



**BOARD OF COMMISSIONERS  
MEETING AGENDA**

Walnut Valley Water District  
271 S. Brea Canyon Road  
Walnut, CA 91789

**Thursday, April 3, 2025  
8:00 A.M.**

Each item on the agenda shall be deemed to include any appropriate motion, resolution, or ordinance, to take action on any item.

Materials related to an item on this agenda submitted after distribution of the agenda packet are available for public review at <https://puentebasin.com/board-packets/> or during regular business hours at the Walnut Valley Water District office, located at 271 S. Brea Canyon Road, Walnut, California.

- |    |  |                        |
|----|--|------------------------|
| 1. | Call to Order  | Chair Woo              |
| 2. | Flag Salute  | Chair Woo              |
| 3. | Roll Call  | Ms. Fleming            |
|    | Commissioner Lewis _____   | Chairman Woo _____     |
|    | Vice-Chair Lima _____  | Commissioner Lee _____ |
| 4. | Public Comment<br>The Chair may impose reasonable limitations on public comments to assure an orderly and timely meeting.                                      | Chair Woo              |
| 5. | <a href="#">Approval of Minutes for February 6, 2025</a><br>(1) Discussion (2) Action Taken  | Chair Woo              |
| 6. | <a href="#">2025 ACWA Joint Powers Insurance Authority Executive Committee Election Requests for Concurring Resolutions</a><br>(1) Discussion (2) Action Taken | Chair Woo              |
| 7. | <a href="#">Revised 2025 Selection of Commission Staff</a><br>(1) Discussion (2) Action Taken  | Chair Woo              |



**MINUTES OF MEETING  
OF THE BOARD OF COMMISSIONERS OF  
PUENTE BASIN WATER AGENCY**

**February 6, 2025  
At the Offices of the  
Rowland Water District**

**COMMISSIONERS PRESENT:**

Robert Lewis, Commissioner  
Anthony Lima, Commissioner  
Henry Woo, Commissioner  
Theresa Lee, Commissioner

**STAFF PRESENT:**

Jared Macias, Administrative Officer  
Myra Malner, Treasurer  
Josh Byerrum, Assistant Treasurer  
Jim Ciampa, Legal Counsel  
Carmen Fleming, Secretary

Staff, guests, and others in attendance: Gabby Palomares, Robert Leamy, and Dusty Moio, Rowland Water District; Sherry Shaw, and Tom Monk, Walnut Valley Water District.

The meeting was called to order at 8:00 a.m. with Chair Lewis presiding.

**Item 4: Public Comment**

None.

**Item 5: Approval of Minutes for December 12, 2024**

*Upon consideration thereof, it was moved by Commissioner Lee, seconded by Commissioner Lima, and unanimously carried (4-0) to approve the minutes of the Commission meeting held on December 12, 2024.*

**Chair Lewis indicated that the motion was approved by a 4-0 vote**

**Item 6: Approval of Revision for October 3, 2024 Minutes**

- ◆ Ms. Shaw reported an amendment was needed for item 10:E of the previously approved October 3, 2024 meeting minutes.
- ◆ Staff submitted the below listed amendment.

**E. Regional Water Supply Reliability Program Update**

- i. Ms. Dawn Flores of Woodard and Curran provided a PowerPoint presentation to the Commission regarding the Regional Water Supply Reliability Program Update.
- ii. Mr. Macias requested authorization to execute the Main San Gabriel Groundwater Basin Cyclic Storage letter agreement with Three Valleys Municipal Water District to purchase 3,000-acre feet of supplemental water for the 2025-2029 water years.

*Upon consideration thereof, it was moved by Commissioner Lee, seconded by Commissioner Lima, and unanimously carried (4-0) to authorize the Administrative Officer to execute the Main San Gabriel Groundwater Basin Cyclic Storage letter agreement with Three Valleys Municipal Water District to purchase 3,000-acre feet of supplemental water for the 2025-2029 water years.*

*Upon consideration thereof, it was moved by Commissioner Lima, seconded by Commissioner Woo, and unanimously carried (4-0) to approve the amended minutes of the Commission meeting held on October 3, 2024.*

**Chair Lewis indicated that the motion was approved by a 4-0 vote**

**Item 7: Review of Financial Statements: Second Quarter FY 24-25**

- ◆ Ms. Malner reviewed the Second Quarter Fiscal Year 2024-25 financials.

*Upon consideration thereof, it was moved by Commissioner Lima, seconded by Commissioner Lee, and unanimously carried (4-0), to receive, approve and file the financials for the Second Quarter Fiscal Year 2024-25.*

**Chair Lewis indicated that the motion was approved by a 4-0**

**Item 8: Receive and File Rowland and Walnut Valley Water Districts' 2025 PBWA Board Member Appointment Resolutions**

- ◆ Staff reported the attached resolutions appointing Rowland and Walnut Valley Water Districts' Commissioners for 2025 were adopted by Rowland Water District's and Walnut Valley Water District's respective Boards of Directors.

*Upon consideration thereof, it was moved by Commissioner Lima, seconded by Commissioner Woo, and unanimously carried (4-0) to receive and file Rowland and Walnut Valley Water Districts' 2025 PBWA Board Member appointment resolutions*

**Chair Lewis indicated that the motion was approved by a 4-0 vote**

**Item 9: Annual Selection of Commission Officers and Commission Staff**

- ◆ As per the rotation policy, the Commission selected Commissioner Woo to be the Chair and Commissioner Lima be seated as Vice-Chair of the Puente Basin Water Agency for the 2025 term, effective immediately.

*Upon consideration thereof, it was moved by Commissioner Lee, seconded by Commissioner Lewis, and unanimously carried (4-0) that Commissioner Tang be seated as Chair, and Commissioner Lima be seated as Vice-Chair of the Puente Basin Water Agency for the 2025 term, effective immediately.*

**Chair Lewis indicated that the motion was approved by a 4-0 vote**

**Commissioner Woo proceeded as Chair for the remainder of the meeting**

- ◆ Also, the annual appointment of Secretary, Treasurer, Administrative Officer, Assistant Administrative Officer and Assistant Treasurer shall be as set forth in the JPA Agreement.

*Upon consideration thereof, it was moved by Commissioner Lewis, seconded by Commissioner Lee, and unanimously carried (4-0), that, in accordance with the Agency's JPA Agreement, the Agency's administrative positions will be as follows: Mr. Coleman as Assistant Administrative Officer, Mr. Byerrum as Assistant Treasurer, Ms. Fleming as Secretary, Ms. Malner as Treasurer, and Mr. Macias as Administrative Officer of the Puente Basin Water Agency, for the 2025 term, effective immediately.*

**Chair Woo indicated that the motion was approved by a 4-0 vote**

## **Item 10: PBWA Legislative Activities**

### ***A. PBWA 2025-26 Legislative Contract***

- ◆ Mr. Macias stated that the Lobbying Firm Retention Contract and Cost Sharing Agreement with Reeb Government Relations, LLC (RGR) addendum is expiring effective February 28, 2025. The parties to the cost sharing agreement desire to renew the agreement with RGR for lobbying services for the 2025-26 California legislative program. The term of the renewed agreement will be from January 2025 through December 2025, with a monthly fee of \$6,000; and from January 2026 through December 2026, with the monthly fee of \$6,250.
- ◆ Bellflower-Somerset Mutual Water Company will participate in the cost-sharing agreement for lobbying services with the renewed contract.

***Upon consideration thereof, it was moved by Commissioner Lima, seconded by Commissioner Lee, and unanimously carried (4-0), to authorize the Administrative Officer to enter into an agreement with Reeb Government Relations, LLC for lobbying services January 2025 through December 2025, with a monthly fee of \$6,000; and January 2026 through December 2026, with the monthly fee of \$6,250.***

**Chair Woo indicated that the motion was approved by a 4-0**

### ***B. CA Water for All Campaign Update***

- ◆ The Commission was updated regarding newly presented SB72, which is similar to SB 366 from the last Legislative Session and will be considered during the 2025-25 Legislative Session.

***Commissioner Lima left the meeting at 8:26 a.m.***

## **Item 11: Regional Water Supply Reliability Program**

### ***A. Puente Basin Groundwater Management Plan***

- ◆ Mr. Macias reported that the next Puente Basin Stakeholders' meeting will be held March 18, 2025 to further discuss the Groundwater Management Plan.

### ***B. California Domestic Water Company***

- ◆ Mr. Leamy reported the Cal Domestic project had a leak which needed repairing creating a 3-day delay, and that project was currently operating at a single pump flow.

### ***C. Central Basin***

- ◆ Mr. Macias reported that a meeting among interested parties would be held March 4, 2025. Staff continues discussions with Pico Water District and the City of Whittier regarding conceptual intertie designs and a future joint effort to produce and deliver Central Basin groundwater to the Agency.

### ***D. Pomona Basin Regional Groundwater Project***

#### ***i. Six Basins Groundwater Project Update***

- ◆ Mr. Macias reported that Old Baldy Well is operational.
- ◆ Mr. Macias also reported that Durward Well is close to being operational, with testing to be completed and permits will need to be acquired for pump discharges.

#### ***ii. Proposition 84 Grant***

- ◆ Mr. Macias updated the Commission that the grant has been completed and closed.

*E. Regional Water Supply Reliability Program Update*

- ◆ Mr. Macias reported Woodard and Curran is continuing to work on the Puente Basin Water Agency Regional Water Supply Program Update and a final memo will possibly be available for the June meeting.

*F. Advanced Water Treatment Facility*

- Technical Memo: Advanced Water Treatment Facility (AWTF) Preliminary Sizing and Concept Evaluation*
  - ◆ Ms. Shaw presented the two scenarios to the Commission, each of which have cost estimates that exceed the benefits that would be provided.

***Upon consideration thereof, it was moved by Commissioner Lee seconded by Commissioner Lewis, and unanimously carried (3-0) to receive and file the Technical Memorandum for the Advanced Water Treatment Facility Preliminary Sizing and Concept Evaluation.***

**Chair Woo indicated that the motion was approved by a 3-0**

**Item 12: Attorney's Report**

General Counsel Ciampa provided a brief legislative report.

**Item 13: Commission Comments**

No report on this item

**Item 14: Items for Future Discussion/Review**

No report on this item

**Item 15: Adjournment at 8:48 a.m.**

***By consensus of the Commission the meeting ended at 8:48 a.m. The next Commission meeting is to be held April 3, 2025, at Walnut Valley Water District.***



## San Bernardino Valley Water Conservation District

Helping Nature Store Our Water

Puente Basin Water Agency  
Theresa Lee  
JPIA Director  
271 S Brea Canyon Rd  
Walnut, CA 91789

February 3, 2025

Dear Theresa Lee,

On behalf of the Board of Directors of the San Bernardino Valley Water Conservation District (SBVWCD), we are honored to nominate our President, Melody McDonald, for re-election to the Association of California Water Agencies Joint Powers Insurance Authority (ACWA JPIA) Executive Committee. Enclosed, please find a certified copy of SBVWCD Resolution No. 626, formally supporting Mrs. McDonald's nomination.

For over three decades, Ms. McDonald has exemplified exceptional leadership, unwavering dedication to the water industry, and a steadfast commitment to risk management and training. Her unparalleled institutional knowledge and contributions to ACWA JPIA have earned her recognition as a cornerstone of its success.

Ms. McDonald's service to her community spans many critical aspects of the water sector:

- President, ACWA JPIA Board of Directors
- Member, ACWA JPIA Executive Committee (since 2001)
- Chair, ACWA JPIA Personnel Committee
- Director, ACWA JPIA (since 1991)
- President, San Bernardino Valley Water Conservation District
- Director, San Bernardino Valley Water Conservation District (since 1991)
- Member, ACWA State Legislative Committee
- Board Member, Association of San Bernardino County Special Districts

In addition to her ongoing roles, Ms. McDonald has previously served as Chair and Vice-Chair of the ACWA JPIA Liability, Property, and Workers Compensation Program committees. Notably, she spent eight years as Chair of the State of California Santa Ana Regional Water Quality Control Board under a gubernatorial appointment from 1993 to 2000.

With over 32 years of experience in the water industry, Ms. McDonald's leadership has guided ACWA JPIA's remarkable growth, now managing assets exceeding \$244 million. In 2024, JPIA conducted 207 training classes and equipped more than 4,400 employees with essential skills to mitigate risks. Her guiding philosophy, "The best

1630 W. Redlands Blvd, Suite A  
Redlands, CA 92373  
Phone: 909.793.2503  
Fax: 909.793.0188  
www.sbvxcd.org Email: info@sbvxcd.org

### BOARD OF DIRECTORS

Division 1:  
Richard Comeille

Division 2:  
Mark E. Falcone

Division 3:  
Robert Stewart

Division 4:  
John Longville

Division 5:  
Melody McDonald

### GENERAL MANAGER

Betsy Miller

claim is the one that never happened,” underscores her commitment to proactive risk management and loss prevention—key drivers of ACWA JPIA’s success.

We respectfully request that your organization adopt a concurring resolution of nomination in support of Ms. McDonald. A sample resolution is enclosed for your convenience or can be accessed at ACWA JPIA [Election Page](#). Given the time-sensitive nature of this request, we kindly ask that it be included on your next Board meeting agenda.

Thank you for your consideration and support of Ms. McDonald’s candidacy. Should you have any questions or need additional information, please feel free to contact me at 909-793-2503 or [bmiller@sbnwcd.org](mailto:bmiller@sbnwcd.org).

