is advanced by the professional development, personalized coaching and training that build employee capabilities and job satisfaction.

- Strategic Goal #6 – Provide excellent customer service is the primary alignment:
    - Objective A: Delivers outstanding internal and external customer service in a timely, courteous and effective manner through targeted behavioral improvements.
    - Objective B: Enhances the customer experience via data-driven process refinements and alignment with the new SpryCIS implementation.
    - Objective C: Supports measurement of success by implementing new metrics for the Elite Customer Service Standards.
    - Objective D: Enables continuous improvement and reinforcement through AI insights and ongoing coaching.

- Strategic Goal #8 – Practice continual business improvement and Goal #4 – Increase favorable opinion of Mesa Water are supported through measurable gains in operational efficiency, customer sentiment and public perception of customer service excellence.

The program transforms traditional customer service oversight into a proactive, technology-enabled framework that reinforces Mesa Water's commitment to excellence across all strategic pillars.

Benefits of Training Customer Service Staff Based on Anna Results

Anna represents a significant advancement over traditional call sampling or manual review. By analyzing 100% of interactions using advanced machine learning (evaluating over 150 human behavioral attributes per call in under a minute), it delivers objective, scalable and rapid insights into sentiment, decision-making, compliance, representative effectiveness and operational metrics. Training and coaching informed by these Anna results will produce the following key benefits:

1. Enhanced Agent Performance and Consistency — Representatives receive personalized, data-driven feedback and coaching on specific behavioral attributes (e.g., empathy, clarity, problem-solving). This leads to measurable skill development, reduced variability in service delivery, and higher first-contact resolution rates.

2. Superior Customer Experience and Satisfaction — Targeted improvements in communication and sentiment handling will result in more courteous, effective and empathetic interactions—directly elevating customer perceptions and loyalty while supporting the Elite Customer Service Standards.

3. Operational Efficiency and Cost Savings — Full-population analysis replaces labor-intensive manual reviews, providing actionable insights within hours. This enables quicker identification of process gaps, reduced repeat calls and optimized contact center operations.

4. Continuous Improvement and Accountability — Quarterly coaching combined with annual training creates a culture of ongoing development. Auto-coaching tools empower supervisors for real-time reinforcement, while quarterly CX Impact reports facilitate Board-level visibility and strategic adjustments.

5. Strategic Risk Mitigation and Compliance — AI-driven evaluation strengthens adherence to service standards, regulatory requirements and internal policies, reducing potential reputational or operational risks.

6. Employee Engagement and Retention — Professional development opportunities aligned with Goal #5 foster a skilled, motivated workforce—supporting recruitment and retention of top talent in a competitive labor market.

Overall, the Elite Customer Service Program will deliver a clear return on investment through higher customer satisfaction scores, increased favorable public opinion and alignment with Mesa Water's vision of top-tier performance.

FINANCIAL IMPACT

In Fiscal Year 2026, no funds were budgeted for this service; the requested funds will come from Cash on Hand. For Fiscal Years 2027 – 2031, funding ($20,764 per year) will be added to the proposed budget under the Financial Services Department.

ATTACHMENTS

None.

MEMORANDUM

Dedicated to Satisfying our Community's Water Needs

TO: Board of Directors
FROM: Denise Khalifa, Chief Administrative Officer
DATE: April 8, 2026
SUBJECT: External Partnerships, Memberships and Sponsorships Policy

RECOMMENDATION

Adopt Resolution No. 1611 Establishing an External Partnerships, Memberships and Sponsorships Policy.

The Executive Committee will review this item at its April 7, 2026 meeting.

STRATEGIC PLAN

Goal #1: Provide an abundant, local, reliable and safe water supply.
Goal #2: Perpetually renew and improve our infrastructure.
Goal #3: Be financially responsible and transparent.
Goal #4: Increase public awareness of Mesa Water.
Goal #5: Attract, develop and retain skilled employees.
Goal #6: Provide excellent customer service.
Goal #7: Actively participate in regional and statewide water issues.
Goal #8: Practice continual business improvement.

PRIOR BOARD ACTION/DISCUSSION

None.

DISCUSSION

Mesa Water District (Mesa Water®) actively seeks opportunities to collaborate with external organizations to achieve shared objectives. These collaborations come in many forms – partnerships, organizational memberships, professional subscriptions, sponsorships and other external affiliations (external engagements) – while promoting community engagement and supporting the mission and goals of Mesa Water.

This item is being agendized at the request of the Board of Directors (Board) who directed staff, in the Fiscal Year 2026 Strategic Plan, to develop a policy that outlines how the District vets and selects trusted local organizations for partnerships, sponsorships and support. Such a policy is meant to ensure that Mesa Water's position and reputation are protected in its affiliations while also focusing on working with organizations whose policies and values align with the strategic objectives and values of Mesa Water.

As outlined in the draft policy, the Board will continue to review the comprehensive list of memberships and sponsorships presented each year with the proposed fiscal year budget. This annual list will include the correlating Charity Navigator (or comparable option) rating for each organization with whom the District has partnered.

Staff recommends the Board adopt Resolution No. 1611 Establishing an External Partnerships, Memberships and Sponsorships Policy that will provide guidelines and structure for the external engagements being formed between Mesa Water and other organizations.

FINANCIAL IMPACT

There is no financial impact for the discussion of this matter.

ATTACHMENTS

Attachment A: Draft Resolution No. 1611

RESOLUTION NO. 1611

RESOLUTION OF THE MESA WATER DISTRICT BOARD OF DIRECTORS ESTABLISHING AN EXTERNAL PARTNERSHIPS, MEMBERSHIPS AND SPONSORSHIPS POLICY

WHEREAS, Mesa Water District (Mesa Water® or District) is a county water district organized and operating pursuant to the provisions of the laws of the State of California (State or California); and

WHEREAS, the Board of Directors (Board) of Mesa Water actively seeks opportunities to collaborate with external organizations to achieve shared objectives, promote community engagement and support the mission and goals of the District; and

WHEREAS, Mesa Water desires to collaborate with organizations whose policies and values align with the strategic objectives and core values of the District; and

WHEREAS, the Board aims to ensure that Mesa Water is protected from potential risks in relation to its external partnership agreements and associations; and

WHEREAS, Mesa Water has the power and authority to enter into contracts with other entities and public agencies, and participate in activities, for various purposes which support and/or promote the operations, mission and objectives of the District; and

WHEREAS, the policy set forth herein will require a consistent evaluation process and will establish a clear framework for evaluating and engaging in partnerships, organizational memberships, professional subscriptions, sponsorships and other external affiliations (external engagements); and

WHEREAS, the Board desires to establish and adopt a policy regarding external partnerships, memberships and sponsorships.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF MESA WATER DISTRICT DOES HEREBY RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

Section 1. This Resolution establishes the evaluation process regarding an external partnerships, memberships and sponsorships policy as set forth in Attachment A.

Section 2. This Resolution shall be reviewed by the Board every four years.

Section 3. This Resolution shall take effect upon adoption by the Board.

DRAFT

ADOPTED, SIGNED and APPROVED this 8th day of April 2026 by a roll call vote.

AYES:	DIRECTORS:
NOES:	DIRECTORS:
ABSTAIN:	DIRECTORS:
ABSENT:	DIRECTORS:

Marice H. DePasquale
President, Board of Directors

Denise Khalifa
District Secretary

DRAFT

RESOLUTION NO. 1611

ATTACHMENT A

RESOLUTION OF THE MESA WATER DISTRICT BOARD OF DIRECTORS ESTABLISHING AN EXTERNAL PARTNERSHIPS, MEMBERSHIPS AND SPONSORSHIPS POLICY

External Partnerships, Memberships
and Sponsorships Policy

DRAFT

External Partnerships, Memberships and Sponsorships Policy

1. Purpose and Intent

The purpose of this External Partnerships, Memberships and Sponsorships Policy (Policy) is to establish a clear framework for the Mesa Water Board and staff for evaluating and engaging in partnerships, organizational memberships, professional subscriptions, sponsorships and other external affiliations (external engagements) to achieve shared objectives, promote community engagement and support the mission and goals of Mesa Water. The District intends to maintain a fiscally responsible approach to external engagements, which are to be generally limited to memberships, sponsorship support and attendance at events.