Please send a certified copy of your resolution to:

**ACWA/JPIA**  
Attention: Laura Baryak  
ACWA JPIA  
P.O. Box 619082  
Roseville, CA 95661-9082  
[lbaryak@acwajpia.com](mailto:lbaryak@acwajpia.com)

and

**San Bernardino Valley Water  
Conservation District**  
Attention: Allison Zecher  
1630 W. Redlands Blvd. Suite A  
Redlands, CA 92374  
[azecher@sbnwcd.org](mailto:azecher@sbnwcd.org)

***This resolution must be received by ACWA/JPIA no later than 4:30 pm Friday, April 11, 2025.***

Sincerely,

Betsy Miller  
General Manager

Enclosures:

1. SBVWCD Resolution No. 626
2. Statement of Qualifications
3. Sample Concurring Resolution



**RESOLUTION NO. 626**

**A RESOLUTION OF THE BOARD OF DIRECTORS OF THE  
SAN BERNARDINO VALLEY WATER CONSERVATION DISTRICT  
NOMINATING ITS ACWA/JPIA BOARD  
MEMBER TO THE EXECUTIVE COMMITTEE  
OF THE ASSOCIATION OF CALIFORNIA WATER AGENCIES  
JOINT POWERS INSURANCE AUTHORITY ("ACWA/JPIA")**

**WHEREAS**, this District is a member district of the ACWA/JPIA that participates in all four of its Programs: Liability, Property, Workers' Compensation, and Employee Benefits; and

**WHEREAS**, the Bylaws of the ACWA/JPIA provide that in order for a nomination to be made to ACWA/JPIA's Executive Committee, the member district must place into nomination its member of the ACWA/JPIA Board of Directors for such open position; and

**WHEREAS**, President McDonald has served District and the ACWA/JPIA Executive Committee for many years and brings leadership experience and perspective.

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of the San Bernardino Valley Water Conservation District that its member of the ACWA/JPIA Board of Directors, Melody McDonald, be nominated as a candidate for the Executive Committee for the election to be held at JPIA's Spring 2025 Conference.

**BE IT FURTHER RESOLVED** that the ACWA/JPIA staff is hereby requested, upon receipt of the formal concurrence of three other member districts to affect such nomination.

**BE IT FURTHER RESOLVED** that the District Secretary is hereby directed to transmit a certified copy of this resolution to the ACWA/JPIA at P.O. Box 619082, Roseville, California 95661-9082, forthwith.

**ADOPTED** this 13th day of November 2024.



Vice President, Board of Directors

ATTEST:

  
Secretary



[Melody.sbvwd@gmail.com](mailto:Melody.sbvwd@gmail.com)

**Melody  
Henriques-McDonald**

P.O. BOX 830  
HIGHLAND, CA 92346

*(909) 793-2503 District  
(909) 499-5175 cell  
(909) 867-9821 fax*

Like @ <https://www.facebook.com/Melody4Water>

**Candidate for:**

**ACWA JPIA  
EXECUTIVE COMMITTEE**  
(Incumbent, seeking re-election)



*Melody & Board receiving, District of Distinction Award, the highest governance and best practices accreditation possible.*

Kathleen Tiegs, former Special Districts Board Member & ACWA President presenting. 2017

**ASSOCIATIONS**

**Member, Board of Directors of the San Bernardino Valley Water Conservation District (Elected), Currently President, originally appointed in 1991, and first woman on the board.**

**Member, Executive Committee ACWA/JPIA since 2001**

**President, ACWA/JPIA BOD, Chair Executive Committee**

**Chair, Personnel Committee**

**Director, ACWA/Joint Powers Insurance Authority since 1991**

**Member ACWA State Legislative Committee**

**Board Member, Association of the San Bernardino County Special Districts**

**Over 32 + Years, Experience in the Water Industry includes:**

**Past Member, (CWA) California Women for Agriculture**

**Past Member, ACWA Water Management Committee**

**Past Member, ACWA Federal Affairs Committee**

**Past Chair & Vice-Chair, JPIA Liability, Property, & Workers Compensation Programs**

**Past Member, Board of Directors ACWA, Region 9 Chair**

**Past Chair, Water Management Certification Subcommittee**

**Chair, California Water Quality Control Board, Santa Ana Region 8  
Years of service, Gubernatorial Appointment 1993-2000**

**CURRENT EMPLOYMENT**

**Southwest Lift & Equipment, Inc. (Heavy Duty Vehicle Lifts)  
Broker/Associate, Century 21 Lois Lauer Realty**

**PROFESSIONAL ASSOCIATIONS & LICENSES**

**Redlands Association of Realtors  
California Real Estate Broker's License  
Arizona Real Estate Broker's License**

**ORGANIZATIONS AND SOCIETIES**

**Highland Chamber of Commerce  
San Bernardino Chamber of Commerce  
Immanuel Baptist Church Highland, CA  
BSF International**

**EDUCATION**

**San Geronio High School, 1976  
Western Real Estate School, 1989  
Graduate, Special Districts Board Management Institute, 1997  
Studied at Crafton Hills College**

RESOLUTION NO. \_\_\_\_\_

RESOLUTION OF THE BOARD OF DIRECTORS OF THE

(NAME OF MEMBER DISTRICT)

**CONCURRING IN NOMINATION TO THE EXECUTIVE COMMITTEE**

OF THE ASSOCIATION OF CALIFORNIA WATER AGENCIES  
JOINT POWERS INSURANCE AUTHORITY ("JPIA")

**WHEREAS**, this district is a member district of the JPIA; and

**WHEREAS**, the Bylaws of the JPIA provide that in order for a nomination to be made to JPIA's **Executive Committee**, three member districts must concur with the nominating district, and

**WHEREAS**, another JPIA member district, the (NAME OF NOMINATING DISTRICT) has requested that this district concur in its nomination of its member of the JPIA Board of Directors to the **Executive Committee** of the JPIA;

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of the (NAME OF MEMBER DISTRICT) that this district concur with the nomination of (NAME OF NOMINEE) of (NAME OF NOMINATING DISTRICT) to the **Executive Committee** of the JPIA.

**BE IT FURTHER RESOLVED** that the District Secretary is hereby directed to transmit a certified copy of this resolution to the JPIA at P.O. Box 619082, Roseville, CA 95661-9082, forthwith.

**ADOPTED** this (DATE) day of (MONTH), 2025.

(SIGNATURE)  
Board President

ATTEST:

(SIGNATURE)  
Secretary



TO: Board of Commissioners  
FROM: Jared Macias, Administrative Officer  
DATE: April 3, 2025  
RE: Discussion and Approval of the Annual PBWA Budget for FY 2025-26

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**Recommendation:**

That the Commissioners approve the proposed PBWA FY 2025-2026 Administration Budget.

**Background:**

The proposed FY 25-26 budget focuses on securing water supplies for our customers through various projects. This report details production estimates and associated costs for each project:

- Three Valleys Municipal Water District (TVMWD) is based on RWD and WVWD production demands, budgeted production is 10,014 AF. The budget also includes each agency's respective share of TVMWD and MWD fixed charges.
- The California Domestic Water Company (CDWC) project is budgeted to produce 2,417 AF of water. Costs associated with the project relate to CDWC water charges, MSGBWM charges, electricity costs, and treatment costs.
- No water production has been included in the budget for La Habra Heights County Water District
- The Pomona Basin project is anticipated to produce 563 AF from Old Baldy and 343 AF from Durward wells. Costs associated with the project relate to water charges, electricity costs, and treatment costs.

*Budget Process*

Rowland Water District and Walnut Valley Water District will share the budget equally, except for TVMWD which is allocated based on water production by each agency. Both member agencies will be asked to approve their respective allocations after the PBWA Commission's approval.

PUENTE BASIN WATER AGENCY  
FY 25-26 OPERATING BUDGET

	Budget FY 24-25	Projected FY 24-25	Budget FY 25-26	Administrative	TVMWD	CDWC	Pomona Basin	LHHCWD
<b>1 REVENUES:</b>								
2 Administrative Assessment - RWD	\$ 193,450	\$ 156,300	\$ 193,450	\$ 193,450	\$ -	\$ -	\$ -	\$ -
3 Administrative Assessment - WVWD	193,450	156,300	193,450	193,450	-	-	-	-
4 Other	32,000	33,600	32,000	32,000	-	-	-	-
5 Water Sales - Project - RWD	1,077,950	477,350	1,668,100	-	-	1,003,950	662,800	1,350
6 Water Sales - Project - WVWD	1,077,950	477,350	1,668,100	-	-	1,003,950	662,800	1,350
7 Water Sales - TVMWD - RWD	4,429,600	4,584,800	5,812,500	-	5,812,500	-	-	-
8 Water Sales - TVMWD - WVWD	10,374,900	9,809,800	10,055,600	-	10,055,600	-	-	-
9 Project Maintenance Reserve - RWD	3,000	2,580	6,000	-	-	6,000	-	-
10 Project Maintenance Reserve - WVWD	3,000	2,580	6,000	-	-	6,000	-	-
11 Total Revenues	17,385,300	15,700,660	19,635,200	418,900	15,868,100	2,019,900	1,325,600	2,700
12 Use of Stored/Leased Water	675,900	614,500	1,427,300	-	-	1,427,300	-	-
13 Total	18,061,200	16,315,160	21,062,500	418,900	15,868,100	3,447,200	1,325,600	2,700
<b>14 EXPENSES:</b>								
15 <u>Source of Supply</u>								
16 Purchased Water - TVMWD	14,004,400	13,514,200	14,802,000	-	14,802,000	-	-	-
17 Purchased Water - LHHCWD	-	-	-	-	-	-	-	-
18 Purchased Water - CDWC	536,100	436,200	1,086,700	-	-	1,086,700	-	-
19 Purchased Water - Old Baldy	310,400	-	365,600	-	-	-	365,600	-
20 Purchased Water - Durward	414,700	-	471,500	-	-	-	471,500	-
21 Stored Water Used	675,900	614,500	1,427,300	-	-	1,427,300	-	-
22 Surcharge - Orchard Dale	-	-	-	-	-	-	-	-
23 Assessments - WRD	-	-	-	-	-	-	-	-
24 Assessments - MSGBWM	240,000	207,100	483,400	-	-	483,400	-	-
25 Subtotal	16,181,500	14,772,000	18,636,500	-	14,802,000	2,997,400	837,100	-
26 <u>Fixed Charges</u>								
27 TVMWD Water Use Charge	83,600	83,600	98,700	-	98,700	-	-	-
28 TVMWD Connected Capacity	88,000	88,000	105,800	-	105,800	-	-	-
29 TVMWD Equivalent Small Meters	91,700	91,700	110,000	-	110,000	-	-	-
30 TVMWD RTS Charge	83,500	163,900	274,000	-	274,000	-	-	-
31 MWD Capacity Reservation Charge	451,100	451,100	475,400	-	475,400	-	-	-
32 Subtotal	797,900	878,300	1,063,900	-	1,063,900	-	-	-

	Budget FY 24-25	Projected FY 24-25	Budget FY 25-26	Administrative	TVMWD	CDWC	Pomona Basin	LHHCWD
33 <u>Other Costs</u>								
34 Energy - Pumping and Treatment	409,000	99,800	<b>352,100</b>	-	-	256,200	95,900	-
35 Materials & Supplies - Chemicals	33,600	45,900	<b>116,000</b>	-	-	116,000	-	-
36 Materials & Supplies - Other	25,000	10,000	<b>20,000</b>	-	-	20,000	-	-
37 Other Costs (Labor etc.)	65,700	37,200	<b>315,300</b>	-	-	45,600	267,000	2,700
38 Lease Agreements - Old Baldy	121,400	118,500	<b>125,600</b>	-	-	-	125,600	-
39 Permits & Fees	2,200	2,100	<b>2,200</b>	-	2,200	-	-	-
40 Subtotal	656,900	313,500	<b>931,200</b>	-	2,200	437,800	488,500	2,700
41 <u>Administrative &amp; General</u>								
42 Legal	20,000	6,000	<b>20,000</b>	20,000	-	-	-	-
43 Engineering	5,000	1,500	<b>5,000</b>	5,000	-	-	-	-
44 Professional Services- Other	304,200	254,000	<b>304,200</b>	304,200	-	-	-	-
45 Insurance - Property & Liability	6,500	6,300	<b>6,500</b>	6,500	-	-	-	-
46 Accounting/Auditing	8,400	8,400	<b>8,400</b>	8,400	-	-	-	-
47 Administrative Expenses - Other	74,800	70,000	<b>74,800</b>	74,800	-	-	-	-
48 Subtotal	418,900	346,200	<b>418,900</b>	418,900	-	-	-	-
49 Total Expenses	\$ 18,055,200	\$ 16,310,000	\$ <b>21,050,500</b>	\$ 418,900	\$ 15,868,100	\$ 3,435,200	\$ 1,325,600	\$ 2,700
50 Other Income/(Expense)	-	-	-	-	-	-	-	-
51 Interest Income	2,000	2,000	<b>2,000</b>	2,000	-	-	-	-
52 Leased Water Revenue	125,500	125,500	<b>125,500</b>	125,500	-	-	-	-
53 Depreciation	-	-	-	-	-	-	-	-
54 Subtotal	127,500	127,500	<b>127,500</b>	127,500	-	-	-	-
55 Net Income (Loss) Before Transfers	\$ 133,500	\$ 132,660	\$ <b>139,500</b>	\$ 127,500	\$ -	\$ 12,000	\$ -	\$ -
56 Transfers In: Maint. Reserve Funds Used			-	-	-	-	-	-
57 Transfers Out: Maint. Reserve Funds Collected	(6,000)	(5,160)	<b>(12,000)</b>	-	-	(12,000)	-	-
58 Net Income (Loss) After Transfers	\$ 127,500	\$ 127,500	\$ <b>127,500</b>	\$ 127,500	\$ -	\$ -	\$ -	\$ -
59 <u>PBWA Maintenance Reserve</u>			<b>Total</b>	Administrative	TVMWD	CDWC	Pomona Basin	LHHCWD
60 Beginning Balance July 1	\$ 167,123	\$ 161,603	\$ <b>166,763</b>	\$ -	\$ -	\$ 145,669	\$ -	\$ 21,094
61 Transfers In	6,000	5,160	<b>12,000</b>	-	-	12,000	-	-
62 Transfers Out			-	-	-	-	-	-
63 Ending Balance June 30	\$ 173,123	\$ 166,763	<b>178,763</b>	\$ -	\$ -	\$ 157,669	\$ -	\$ 21,094

## PUENTE BASIN WATER AGENCY FY 2025-26 Budget Supplement

The following is a supplement to the proposed budget and is intended to provide more specific detail and explanation of the major revenues and expenses proposed in the FY 25-26 Operating Budget.