This Policy is designed to ensure that Mesa Water's position and reputation are protected in its external engagements while also focusing on working with organizations whose policies and core values align with the operations, strategic objectives and core values of the District.

By requiring a consistent evaluation process, it is the goal of Mesa Water to maintain due diligence and transparency in all District affiliations.

2. Approval Process for Planned External Engagements

Planned external engagements will be identified and approved as part of the annual fiscal year budget process.

Each external engagement will be evaluated and vetted by Mesa Water staff in advance of the annual budget meeting to ensure alignment with District goals.

The Board will receive annually a complete list of memberships and sponsorships that includes the correlating Charity Navigator (or comparable option) rating for each such organization with whom the District has partnered.

3. Charity Navigator (or Comparable Option)

Charity Navigator is a 501(c)(3) nonprofit that serves to provide reviewed, transparent evaluations of over 225,00 charities and assign a rating based on the overall soundness of their programs. They are the world's largest independent charity evaluating service, assessing and rating non-profits using four principal criteria:

- Finance & Accountability
- Impact & Results
- Leadership & Adaptability
- Culture & Community

DRAFT

Mesa Water will endeavor to partner with organizations possessing a strong Charity Navigator (or comparable option) rating, while also acknowledging that some organizations may not have such a rating.

4. Unplanned External Engagements

Unplanned or ad hoc external engagements that arise outside of the Mesa Water budget cycle will be reviewed on a case-by-case basis and must be approved by the General Manager prior to District participation or expenditure of funds.

If an unplanned external engagement is approved by the General Manager, the organization will be added to the next fiscal year budget for approval by the Board.

5. General Disclosure Obligation

Mesa Water's Board and management staff shall have an ongoing obligation to disclose any association they may have with an organization with whom Mesa Water has an external engagement.

a. Definition of Association

For the purpose of this clause, an association shall include, but not be limited to, holding any of the following positions or relationships:

- **Director, Officer or Trustee** - whether paid or unpaid.
- **Paid Employee or Consultant** receiving annual compensation or payments from the association.
- **Holder of a Significant Financial Interest** exceeding an equity or ownership interest of 1% or an equivalent monetary value.
- **Any Other Formal Governance, Financial or Employment Relationship** that could reasonably be perceived to create an appearance of a conflict of interest to Mesa Water.

b. Procedure and Timing of Disclosure

- **Initial Disclosure:** Each Mesa Water Director and staff member on the District's management team must submit a written statement, via email to the District Secretary upon their appointment/hire/promotion, stating their association with any organization with whom Mesa Water has a current external engagement.
- **Updated Disclosure:** Each Mesa Water Director and staff member on the District's management team must disclose, in writing to the District Secretary, any new association or material change to an existing association upon its occurrence.

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- **Disclosure Prior to Deliberation/Vote:** Each Mesa Water Director who has an association with a sponsored organization must verbally disclose the nature of that association prior to any Board deliberation or vote concerning that sponsored organization.

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MesaWater DISTRICT®

Dedicated to Satisfying our Community's Water Needs

MEMORANDUM

TO: Board of Directors
FROM: Denise Khalifa, Chief Administrative Officer
DATE: April 8, 2026
SUBJECT: Employee Retirement Events

RECOMMENDATION

Adopt Resolution No. 1612 Amending the Guidelines for Employee Retirement Events Superseding Resolution No. 1586.

The Executive Committee will review this item at its April 7, 2026 meeting.

STRATEGIC PLAN

Goal #3: Be financially responsible and transparent.
Goal #5: Attract, develop and retain skilled employees.
Goal #6: Provide excellent customer service.

PRIOR BOARD ACTION/DISCUSSION

At its August 24, 2010 meeting, the Board of Directors (Board) adopted Resolution No. 1400 Establishing Guidelines for Employee Retirement Events Superseding Resolution No. 1326.

At its January 10, 2024 meeting, the Board adopted Resolution No. 1586 Establishing Guidelines for Employee Retirement Events, as modified, Superseding Resolution No. 1400.

BACKGROUND

Mesa Water District's (Mesa Water®) Employee Retirement Events policy (Policy) was last reviewed in 2024 and establishes guidelines to acknowledge retiring employees with a District-sponsored event tailored to their preference and length of service to Mesa Water.

The 2024 updates to the Policy consolidated the six recognition categories into three, increased the monetary recognition to keep pace with standard inflation over the intervening 13 years, and added a clause for the Policy to be reviewed biennially.

DISCUSSION

This item is being agendized as Resolution No. 1586 Establishing Guidelines for Employee Retirement Events is due for its biennial review.

Staff recommends updating the Policy by changing the review period from every two years to every four years. Minor revisions and grammatical changes were made throughout the resolution to ensure consistency with previously adopted resolutions.

Staff recommends keeping the Policy's current recognition categories as listed below:

10 – 24 years of service	$550
25 – 34 years of service	$900
35 + years of service	Board Direction

FINANCIAL IMPACT

None.

ATTACHMENTS

Attachment A: Draft Resolution No. 1612
Attachment B: Resolution No. 1586, Redline

RESOLUTION NO. 1612

RESOLUTION OF THE MESA WATER DISTRICT BOARD OF DIRECTORS AMENDING THE GUIDELINES FOR EMPLOYEE RETIREMENT EVENTS SUPERSEDING RESOLUTION NO. 1586

WHEREAS, Mesa Water District (Mesa Water® or District) is a county water district organized and operating pursuant to the provisions of the laws of the State of California (State or California); and

WHEREAS, the Board of Directors of Mesa Water desires to amend a policy relative to employee retirement events.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF MESA WATER DISTRICT DOES HEREBY RESOLVE, DETERMINE, AND ORDER AS FOLLOWS:

Section 1. This Resolution amends the guidelines for employee retirement events as set forth in Attachment A.

Section 2. This Resolution shall be reviewed by the Board every four years and supersedes Resolution No. 1586 and all other actions of the Board of Directors concerning employee retirement events.

Section 3. This Resolution shall take effect upon adoption by the Board.

ADOPTED, SIGNED, and APPROVED this 8th day of April 2026 by a roll call vote.

AYES: DIRECTORS:
NOES: DIRECTORS:
ABSTAIN: DIRECTORS:
ABSENT: DIRECTORS:

Marice H. DePasquale
President, Board of Directors

Denise Khalifa, District Secretary

DRAFT

RESOLUTION NO. 1612

ATTACHMENT A

RESOLUTION OF THE MESA WATER DISTRICT BOARD OF DIRECTORS AMENDING THE GUIDELINES FOR EMPLOYEE RETIREMENT EVENTS SUPERSEDING RESOLUTION NO. 1586

1. It shall be Mesa Water District's (Mesa Water® or District) policy to acknowledge retiring employees with a District sponsored event tailored to their preferences and length of service. Absent specific direction by the Board of Directors (Board) for exceptions, the policy shall be as follows:

    a. District-Hours Event: During regular business hours, Mesa Water may host a reception honoring the retiring employee for employees and the retiring employee's guests. The reception would be coordinated by Human Resources, with assistance from the retiring employee's department.

    b. After-Hours Event: Responsibility for planning and coordinating an optional after-hours event would be that of the retiring employee with assistance from their department and Human Resources. Mesa Water will not assume responsibility for funding after-hours events unless specifically directed by the Board.

    c. District Recognition: The District shall provide recognition to the retiring employee, based on the length of service to Mesa Water. Alternatively, if it is the preference of the retiring employee, the District recognition may be used to partially offset the cost of an after-hours event. The funds for the District recognition shall not be used for alcohol, or any expense considered inappropriate.