### **REVENUES**

#### Administrative Assessments RWD/WVWD

Represents payments received from the WVWD and RWD related to the administrative costs of the District. The administrative costs of the District are shared equally by both agencies.

#### Water Sales - Project RWD/WVWD

Represents payments received from the WVWD and RWD related to the production of water from PBWA water reliability projects. The costs and benefits of these projects is shared equally by the agencies.

#### Water Sales -TVMWD

Represents payments received from the WVWD and RWD related to water purchased from TVMWD. Unlike the project water sales, the amounts collected from each agency are based on the estimated costs associated with each individual agency's estimated purchases through the Joint Water Line. These costs include both the commodity and fixed charges assessed by TVMWD.

#### Project Maintenance Reserve

In an effort to ensure sufficient money is available to repair and maintain the LHCWD and CDWC projects, the agencies decided, through separate project agreements, to establish a maintenance reserve account to fund the repair of the facilities. The amounts collected will be reserved for this purpose. For FY 25-26 the budgeted amount is \$12,000, related to expected production from the Cal Domestic project of 2,417 acre-feet. No water production related to other projects has been included in the budget. The maintenance reserve amounts are to be funded equally by the agencies.

#### Stored/Leased Water

The PBWA, through RWD and WVWD, has over the past several years purchased and stored untreated water in the Main Basin to be used initially by the CDWC project. For the current year budget, it is anticipated that the CDWC project will produce 2,417 AF of water. The average cost of the stored water is \$590.54 per acre-foot, this amount has been included in the budgeted expenses and revenues.

### **EXPENSES**

#### Source of Supply

Purchased Water - TVMWD - Represents the commodity cost, including TVMWD's surcharge, associated with the purchase of water from TVMWD. Costs are based on purchases of 10,014 acre-feet (RWD 3,720 acre-feet; WVWD 6,294 acre-feet).

## PUENTE BASIN WATER AGENCY FY 2025-26 Budget Supplement

Purchased Water - LHCWD - Represents the estimated charges associated with purchase of water from LHCWD, as outlined in the agreement. For FY 25-26, no water production has been included in the budget.

Purchased Water - CDWC - Represents the estimated charges associated with purchase of water from CDWC, as outlined in the agreement. Includes the cost of untreated water, previously purchased and stored in the Main Basin. Based on water purchases of 2,417 acre-feet.

Purchased Water - Old Baldy - Represents the estimated charges associated with production of water from the Old Baldy Well, as outlined in the agreement. Includes the cost of untreated water, purchased from the City of La Verne. Based on water purchases of 563 acre-feet.

Purchased Water - Durward - Represents the estimated charges associated with production of water from the Durward Well, as outlined in the agreement. Includes the cost of untreated water, purchased from Goldenstate. Based on water purchases of 343 acre-feet.

Surcharge Orchard Dale - In addition to the costs charged by LHCWD, the District must also pay a per acre-foot surcharge to Orchard Dale Water. No amount has been budgeted for FY 25-26

Assessments - WRD - Represents the cost of replenishment water related to the CDWC project. Based on water purchases of 2,417 acre-feet

### Fixed Charges

These charges represent the fixed charges assessed to each respective agency by TVMWD. These charges include the Imported Water Use Charge, Connected Capacity, Equivalent Small Meters, TVMWD RTS Charge, and MWD Capacity Reservation Charge. For the year the total charges are estimated to be \$1,063,900. RWD's share of this amount is \$289,500 and WVWD's share is \$774,400.

### Other Costs

Energy - Represents the power cost associated with the pumping activities and treatment facilities of the water reliability projects.

Materials and Supplies - Chemicals - Estimated costs for chemicals used for the treatment facilities associated with the water reliability projects.

Materials and Supplies - Other - Estimated costs for other miscellaneous supplies necessary for the operation of the projects.



PUENTE BASIN WATER AGENCY  
FY 2025-26 Budget Supplement

Other Costs - Estimated costs for RWD and TVMWD labor and other professional fees related to operating and maintaining the project facilities.

Lease Agreement - Estimated costs for operating the Old Baldy Well on La Verne property

Permits & Fees - Includes costs for WRD Admin Budget, Central Basin Water Rights fees, and Water Research foundation fees paid through TVMWD.

Administrative & General

Legal - To provide funds for legal expense related to the activities of the PBWA.

Engineering - To provide funds for professional engineering fees related to the management and reporting requirements for the Puente Basin

Professional Services Other - To provide funds for professional services related to state funding, and other outside services not related to a specific project.

Insurance - Property and Liability - To provide funds for property and liability insurance

Accounting - To provide funds for auditing services.

Administrative Expenses - Includes funding for internal labor, ACWA dues, and banking fees attributable to the activities of the PBWA.

**Other Income/(Expenses)**

Interest Income - Interest received from monies in the LAIF investment account.

Leased Water Revenue - Leased water to other agencies from water rights owned in the Central Basin



TO: Board of Commissioners  
FROM: Jared Macias, Administrative Officer  
DATE: April 3, 2025  
RE: Consider Acceptance of Work and Notice of Completion for the Six Basins Project (Phase 2) - Durward Well Development & Equipping – Well Equipping Phase (P.N. PB18-0005-P2-EQ)

---

### **Recommendation**

Request the Commission:

1. Accept the work as installed for the project listed below.
2. Authorize the filing of the Notice of Completion for the project listed below.

<b><u>Project No.</u></b>	<b><u>Description</u></b>	<b><u>Contractor</u></b>
P.N. PB18-0005-P2-EQ	Six Basins Project (Phase 2) - Durward Well Development & Equipping- Well Equipping Phase	Doty Bros. Equipment Co.

### **Background**

The contractor has substantially completed work on the above project and all work has been performed in accordance with the contract documents.

Attachments:  
*Notice of Completion*  
*Vicinity Map*

**RECORDING REQUESTED BY:**

Puente Basin Water Agency

**WHEN RECORDED MAIL TO:**

Puente Basin Water Agency  
271 South Brea Canyon Road  
Walnut, CA 91789

SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE

**NOTICE OF COMPLETION**

**Notice is hereby given that:**

Puente Basin Water Agency, created by a Joint Powers Agreement between Rowland Water District (a County Water District) and Walnut Valley Water District (a California Water District), hereby requests this Notice of Completion be filed for the Six Basins Groundwater Project, location map attached as "Exhibit A".

The work of improvement was completed on March 4, 2025. The contractor for said work of improvement was Doty Bros. Equipment Co., 11232 E. Firestone Blvd., Norwalk, CA 90650. The name and address of the contractor's surety is Fidelity and Deposit Company of Maryland, 1299 Zurich Way, 5<sup>th</sup> Floor, Schaumburg, IL, 60196-1056.

The property upon which work of improvement was completed is in the City of La Verne, County of Los Angeles, State of California and is described as follows:

Six Basins Groundwater Project (Phase 2)  
Durward Well Development & Equipping – Equipping Phase

Property Owner: Puente Basin Water Agency  
Project No.: PB18-0005-P2-EQ

Dated: April 3, 2025

PUENTE BASIN WATER AGENCY

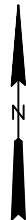
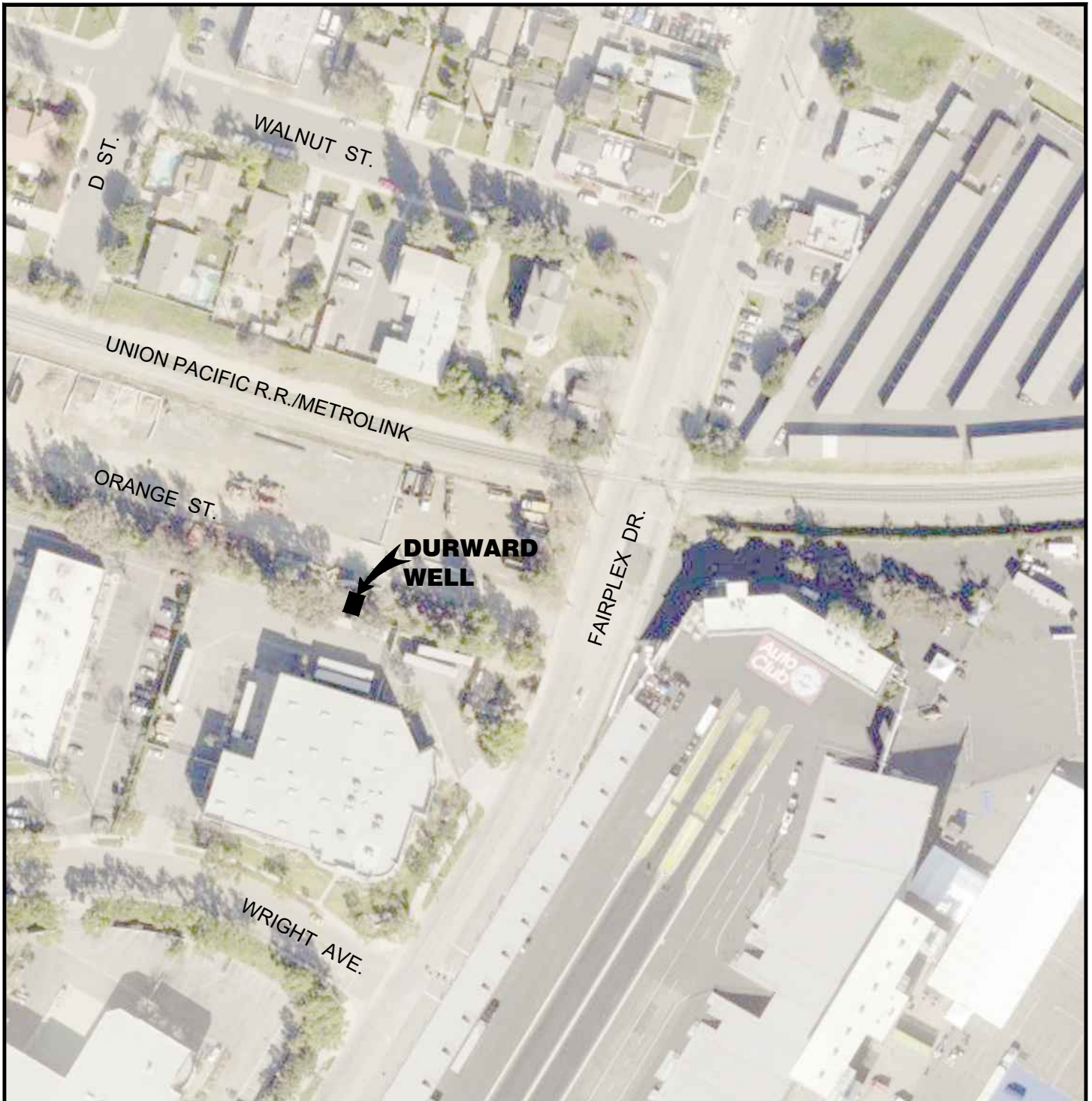
By: \_\_\_\_\_  
Jared Macias, Administrative Officer

**VERIFICATION**

The undersigned declares that she is the Secretary of the public corporation that executed the foregoing notice as owner of the interest on the property described therein, that she makes this verification on behalf of said corporation, that she has read said notice and knows its contents, and that the facts therein are true to the best of his knowledge and belief.

The undersigned declares under penalty of perjury that the foregoing is true and correct.  
Executed at Walnut, California this 3rd day of April 2025.

By: \_\_\_\_\_  
Carmen Fleming, Secretary



VICINITY MAP  
Not to Scale

**PUENTE BASIN WATER AGENCY**

**DURWARD WELL 1905B FAIRPLEX DRIVE, LA VERNE, CA 91750**



TO: Board of Commissioners  
FROM: Jared Macias, Administrative Officer  
DATE: April 3, 2025  
RE: Regional Water Supply Program Update

---

### **Recommendation**

That the Board of Commissioners receive and file the final Regional Water Supply Program Update.

### **Background**

In 2012, the Puente Basin Water Agency (“PBWA”) entered into an agreement with RMC to establish a Regional Water Supply Program (“Program”) identifying projects that could supplement Metropolitan Water District (“MWD”) water supplied to Rowland Water District and Walnut Valley Water District. Out of this original framework, the La Habra Heights and Cal Domestic projects were initially conceived, designed and built as redundant sources of supply, lessening PBWA’s reliance on MWD. In 2023, PBWA desired to update the Program to factor in remaining viable projects as well as projected declining water usage due to the State of California’s recently enacted “Making Conservation a California Way of Life” regulation. Through an exhaustive effort looking at current and potential partnerships in the Main Basin, Six Basins, and Central Basin areas, a planning document was created to assist PBWA with new planning goals and supply objectives through 2050.

Planning objectives defined in this plan include: providing a vision for PBWA to provide water supplies through 2050, building on previous work using updated data, and using a planning process that supports adaptable implementation. In addition, the Program was to consider offsetting direct imported water use during summer peak demand months and leveraging existing facilities. Steps to develop the Program included: 1) Forecasting future demands, 2) projecting baseline supplies, 3) describing supply options, 4) evaluating options, and 5) developing the implementation program. Each of these are described in detail in the Program document.

Through this evaluation process, it was determined that there are three priority levels of projects that PBWA should consider in the future:

### **Priority 1 Projects**

#### Recommended Implementation

- Pico-Whittier Project
- Increasing Cal-Domestic Water Project Supplies

### **Priority 2 Projects**

Explore Partnership Agreements and Funding Opportunities

- La Puente/Industry Project
- CIC Connection
- Six Basins Regional Project, Phase 3

### **Priority 3 Projects**

Monitor for Future Viability

- Glendora Regional Groundwater Project
- Six Basins Regional Project, Phase 4
- Advanced Water Treatment Project (Direct Potable Reuse)

In summary, the Program has been updated as a planning document for PBWA to evaluate future reliability projects, as needed. Staff will continue to assess the viability of each project and present recommendations to the Commission for further action.

Attachment:

*Puente Basin Water Agency Regional Water Supply Program Update*



# Puente Basin Water Agency

## Regional Water Supply Program Update

FINAL

515 S. Flower Street | 18<sup>th</sup> Floor  
Los Angeles, California 90071  
800.426.4262

[woodardcurran.com](http://woodardcurran.com)

**Puente Basin  
Water Agency**  
February 2025

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- Appendix B: Metropolitan Water District Imported Water Reliability and Cost Projections
- Appendix C: Detailed Option Costs
- Appendix D: Baseline Systems Model Diagram

## 1. INTRODUCTION

The Puente Basin Water Agency (PBWA), a joint powers authority between Rowland Water District (RWD), and Walnut Valley Water District (WVWD), was formed in 1971 for the protection and stewardship of local, imported and recycled water supplies, a mission which is supported by PBWA's current strategic initiatives shown below.

- Optimize use of local water supplies and reduce the members' reliance on imported water
- Improve water quality across the region and enhance water supply reliability
- Coordinate regional projects to maximize basin-wide water production and build cooperation and collaboration among stakeholders
- Evaluate opportunities to provide surplus water to other purveyors and secure position as regional water management leaders

In-line with its strategic initiatives, PBWA created the Regional Water Supply Program (Program) in 2012 to identify and implement projects that could improve supply reliability and offset imported water use. Since 2012, PBWA has successfully completed three projects identified as priorities under the program.

- 1) **California Domestic Water Company (Cal Domestic) Pipeline and Pump Station:** The new Harbor pipeline and pump station delivers imported water stored in the Main San Gabriel Basin through a Cal Domestic connection to RWD and then to WVWD through the Pathfinder pipeline and Colima interties.
- 2) **Pomona Basin Regional Groundwater Project Phases 1 and 2:** The newly reactivated Old Baldy and Durward groundwater wells are used to pump water from the Ganesha and Pomona Basins into the Pomona-Walnut-Rowland Joint Water Line (PWR-JWL).
- 3) **La Habra Heights County Water District Pipeline:** A new pipeline and supporting infrastructure delivers water pumped from Central Basin through the La Habra Heights County Water District's transmission system to RWD.

By implementing these projects, PBWA has made progress meeting its goal of having reliable supply during an imported water outage. PBWA has continued to identify additional opportunities to pursue projects and has updated the Regional Water Supply Program with new planning goals and supply objectives in mind through 2050.

### Planning Goals

- Provide a vision for PBWA to provide water supplies through 2050
- Build upon previous work using new information and ideas
- Use a planning process that supports adaptable implementation

### Supply Objectives

- Offset direct imported water use during summer peak demand months
- Leverage existing facilities

The process used to develop the Program update, shown in **Figure 1-1**, incorporated new data to forecast growth and water demand as well as existing and potential new supply project ideas and implementation considerations.

**FIGURE 1-1: REGIONAL WATER SUPPLY PROGRAM UPDATE PROCESS**

#### Forecast Demands (Section 2)

- Build RWD and WWWD demand models
- Compile PBWA demand forecast

#### Project Baseline Supplies (Section 3)

- Project current supplies and determine reliability
- Identify existing facility capacities

#### Describe Supply Options (Section 4)

- Articulate options
- Run GoldSim model to identify potential limiting factors

#### Evaluate Options (Section 5)

- Develop evaluation criteria
- Apply criteria to options

#### Develop Implementation Program (Section 6)

- Prioritize options
- Develop implementation next steps

## 2. DEMAND FORECAST

Because RWD and WVWD have their own distinct systems and demands, separate demand forecasts were first developed and then compiled into one overall PBWA demand forecast through 2050. The process and resulting forecasts for PBWA's potable and non-potable demands are described in this section.

### 2.1 Potable Demand Forecast Methodology

The following nine steps were used to develop retail demand projections out to 2050. This process was applied to both RWD and WVWD to develop a total potable demand forecast for PBWA. The detailed process for each district is provided in **Appendix A**, while the summary forecast is provided in Section 2.2.

#### ***Step 1 - Compile historic water use by sector***

Water usage was divided into sectors including single family, multi-family, commercial, public/governmental, irrigation, and other uses. Historical water use data from calendar year 2019 to 2023 was compiled for each sector.

#### ***Step 2 - Determine annual baseline water use***

To capture wet as well as drought years, baseline water use for each sector was assumed to be the five-year average measured from January 2019 to December 2023.

#### ***Step 3 – Estimate indoor versus outdoor water use***

Indoor versus outdoor water use was estimated by comparing the monthly demands for dedicated landscape meters against the average monthly demand calculated in steps one and two. Since the Indoor demand is assumed to be the same each month regardless of weather, the outdoor demand was assumed to be the difference between total monthly demand and the estimated indoor demand. The average percentage of indoor and outdoor use was then calculated for each sector.

#### ***Step 4 – Calculate growth rates***

Projected growth within each of the demand sectors was estimated based on population, household and employment growth projections provided in the Southern California Association of Government (SCAG) 2024 Connect SoCal Plan. Because the WVWD and RWD service areas don't align with city boundaries, the SCAG Tier 2 TAZ forecasts were used by estimating the percentage of each TAZ within the combined PBWA service area and then applying the Tier 2 TAZ population, household and employment forecasting to that portion of the service area.

#### ***Step 5 - Calculate water use unit factors***

Unit factors were calculated for every use sector by dividing each of the baseline water use averages (prepared under step 2) by the corresponding 2020 Census block group estimates of population, households or employment. A weighted average by block group area was calculated for each service area.

Current employment was estimated using SCAG 2024 Connect SoCal Plan's forecasting which includes employment forecasting starting in 2019 and going to 2050 using the method described above. Employment for the year 2020 was interpolated from this data.

### **Step 6 - Apply water use unit factors to growth**

Indoor and outdoor demand forecasts were calculated and interpolated into five-year increments for each sector using the following formula:

$$\text{Water Use} = \text{Growth} \times \text{Unit Factor} \times \text{Indoor (or Outdoor) Water Use Percentage}$$

### **Step 7 - Estimate water loss**

Water loss estimates were estimated by applying the average percentage of assumed water loss for each service area from American Water Works Association Water Loss Audit Reports.

### **Step 8 - Compile demand projections**

The results of Steps 6 and 7 were summed to generate the total demand projection, divided by sector and indoor versus outdoor use.

### **Step 9 – Adjust forecast for SB606/AB1668 water use objectives**

Water use objectives that meet the requirements of SB606 and AB1668 were applied to the estimated population in each service area to estimate indoor residential use. Provisional data provided by the SWRCB was used to estimate outdoor residential water use and water loss standards. Estimate of the CII outdoor irrigation was not available in the provisional data and therefore adjustments weren't made to the CII outdoor demand.

- Indoor residential use: Calculated based on indoor use of 47 gpcd starting in 2025 and 42 gpcd starting in 2030.
- Outdoor residential use: Calculated based on irrigated landscape area (and in some cases, a portion of irrigable un-irrigated area), effective precipitation, evapotranspiration, and a landscape efficiency factor of 0.80 starting in 2028 and 0.63 in 2035.
- CII outdoor irrigation: Calculated based on irrigated landscape area, effective precipitation, evapotranspiration, and a landscape efficiency factor of 0.80 starting in 2025, 0.63 starting in 2035, and 0.45 starting in 2040.
- Water loss: Equal to average baseline real loss

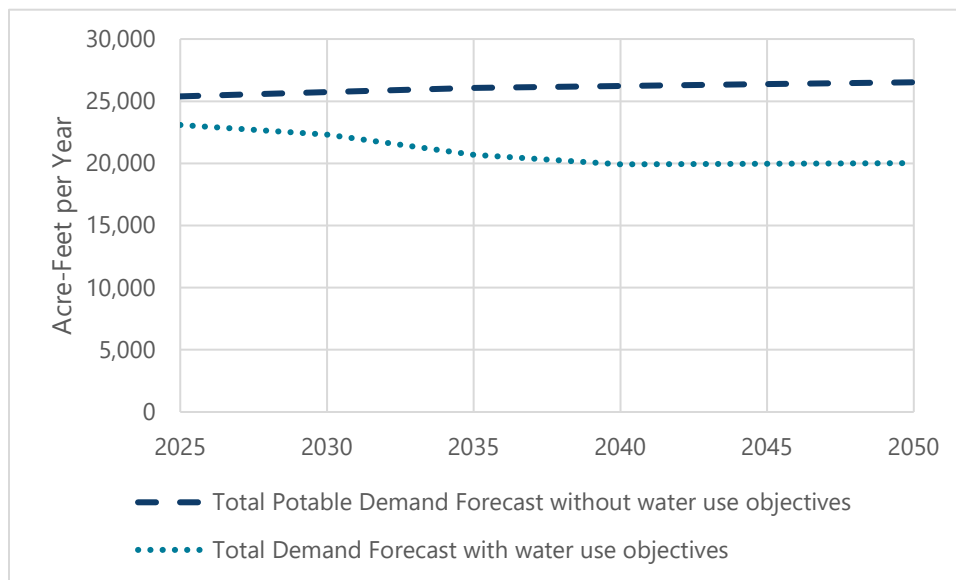
## **2.2 PBWA Potable Demand Forecast**

The potable demand forecasts for WVWD and RWD were combined to create a total potable demand forecast for PBWA in **Table 2-1** and **Figure 2-1** which show the forecast with and without the Step 9 application of water use objective calculation methodologies. As shown in these figures, water use objectives are expected to significantly reduce demand within each service area. Given that the water use objectives were approved by the SWRCB on July 3, 2024, it's assumed that the demand forecast with water use objectives is the most probable future demand.

**TABLE 2-1: TOTAL POTABLE DEMAND FORECAST (AFY)**

Sector	2025	2030	2035	2040	2045	2050
<b>Without Water Use Objectives</b>						
WVWD	16,256	16,689	17,122	17,276	17,430	17,583
RWD	9,114	9,002	8,890	8,881	8,873	8,865
<b>Total without water use objectives</b>	<b>25,370</b>	<b>25,691</b>	<b>26,012</b>	<b>26,157</b>	<b>26,303</b>	<b>26,448</b>
<b>With Water Use Objectives</b>						
WVWD	15,099	14,719	13,540	12,965	13,022	13,079
RWD	8,818	8,430	7,970	7,787	7,781	7,776
<b>Total with water use objectives</b>	<b>23,917</b>	<b>23,149</b>	<b>21,510</b>	<b>20,752</b>	<b>20,803</b>	<b>20,855</b>

**FIGURE 2-1: TOTAL POTABLE DEMAND FORECAST**





### 3. BASELINE SUPPLY FORECAST

PBWA relies primarily on treated imported water but is continuing to work toward a more diverse supply portfolio that includes raw imported water conjunctive use storage and further development of local supplies. The following sections provide a description of PBWA’s historical baseline supplies and future baseline supply projections.

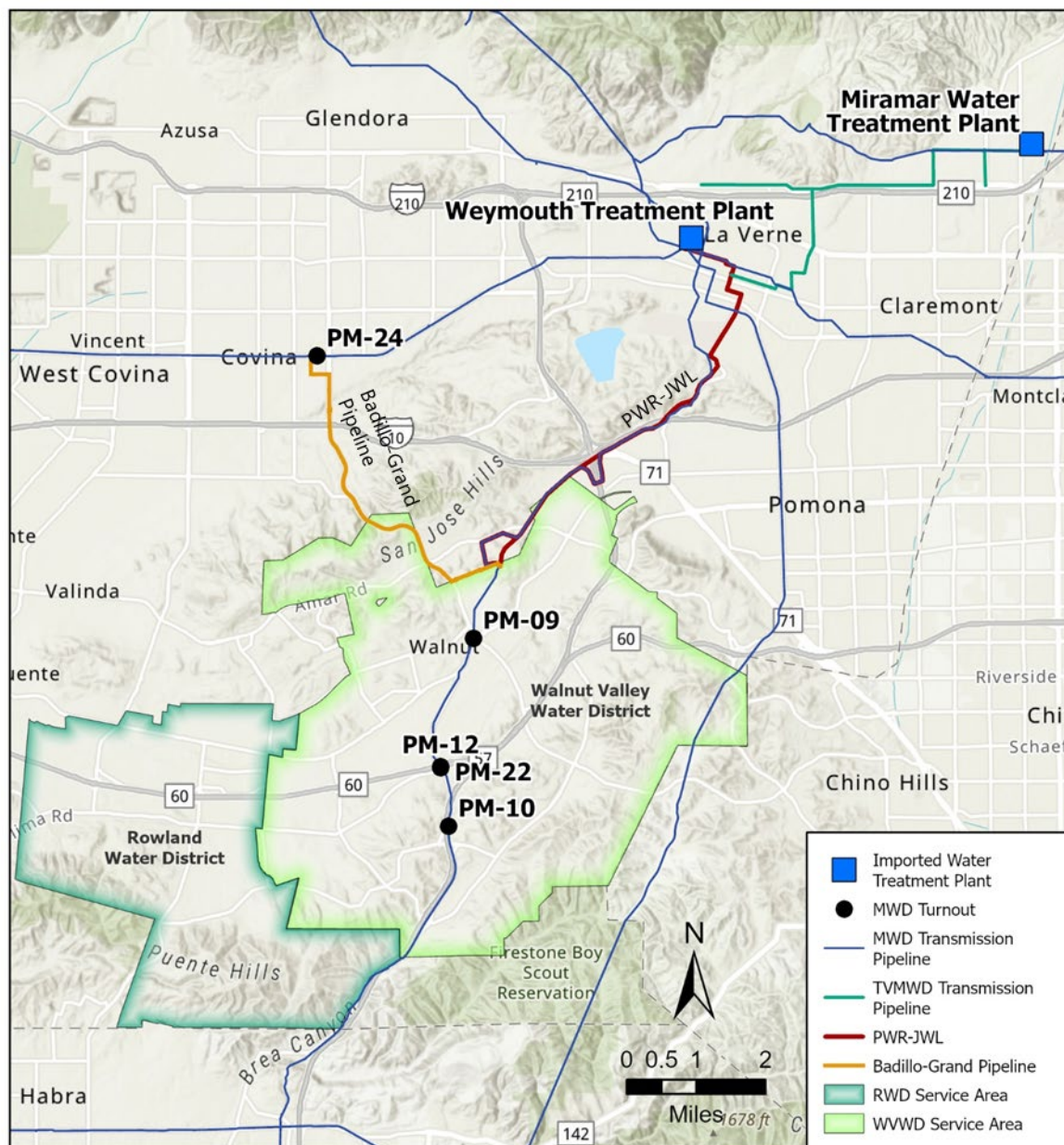
#### 3.1 Historical and Projected Baseline Imported Water Supply