        The District recognition categories are listed below and shall be reviewed by the Board every four years:

10 – 24 years of service	$ 550
25 – 34 years of service	$ 900
35 + years of service	Board Direction

    d. Gift From Employees: Employees have the option of contributing toward a gift for the retiring employee. The retiring employee's department and Human Resources would coordinate the gift contributions and selection.

DRAFT

RESOLUTION NO. 16121586

RESOLUTION OF THE MESA WATER DISTRICT BOARD OF DIRECTORS AMENDING THE ESTABLISHING GUIDELINES FOR EMPLOYEE RETIREMENT EVENTS SUPERSCEDING RESOLUTION NO. 15861400

WHEREAS, Mesa Water District (Mesa Water® or District) is a county water district organized and operating pursuant to the provisions of the laws of the State of California (State or California); and

WHEREAS, the Board of Directors (Board) of Mesa Water District desires to amenddopt a policy relative to employee retirement events.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE MESA WATER DISTRICT DOES HEREBY RESOLVE, DETERMINE, AND ORDER AS FOLLOWS:

Section 1. This Rresolution amends theestablishes guidelines for employee retirement events as set forth in AttachmentAppendix A.

Section 2. This Resolution shall be reviewed by the Board every four years biennially and supersedes Resolution No. 1586 and all other actions of the Board concerning employee retirement events.

Section 3. This Resolution shall take effect upon adoption by the Board.

ADOPTED, SIGNED, and APPROVED this 810th day of April 2026January 2024 by a roll call vote.

AYES:	DIRECTORS:	Atkinson, Bockmiller, Fisler, DePasquale, Dewane
NOES:	DIRECTORS:	
ABSTAIN:	DIRECTORS:	
ABSENT:	DIRECTORS:	

Marice H. DePasqualeShawn Dewane
President, Board of Directors

Denise KhalifaGarcia, District Secretary

DRAFT

RESOLUTION NO. 16121586

ATTACHMENTAPPENDIX A

RESOLUTION OF THE MESA WATER DISTRICT BOARD OF DIRECTORS AMENDING THEESTABLISHING GUIDELINES FOR EMPLOYEE RETIREMENT EVENTS SUPERSCEDING RESOLUTION NO. 15861400

1. It shall be Mesa Water District's (Mesa Water® or District) policy to acknowledge retiring employees with a District-sponsored event tailored to their preferences and length of service. Absent specific direction by the Board of Directors (Board) for exceptions, the policy shall be as follows:

    a. District-Hours Event: During regular business hours, Mesa Water may host a reception honoring the retiring employee for employees and the retiring employee's guests. The reception would be coordinated by Human Resources, with assistance from the retiring employee's department.

    b. After-Hours Event: Responsibility for planning and coordinating an optional after-hours event would be that of the retiring employee with assistance from their department and Human Resources. Mesa Water will not assume responsibility for funding after-hours events unless specifically directed by the Board.

    c. District Recognition: The District shall provide recognition to the retiring employee, based on the length of service to Mesa Water. Alternatively, if it is the preference of the retiring employee, the District recognition may be used to partially offset the cost of an after-hours event. The funds for the District recognition shall not be used for alcohol, or any expense considered inappropriate.

        The District recognition categories are listed below and shall be reviewed by the Board every four years:biennially with other Board policies.

10 – 24 years of service	$ 550
25 – 34 years of service	$ 900
35 + years of service	Board Direction

    d. Gift From EmployeesEmployees' GiftEmployees: Employees have the option of contributing toward a gift for the retiring employee. The retiring employee's department and Human Resources would coordinate the gift contributions and selection.