PBWA purchases treated water from Three Valleys Municipal Water District (TVMWD), which is a member of the Metropolitan Water District of Southern California (MWD). MWD receives State Water Project (SWP) and Colorado River Aqueduct (CRA) supplies, which can be treated at MWD’s Weymouth Water Treatment Plant (WTP) or TVMWD’s Miramar WTP. TVMWD’s Miramar WTP is physically limited to only receiving SWP supplies, while the MWD Weymouth WTP can receive both sources. Treated, imported water can be delivered to PBWA through multiple connections as shown in **Table 3-1**.

**TABLE 3-1: IMPORTED WATER CONNECTIONS**

Connection	Capacity	Minimum Flow
PM-10 MWD Orange County Feeder to WVWD distribution	8 CFS	2 CFS
PM-12 MWD Orange County Feeder to WVWD distribution	4 CFS	2 CFS
PM-15A MWD Weymouth WTP to PWR-JWL	30 CFS	4 CFS
PM-15B MWD Weymouth WTP to PWR-JWL	180 CFS	18 CFS
PM-21 TVMWD Miramar WTP to PWR-JWL	38 CFS	8 CFS
PM-24 MWD Middle Feeder to Badillo-Grand Pipeline to WVWD Distribution	60 CFS	8 CFS
PM-09 MWD Orange County Feeder to RWD Distribution	10 CFS	3 CFS
PM-22 MWD Orange County Feeder to RWD Distribution	20 CFS	3 CFS
PWR-JWL to WVWD & RWD Terminal Storage Reservoirs	65 CFS (combined WVWD & RWD capacity allocation)	No minimum flow

**FIGURE 3-1: IMPORTED WATER FACILITIES**



MWD uses a tiered rate structure for its member agencies, where TVMWD can purchase up to 80,688 AF at the Tier 1 Rate in 2024. This volume is allocated among the TVMWD member agencies under its own tiered rate structure, where WVWD has a Tier 1 allocation of 26,057 AFY and RWD has a Tier 1 allocation of 14,741 AF. While it's possible for TVMWD, WVWD and RWD to purchase water exceeding these allocations, the purchase cost would be at higher Tier 2 rates. Over the last ten years, WVWD and RWD haven't required their full Tier 1 allocations, as shown in **Table 3-2**.

**TABLE 3-2: HISTORIC IMPORTED WATER USE**

Fiscal Year	WVWD (AF)		RWD (AF)		Total (AF)
	Directly Used Treated Imported	Directly Used Treated Imported	Raw Imported Stored in MSGB and Pumped by Cal Domestic		
2010-11	19,422	10,901	0	30,323	
2011-12	20,361	11,002	0	31,363	
2012-13	20,741	11,423	0	32,164	
2013-14	21,139	11,542	0	32,681	
2014-15	18,669	10,495	0	29,164	
2015-16	15,905	9,472	0	25,377	
2016-17	17,197	9,495	616	27,308	
2018-19	18,485	8,583	1,804	28,872	
2019-20	16,275	8,253	1,490	26,018	
2020-21	16,630	8,515	1,112	26,257	
<b>Average</b>	<b>18,482</b>	<b>9,968</b>	<b>1,256<sup>1</sup></b>	<b>29,706</b>	

Source: RWD 2020 UWMP, WVWD 2020 UWMP.

1. Average of raw imported water stored in MSGB and pumped by Cal Domestic is calculated based on the last four years.

It's assumed that in an average year, the Tier 1 amount of 40,800 AFY (approximately equal to WVWD's allocation of 26,057 AF and RWD's allocation of 14,741 AF) will be available for purchase by PBWA into the future, which is used as the baseline imported water use for this analysis.

MWD performed a regional needs assessment as part of its 2022 Integrated Resources Plan (IRP) that projects member agency demand, local supplies and imported supplies to estimate the probability of imported water shortage and surplus. To account for future uncertainty, the IRP used a scenario planning approach that varied imported water supply stability as impacted by climate change and demand on MWD. Modeling by MWD, indicated that shortage would be experienced in three of the four scenarios after exhausting all local supplies and storage, indicating the need for more local supply projects and storage. The probability of shortage is highly sensitive to the projected growth in demand for MWD imported water. For example, under the two scenarios that applied greater climate change impacts, by 2045 the probability of shortage was estimated at between five percent (under low demand growth) to 66 percent (under high demand growth). The MWD IRP scenarios are described in more detail in **Appendix B**.

During periods of supply shortage, MWD may implement its water shortage contingency plan (WSCP) which requires member agencies to reduce imported water use by reducing Tier 1 allocations. TVMWD's Tier 1 allocation under the WSCP depends on TVMWD's current Tier 1 volume, demand hardening and replenishment. TVMWD then allocates this volume among its member agencies according its Water Supply Allocation Plan (WSAP) as shown for RWD and WVWD in **Table 3-3**. As shown in the table, as the regional supply shortage increases, so do the allocations apportioned to RWD and WVWD.

**TABLE 3-3: RWD AND WVWD ALLOCATIONS UNDER TVMWD'S WSAP**

Regional Shortage Level (Regional Supply Shortage Percentage)	Tier 1 Allocation under WSAP Implementation	
	RWD portion of TVMWD Tier 1 allocation <sup>1</sup>	WVWD portion of TVMWD Tier 1 allocation <sup>1</sup>
1 (5%)	17.92%	32.69%
2 (10%)	18.04%	32.91%
3 (15%)	18.18%	33.17%
4 (20%)	18.34%	33.46%
5 (25%)	18.52%	33.79%
6 (30%)	18.74%	34.18%
7 (35%)	18.99%	34.65%
8 (40%)	19.30%	35.20%
9 (45%)	19.67%	35.88%
10 (50%)	20.14%	36.74%

1. Allocation percentages are from TVMWD's 2015 Water Supply Allocation Plan, Table 1.

An example of how imported water shortages may affect PBWA is provided in **Table 3-4**. Under this example, a ten percent regional supply shortage would result in TVMWD potentially receiving a supply allocation of 54,200 AFY. Of this, WVWD would receive an allocation of 32.91 percent (17,800 AF) and RWD would receive an allocation of 18.04 percent (9,800 AF), totaling 27,600 AF. Under a 30 percent regional shortage, while WVWD and RWD receive slightly increased allocations, the total volume allocated is lower at 21,700 AF. Note that this example does not include water stored by TVMWD in Six Basins that may be available to offset supply needs.

**TABLE 3-4: IMPORTED WATER ALLOCATIONS UNDER TEN PERCENT REGIONAL SUPPLY SHORTAGE**

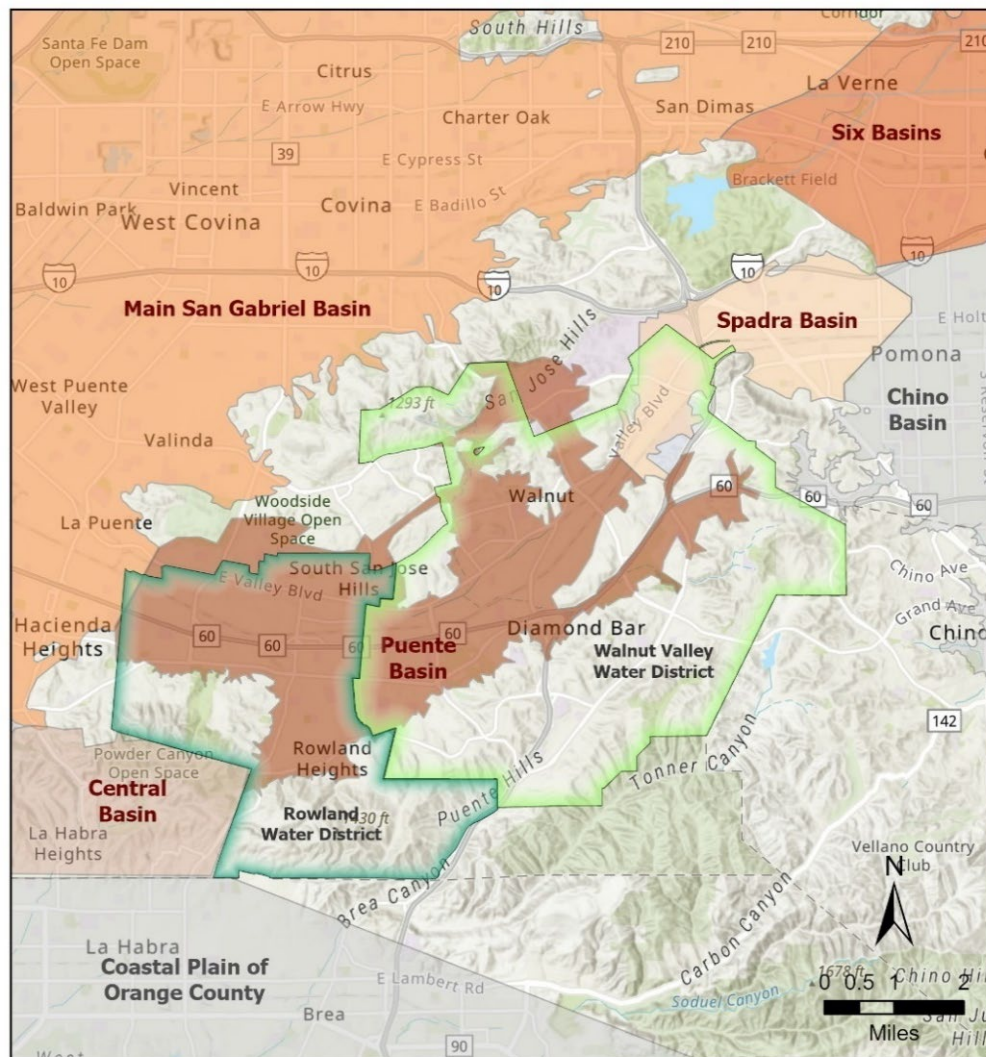
Example Regional Shortage	10%	30%
TVMWD Allocation <sup>1</sup>	54,200 AF	41,100 AF
WVWD Allocation	17,800 AF	14,000 AF
RWD Allocation	9,800 AF	7,700 AF
<b>Total PBWA Allocation</b>	<b>27,600 AF</b>	<b>21,700 AF</b>

1. TVMWD allocation volume is based on actual 2020 imported water deliveries of 60,031 AF and includes estimated credits for demand hardening as described in the TVMWD WSCP.

### 3.2 Historical and Projected Baseline Groundwater Supply

Although the combined PBWA service area only overlies the Spadra and Puente Basins, PBWA has access to water from multiple groundwater basins in the region, as shown in **Figure 3-2**. By partnering with other water districts with pumping rights and developing agreements for storage and export, PBWA has expanded its supply portfolio.

**FIGURE 3-2: GROUNDWATER BASINS**



**Spadra Basin**

The Spadra Basin Groundwater Sustainability Agency (GSA) was formed by WVWD and the City of Pomona to sustainably manage the basin and completed the Spadra Basin Groundwater Sustainability Plan (GSP) in 2022. Spadra Basin generally has poor quality groundwater due to high levels of TDS, nitrate (as nitrogen), sulfate, and other constituents, and therefore is used primarily for non-potable uses by pumpers, including WVWD.

According to the GSP, the yield of the basin is slightly higher than historic pumping, meaning historic pumping can be sustainably maintained into the future. WVWD pumps water from one well in the basin (Industry well) with a capacity of 210 AFY and has historically only pumped three percent of the total water produced from Spadra Basin as compared to other pumpers. (West Yost, 2022). As shown in **Table 3-5**, WVWD pumping in Spadra Basin has ranged from 41 AF to 108 AF between fiscal year (FY) 2011 and 2021

equating to a baseline use of 70 AFY. The projected baseline is assumed to be the same volume moving forward.

**TABLE 3-5: HISTORIC SPADRA BASIN PUMPING**

Fiscal Year	WVWD Pumping (AF)
2010-11	78
2011-12	86
2012-13	108
2013-14	101
2014-15	41
2015-16	50
2016-17	55
2018-19	57
2019-20	67
2020-21	55
<b>Average</b>	<b>70</b>

Source: WVWD 2020 UWMP.

### **Puente Basin**

Water pumped from Puente Basin is primarily used to meet non-potable demands due to high TDS concentrations. The adjudicated rights in the basin are 4,400 AFY, though operating safe yield can change from year to year depending on basin levels. In addition, pumpers may carry over pumping rights. The operating safe yield of Puente Basin is 2,506 AF as of March 2023 (FY 2023). With RWD’s allocation of the operating safe yield at 550 AF and WVWD’s at 921.3 AF, PBWA has access to total of 1,471.3 AF plus RWD & WVWD carry-over rights of 550 AF and 921.3 AF respectively. (Puente Basin Watermaster, 2024). As shown in **Table 3-6**, total pumping from FY 2011 to 2021 by WVWD and RWD has ranged from 824 AF to 1,560 AF, putting average baseline use at 1,070 AFY. The projected baseline is assumed to be the same volume moving forward.

**TABLE 3-6: HISTORIC PUENTE BASIN PUMPING**

Fiscal Year	WVWD (AF)	RWD (AF)	Total (AF)
2010-11	533	300	833
2011-12	645	456	1,101
2012-13	703	354	1,057
2013-14	905	100	1,005
2014-15	856	208	1,064
2015-16	803	204	1,007
2016-17	871	249	1,120
2018-19	1,300	260	1,560
2019-20	892	233	1,125

Fiscal Year	WVWD (AF)	RWD (AF)	Total (AF)
2020-21	667	157	824
<b>Average</b>	<b>818</b>	<b>252</b>	<b>1,070</b>

Source: RWD 2020 UWMP, WVWD 2020 UWMP.

### **Six Basins**

The Six Basins Judgment established the safe yield for all six subbasins at 19,300 AFY, with a subset operating safe yield for four of the subbasins (Canyon, Upper Claremont Heights, Lower Claremont Heights, Pomona Sub-basins) at 13,000 AFY. PBWA has implemented projects to re-activate two wells, one within the Ganesha Subbasin (Old Baldy) and the other in the Pomona Subbasin (Durward) and connect the wells to the PWR-JWL to convey water to the PBWA service areas. The reactivation of these wells are considered Phases 1 and 2 of the Pomona Basin Regional Groundwater Project, discussed further in **Section 4**. PBWA has leased 750 AFY for production at the Old Baldy well and is expected to lease an additional 750 AFY for production at the Durward well, totaling 1,500 AFY. It's assumed that PBWA will maximize this 1,500 AFY into the future.

### **Main San Gabriel Basin**

PBWA's Water Storage and Export Agreement with the Main San Gabriel Watermaster allows for the export and delivery of up to approximately 5,000 AFY. Under PBWA's Water Production and Delivery Agreement, California Domestic Water Company (Cal Domestic) can convey untreated imported water stored in Main Basin through the Harbor Pipeline to RWD's service area generally from October through May. WVWD can access this water as well through the Pathfinder Pipeline and its three Colima interconnections. A summary of water production from the Main San Gabriel Basin is shown in **Table 3-7**. It's assumed that for projected baseline supply, PBWA will produce the same historic average of approximately 1,300 AFY of stored imported water.

**TABLE 3-7: HISTORIC MAIN SAN GABRIEL BASIN PUMPING**

Fiscal Year	Imported Water stored in Main San Gabriel Basin (AF)	Produced Water from Main San Gabriel Basin (AF)
2010-11	0	117
2011-12	0	145
2012-13	0	3
2013-14	0	89
2014-15	0	86
2015-16	0	22
2016-17	616	63
2018-19	1,804	41
2019-20	1,490	18
2020-21	1,112	0
<b>Average</b>	<b>1,256</b>	<b>58</b>

Source: RWD 2020 UWMP. Average does not include "0 AF" production years. Storage is also shown in Table 3-2.

### **Central Basin**

The La Habra Heights County Water District Project can pump and convey up to 2,000 AFY of leased and purchased water rights from Central Basin into the southwestern side of RWD’s service area. While the pipeline has been constructed, water cannot currently be produced due to PFOA/PFOS contamination of the aquifer from which LHHCW and Orchard Dale Water District pump.

### **3.3 Historical and Projected Baseline Recycled Water Supply**

RWD has an allocation of 1,600 AFY of tertiary treated recycled water from the San Jose Creek Water Reclamation Plant (SJCWRP) through an agreement with the City of Industry and the Los Angeles County Sanitation Districts (LACSD). WWWD has an allocation of 3,360 AFY of tertiary treated recycled water through a separate agreement with LACSD from the Pomona Water Reclamation Plant (PWRP). As shown in **Table 3-8**, WWWD has averaged 1,300 AFY recycled water while RWD averages approximately 600 AFY of recycled water, which combines for 1,900 AFY.

It’s assumed that future non-potable demands will only be added opportunistically, as there are no further system expansions planned. Therefore, current recycled water supply use of 1,925 AFY is assumed for the supply baseline.

**TABLE 3-8: HISTORIC RECYCLED WATER USE**

<b>Fiscal Year</b>	<b>WWWD (AF)</b>	<b>RWD (AF)</b>	<b>Total (AF)</b>
2010-11	1,176	82	1,258
2011-12	1,250	92	1,342
2012-13	1,457	553	2,010
2013-14	1,473	798	2,271
2014-15	1,588	754	2,342
2015-16	1,170	850	2,020
2016-17	1,259	759	2,018
2018-19	1,201	810	2,011
2019-20	937	826	1,763
2020-21	1,251	960	2,211
2021-22	1,554	626	2,180
<b>Average</b>	<b>1,276</b>	<b>648</b>	<b>1,925</b>

Source: RWD 2020 UWMP, WWWD 2020 UWMP, LACSD Annual Reuse Report FY 2021-2022.

### **3.4 Summary Average Baseline Supply Projections**

The summary of average annual baseline (or no project) supply is provided in **Table 3-9**. Potable volumes generally reflect the total average supply available while non-potable supplies reflect the average volumes used to meet non-potable demands. A summary of supplies under a 5-year drought condition is provided in **Table 3-9** and assumes that treated, imported water is impacted by drought while local groundwater, stored imported water and recycled water are not impacted by drought. Local groundwater and stored imported water benefit from the ability to store larger volumes in the ground to buffer drought, while



recycled water is reliant on wastewater produced by indoor water uses which are typically not heavily impacted by drought.

**TABLE 3-9: PROJECTED BASELINE AVERAGE SUPPLY AVAILABLE (AFY)**

Supply Source	2025	2030	2035	2040	2045	2050
<b>Potable Supplies</b>						
Treated, Imported Water (Tier 1)	40,800	40,800	40,800	40,800	40,800	40,800
Six Basins	1,500	1,500	1,500	1,500	1,500	1,500
Main San Gabriel Basin (stored imported water)	1,260	1,260	1,260	1,260	1,260	1,260
Central Basin	0	0	0	0	0	0
<b>Total Potable Supplies</b>	<b>43,560</b>	<b>43,560</b>	<b>43,560</b>	<b>43,560</b>	<b>43,560</b>	<b>43,560</b>
<b>Non-Potable Supplies</b>						
Non-Potable Recycled Water	1,925	1,925	1,925	1,925	1,925	1,925
Spadra Basin	70	70	70	70	70	70
Puente Basin	1,070	1,070	1,070	1,070	1,070	1,070
<b>Total Non-Potable Supplies</b>	<b>3,065</b>	<b>3,065</b>	<b>3,065</b>	<b>3,065</b>	<b>3,065</b>	<b>3,065</b>
<b>Total Supplies</b>	<b>46,625</b>	<b>46,625</b>	<b>46,625</b>	<b>46,625</b>	<b>46,625</b>	<b>46,625</b>

### 3.5 Baseline Potable Supply versus Demand

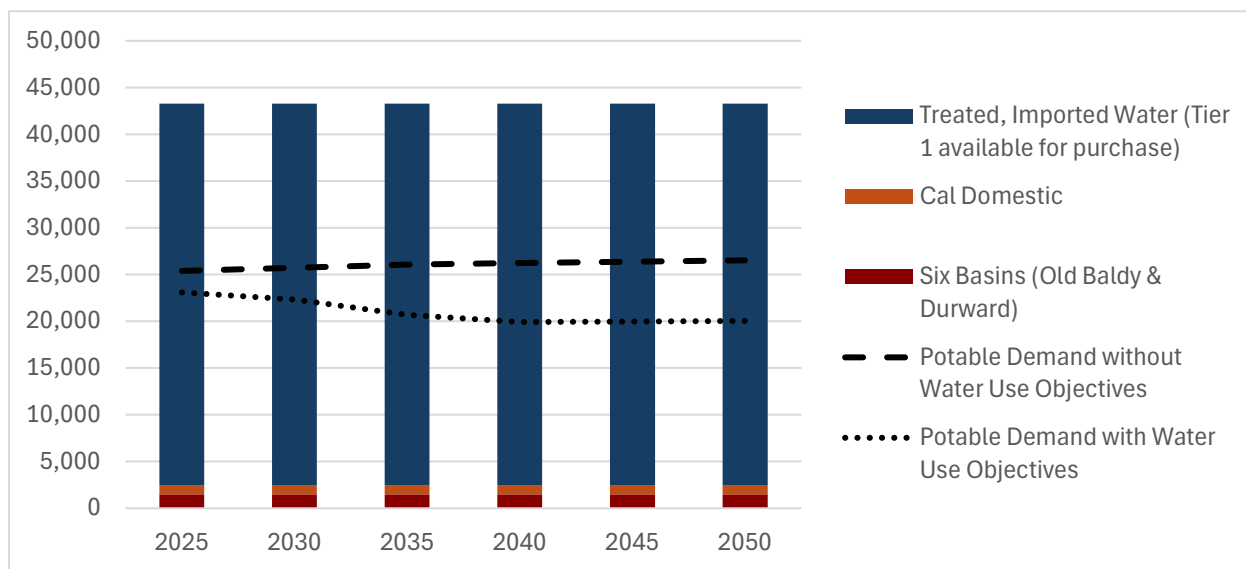
Based on the baseline demand and supply forecast, average annual supplies should be sufficient to meet projected demands. **Table 3-10** and **Figure 3-3** indicate that annual baseline supplies are expected to be higher than annual demands as PBWA has the ability to purchase a volume of Tier 1 imported water that exceeds demands. This is expected given that demand is not expected to significantly increase, or even decrease if water use efficiency objectives are met.

**TABLE 3-10: AVERAGE ANNUAL SUPPLY SURPLUS**

Supply Source	2025	2030	2035	2040	2045	2050
<b>Potable Supply Surplus Without Water Use Objectives</b>						
Potable Demand (AFY)	25,370	25,691	26,012	26,157	26,303	26,448
Potable Supply (AFY)	43,560	43,560	43,560	43,560	43,560	43,560
<b>Potable Supply Surplus (without water use objectives) (AFY)</b>	<b>18,190</b>	<b>17,869</b>	<b>17,548</b>	<b>17,403</b>	<b>17,257</b>	<b>17,112</b>

Potable Supply Surplus With Water Use Objectives						
Potable Demand (AFY)	23,917	23,149	21,510	20,752	20,803	20,855
Potable Supply (AFY)	43,560	43,560	43,560	43,560	43,560	43,560
<b>Potable Supply Surplus (with water use objectives) (AFY)</b>	<b>19,643</b>	<b>20,411</b>	<b>22,050</b>	<b>22,808</b>	<b>22,757</b>	<b>22,705</b>

**FIGURE 3-3: BASELINE ANNUAL POTABLE SUPPLY VERSUS 2050 POTABLE DEMAND**



Because of seasonality, periods of drought and facility capacity constraints must also be considered to better understand potential future supply needs. A systems model was developed using GoldSim to model projected baseline supplies and demands under different hydrologic year types while considering the capacities of major conveyance facilities. A diagram showing the baseline supplies and facilities within the GoldSim model is provided in **Appendix D**. The model uses a monthly timestep, which allows for seasonality of demands to be compared to facility capacity. It also assumes that local supplies will be used first and that any additional demand is met through imported supply purchases.

If shortage allocations are applied to the baseline supplies, PBWA could potentially meet demands until imported allocations are reduced to 24,000 AFY, based on the 2050 forecast demand without water use objectives, which equals a regional shortage level of approximately Level 4. If demand follows the forecast with water use objectives, PBWA could potentially still meet demands with 17,500 AFY imported water, which equals a regional shortage level of approximately Level 9. Figure 3-4 illustrates this, showing supplies available under various regional imported water shortage levels versus demands (note that demands do not reflect implementation of water shortage contingency plans).