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REPORTS:

14. REPORT OF THE GENERAL MANAGER

REPORTS:

15. DIRECTORS' REPORTS AND COMMENTS

MEMORANDUM

Dedicated to Satisfying our Community's Water Needs

TO: Board of Directors
FROM: Denise Khalifa, Chief Administrative Officer
DATE: April 8, 2026
SUBJECT: Classification and Compensation Study

RECOMMENDATION

This item is provided for information.

STRATEGIC PLAN

Goal #3: Be financially responsible and transparent.
Goal #5: Attract, develop and retain skilled employees.

PRIOR BOARD ACTION/DISCUSSION

The Board of Directors (Board) previously adopted a five-year Memorandum of Understanding (January 1, 2023 through December 31, 2027) with the Mesa Water District Employees Association, affiliated with the Orange County Employees Association. The agreement calls for a Classification and Compensation Study (the Study) to be completed by December 31, 2026, with the results of the Study effective on the pay period ending on January 14, 2027.

To meet this contractual requirement, Human Resources completed a Request for Proposals to select a Classification and Compensation Consultant to complete the Study.

DISCUSSION

Mesa Water District (Mesa Water®) received seven proposals from consulting firms to conduct a District-wide classification and compensation study of 60 budgeted positions (50 job classifications), as well as provide ongoing additional support services as required (e.g., individual position studies). A selection panel consisting of four Mesa Water staff and one external representative from the City of Garden Grove reviewed the proposals and interviewed six of the seven firms. Pricing was considered after all the evaluations were conducted.

Staff have selected Public Pay, formerly Ralph Andersen & Associates, located in Roseville, California. Public Pay has been performing classification and compensation studies for public agencies for 40 years, including many water districts local to Orange County. The assigned consultants each have decades of experience and are subject matter experts in this space. Public Pay not only demonstrated a strong command of classification and compensation principles as they relate to government agencies, but also a passion for the work, an understanding of the unique needs of an agency of Mesa Water's size, and a transparent and collaborative study process.

FINANCIAL IMPACT

The cost of engaging with Public Pay to complete the Classification and Compensation Study is $49,800. Should additional needs arise after the study has been completed and implemented, Public Pay will bill Mesa Water based on the following hourly rates:

- Project Manager - $165
- Project Consultant - $155
- Research/Support Staff - $95

ATTACHMENTS

None.

DIRECTORS' REPORTS (AB 1234) PER CA GOVERNMENT CODE SECTION 53232.3(D)

In accordance with CA Government Code 53232.3(d), the following report identifies the meetings for which Mesa Water Directors received expense reimbursement.

Jim Atkinson **Meetings Attended**

Reimbursement Date:	Description, Date
N/A	

Fred R. Bockmiller, P.E. **Meetings Attended**

Reimbursement Date:	Description, Date
4/2/26	Meeting with General Manager, 3/10

Marice H. DePasquale **Meetings Attended**

Reimbursement Date:	Description, Date
3/19/26	Urban Water Institute Spring Conference, 2/24 – 2/27
3/19/26	Mesa Water District Education Center Event, 3/3
3/19/26	CalDesal Meeting, 3/12
3/19/26	Federal Advocacy Pre-Meeting, 3/17
3/19/26	Mesa Water District Education Center Event, 3/19

Shawn Dewane **Meetings Attended**

Reimbursement Date:	Description, Date
3/19/26	Mesa Water District Education Center Event, 3/3
3/19/26	Mesa Water District Education Center Event, 3/19
4/2/26	Federal Advocacy Pre-Meeting, 3/17

James R. Fisler **Meetings Attended**

Reimbursement Date:	Description, Date
4/2/26	Surfside Colony Community Services District Board Meeting, 3/16

CLOSED SESSION:

18. CONFERENCE WITH GENERAL LEGAL COUNSEL – ANTICIPATED LITIGATION:
Pursuant to California Government Code Section 54956.9(d)(2) – significant exposure to litigation.
(One potential case; Claim #26-0699)