**FIGURE 3-4: WATER SUPPLIES WITH REGIONAL IMPORTED WATER SHORTAGE VERSUS DEMAND**

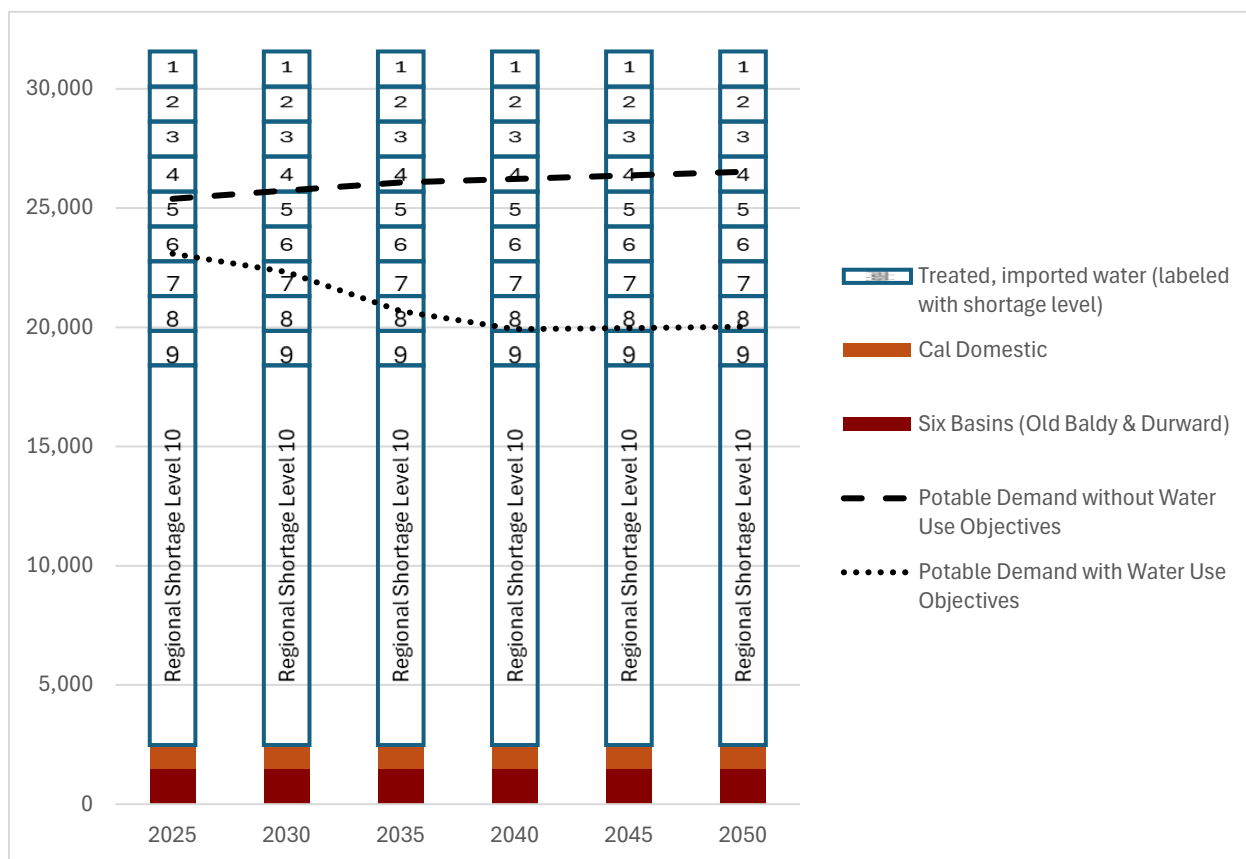
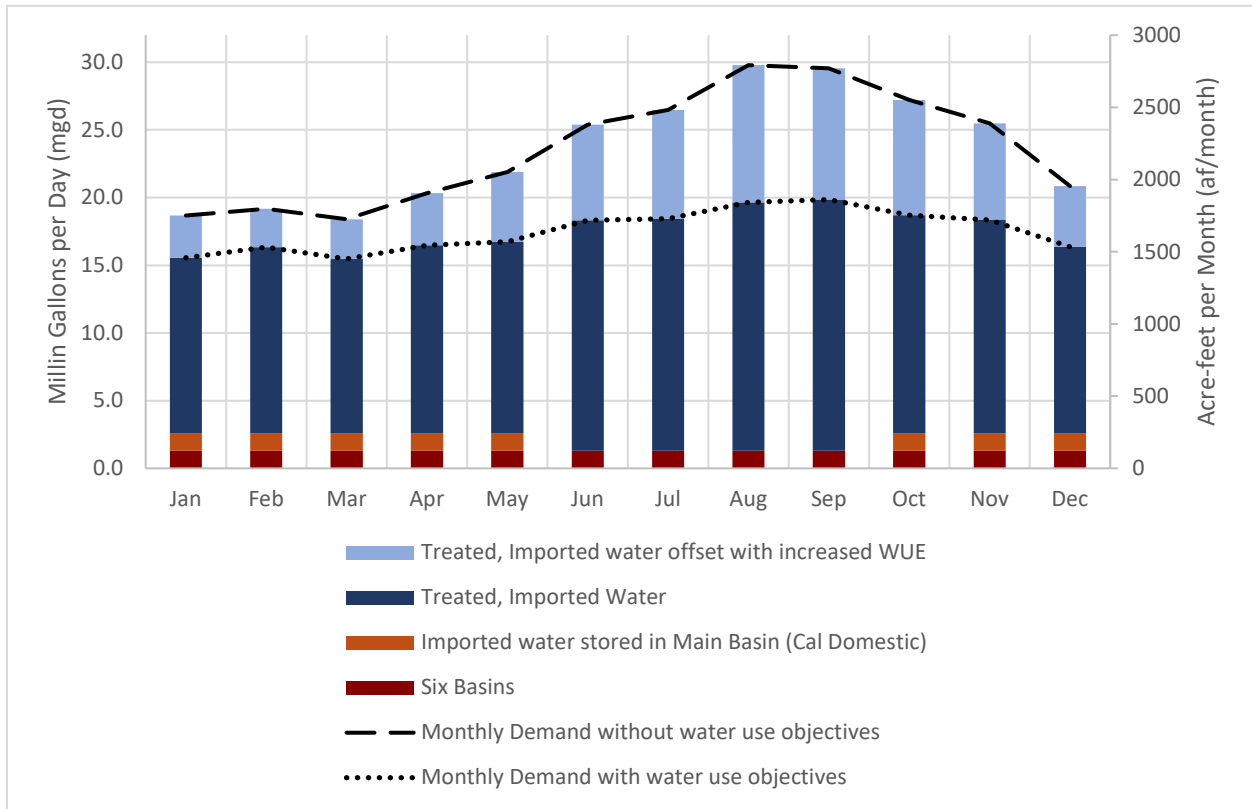


Figure 3-5 shows the modeled supply produced to meet monthly demand at the 2050 planning horizon. As shown in the chart, a significant amount of demand is met using treated, imported water despite implementation of the Pomona Basin Regional Groundwater Project Phases 1 and 2 and the Cal Domestic pipeline and pump station project. Under the demand forecast that assumes water use objectives, peak month demand has been reduced due to reductions in outdoor water use assumptions as indicated by the lower demand line in Figure 3-5. Overall, the monthly analysis reflects a higher demand for imported water under both demand scenarios, meaning there is a need to offset imported water during summer months.

**FIGURE 3-5: BASELINE MONTHLY SUPPLY DELIVERED TO MEET POTABLE DEMAND IN 2050**



## 4. SUPPLY OPTION DESCRIPTIONS

The future supply options developed and described in this section were created to provide additional offsets of future treated, imported water use to meet future demand. Given that many of the additional regional supply sources exist outside of the PBWA service area, many of these options will require partnerships with other local agencies. A summary of the options is provided in **Table 4-1** and the map shown in **Figure 4-1**.

A complete supply option includes a supply source, and the facilities needed to treat (if needed) and convey water to the WVWD and RWD distribution systems. This provides a description of each supply option including current status, supply source, supply volume and seasonality, partnering agencies, costs, and potential facility and supply overlaps with other options.

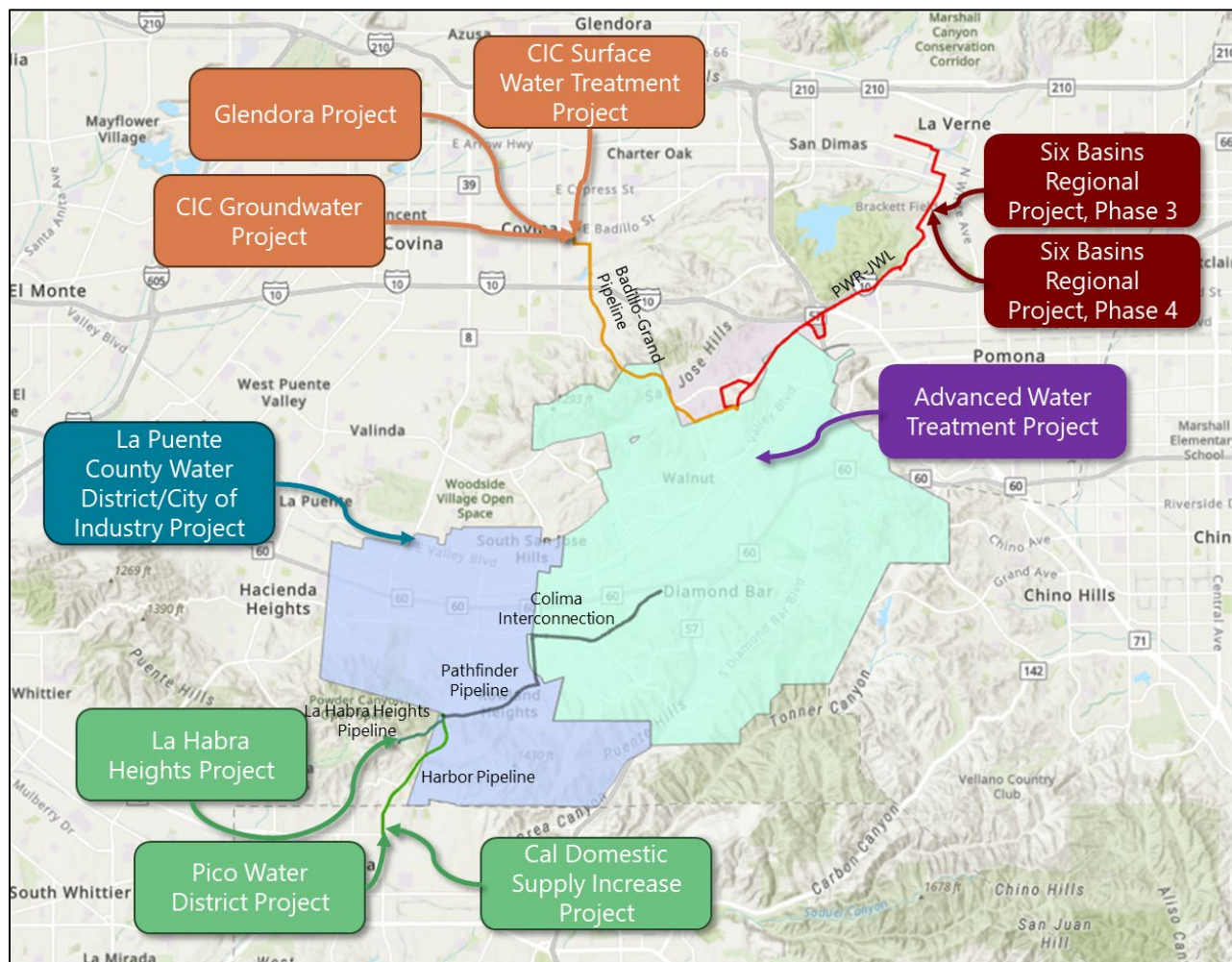
**TABLE 4-1: SUMMARY OPTIONS TABLE**

No.	Option	Supply Source	Supply Volume	Seasonality	Unit cost <sup>1</sup>
1	La Habra Heights Project – Pumping, Treatment and Interconnection	Central Basin groundwater (treated) leased pumping rights	2,500 AFY	Winter only	\$2,700/AF
2	Cal Domestic Supply Increase Project	Stored imported water in Main San Gabriel Basin	2,000 AFY	Summer only	\$1,500/AF
3	Pico Water District Project	Central Basin groundwater (treated) leased pumping rights	2,000 AFY	Summer Only	\$1,400/AF
4	Covina Irrigating Company Groundwater Project	Stored imported water in Main San Gabriel Basin	1,500-2,500 AFY	Year-round	\$2,800/AF
5	Covina Irrigating Company Surface Water Treatment Project	Raw imported water	1,500-2,500 AFY	Year-round	\$2,200/AF
6	Glendora Project – Pumping, Treatment and Interconnection	Stored imported water in Main San Gabriel Basin	4,700 AFY	Year-round	\$3,000/AF
7	La Puente Valley County Water District/City of Industry Project	Stored imported water in Main San Gabriel Basin	1,500-2,500 AFY	Summer only	\$2,700/AF
8a	Six Basins Regional Project – Phase 3	Six Basins pumping rights (leased)	750 AFY	Summer only	\$1,400/AF
8b	Six Basins Regional Project – Phase 4	Six Basins pumping rights (leased)	1,200 AFY	Year-round	\$3,100/AF

No.	Option	Supply Source	Supply Volume	Seasonality	Unit cost <sup>1</sup>
9	Advanced Water Treatment Project	Tertiary treated recycled water from San Jose WRP and Pomona WRP; brackish groundwater from Puente Basin	3,900 AFY	Year-round	Under development

1. Unit costs include annualized capital cost (assuming interest rate of 2.5% over 25 years), annual O&M cost, and annualized supply purchase or lease cost.

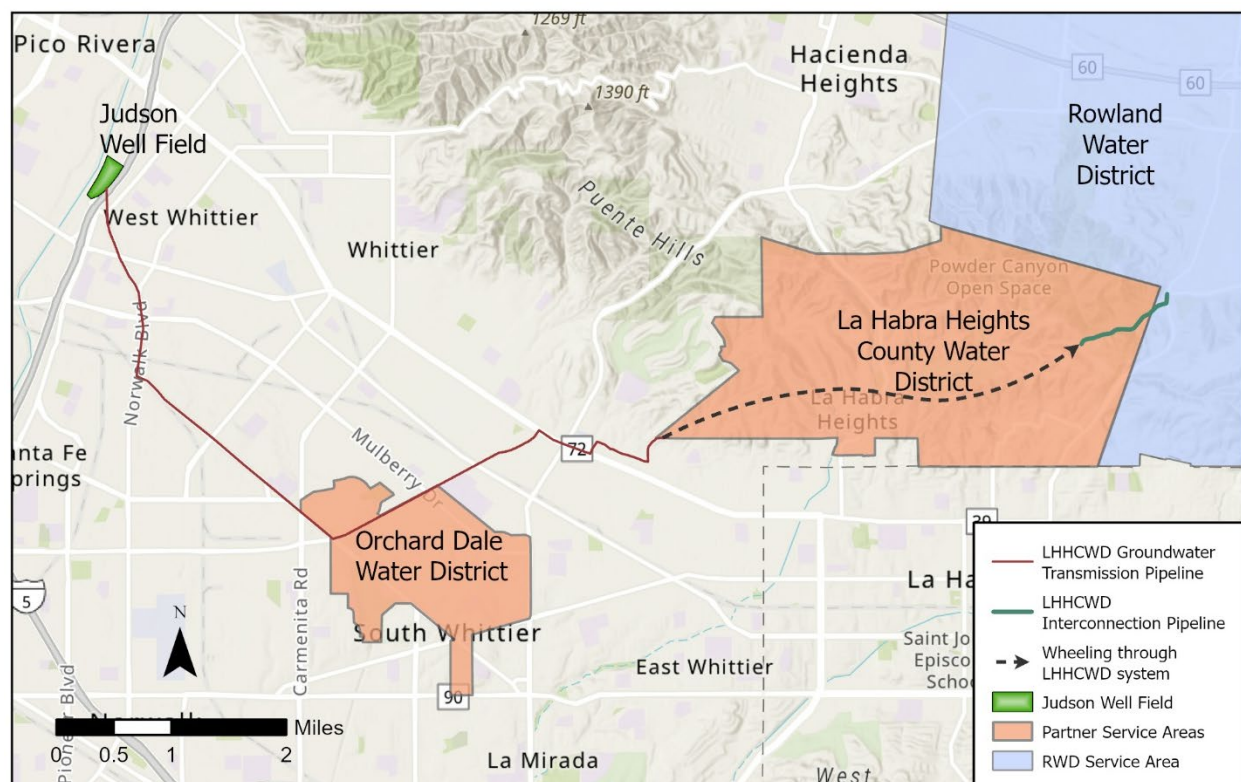
**FIGURE 4-1: SUPPLY OPTIONS MAP**



#### 4.1 Option 1. La Habra Heights Project

This project will purchase or lease pumping rights in Central Basin from La Habra Heights County Water District (LHHCWD) and Orchard Dale Water District, which are partners in the Judson Well Field, shown in **Figure 4-2**. Supplies will be pumped and conveyed through the LHHCWD distribution system to an existing pipeline interconnection to Rowland Water District’s system. Treatment will be required due to contamination with PFOA, PFOS and PFAS in LHHCWD’s Judson Well Field.

**FIGURE 4-2: LA HABRA HEIGHTS PROJECT PARTNER BOUNDARIES AND MAJOR FACILITIES**



#### Status

RWD entered into an agreement with LHHCWD on May 16, 2012 (amended on June 8, 2021) for delivery of water from LHHCWD to RWD. The agreement describes the operating conditions that LHHCWD system must have for capacity to be available to RWD. A 12-inch pipeline interconnection has been constructed from LHHCWD’s Upper Pressure Zone to RWD headquarters along Fullerton Road. Contamination of the groundwater in the Judson Well Field by PFOA and PFOS has prevented implementation of the project. LHHCWD has completed a study that suggests a PFAS treatment system consisting of either Granulated Activated Carbon (GAC) or Ion Exchange (IX) treatment.

#### Supply Source

Central Basin groundwater (treated) leased pumping rights

## Volume & Seasonality

2,500 AFY, available in winter months only

## Partner Agencies

LHHCWD, Orchard Dale Water District.

## Required Facilities

Existing

- LHHCWD facilities
  - Wells 8, 10, 11
  - Rehab Well 9
  - La Mirada Booster
  - Plant 1 booster
  - Plants 5&6 boosters
- Interconnection at East & Fullerton
- 3,800 ft of 12-inch pipeline (Fullerton Rd between East Rd and RWD headquarters)

New

- New well at Judson Well Field
- 1,600 ft of 8-in parallel pipe (Fullerton Rd between East and Kanola Rd)
- Granular Activated Carbon (GAC) or Ion Exchange (IX) treatment plant

## Cost

Planning level costs are provided in **Table 4-2**. Costs assume a GAC treatment facility, and do not include cost sharing with partners. Facilities are sized to assume that supplies are delivered in winter months (four out of twelve months of the year). Detailed costs are provided in **Appendix C**.

**TABLE 4-2: OPTION 1. LA HABRA HEIGHTS PROJECT PLANNING-LEVEL COST ESTIMATE**

<b>Total Capital Cost</b>	\$51,270,000
<b>Annualized Capital Cost</b>	\$3,820,000/year
<b>Annual O&amp;M Cost</b>	\$2,420,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$500,000/year
<b>Total Annual Cost</b>	\$6,740,000/year
<b>Total Unit Cost</b>	\$2,700/AF

## Overlap with Other Options

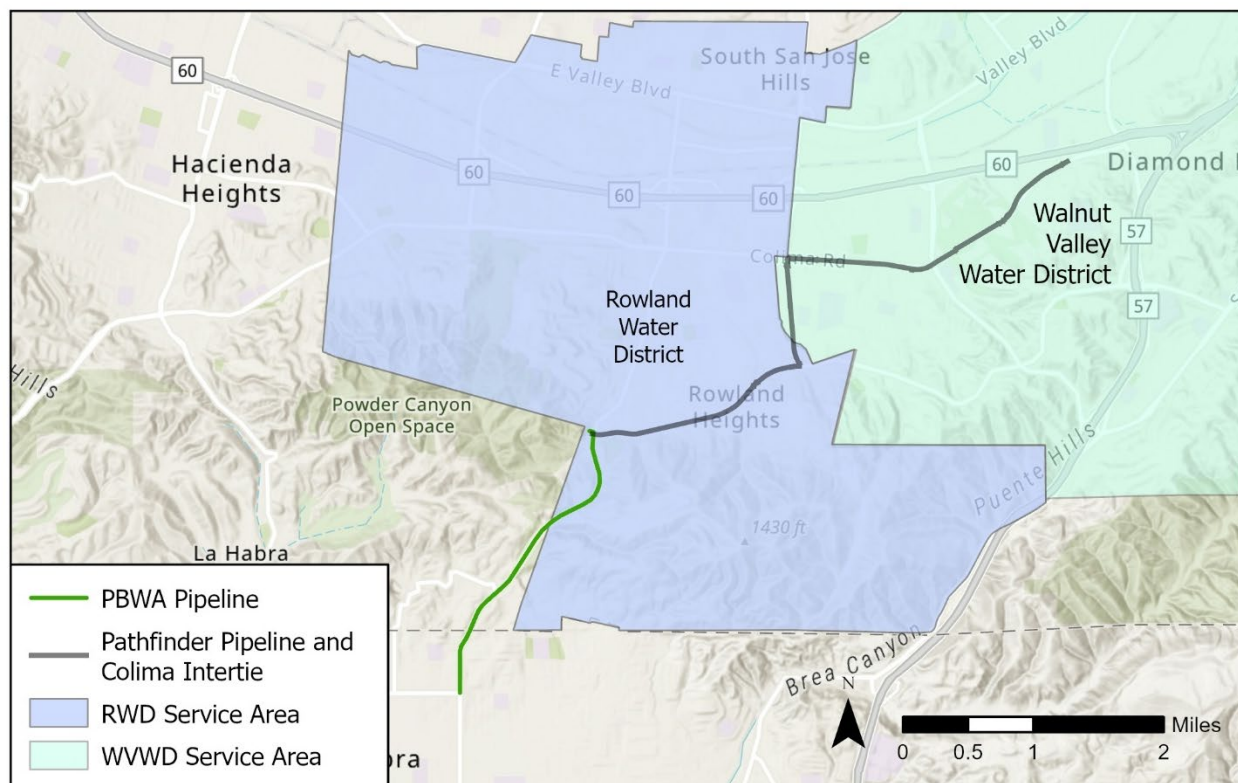
This option does not overlap with other options.



## 4.2 Option 2. Cal Domestic Supply Increase

The Cal Domestic Supply Increase Project will include revision of the current contract with Cal Domestic to allow for purchases of water during summer months (June through September). As described in Section 3, the current contract only allows for delivery of water from October through May. The project will leverage the existing Harbor and Pathfinder Pipelines (**Figure 4-3**) and improve existing facilities to add a variable frequency drive (VFD) and emergency power supply. Note that the emergency power supply is not required for project implementation and is therefore not included in the costs listed below.

**FIGURE 4-3: CAL DOMESTIC SUPPLY INCREASE PROJECT MAJOR FACILITIES**



### Status:

Will require amendment to the current contract with Cal Domestic.

### Supply Source:

Stored, untreated imported water

### Volume & Seasonality:

2,000 AFY, based on 500 AF/month from June-September (4 months)

**Partner Agencies:**

Cal Domestic

**Required Facilities**

Existing

- Harbor and Pathfinder Pipelines

New

- VFD motor for pump station
- Emergency power supply (not required and therefore not included in cost)

**Cost**

Planning level costs for this project are shown in **Table 4-3**. Costs assume water will be delivered four months of the year. The emergency power supply is not included in costs as it is not required for project implementation. Detailed costs are provided in **Appendix C**.

**TABLE 4-3: PLANNING LEVEL COSTS FOR CAL DOMESTIC SUPPLY INCREASE PROJECT**

<b>Total Capital Cost</b>	\$390,000
<b>Annualized Capital Cost</b>	\$30,000/year
<b>Annual O&amp;M Cost</b>	\$570,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$2,420,000/year
<b>Total Annual Cost</b>	\$3,020,000/year
<b>Total Unit Cost</b>	\$1,500/AF

**Overlap with Other Options**

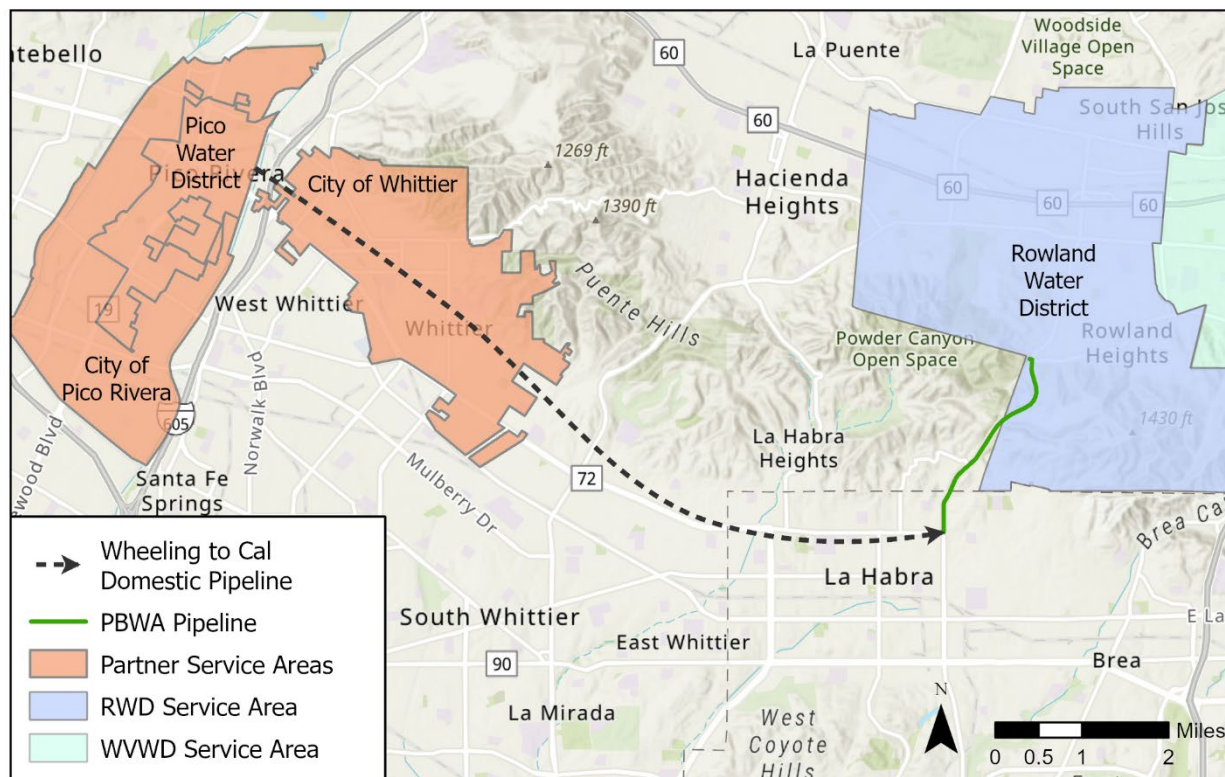
This option will use the Harbor Pipeline, which is also assumed for use by Option 3 (Pico Water District Project). If more than one of these options are implemented, the capital cost for these facilities will be shared. If both options are planned to produce water only in summer months, the volume (up to 10.8 mgd) could exceed the Harbor Pipeline’s capacity of 10.1 mgd.

This option also assumes use of Main San Gabriel Basin-stored imported water, which is also assumed for Option 4 (CIC Groundwater Project), Option 6 (Glendora Project), and Option 7 (La Puente Valley CWD Project). If storage and export will exceed PBWA’s storage and export agreement with the Main San Gabriel Basin Watermaster, the agreement will need to be revised.

**4.3 Option 3. Pico Water District Project**

This project will use excess capacity in Pico Water District’s wells and treatment plant to produce and treat groundwater. Water will be wheeled through Pico Water District’s system, Whittier’s system and then to Cal Domestic’s transmission line where the water will be sent Rowland’s system via the PBWA booster pump station and pipeline, shown in **Figure 4-4**

**FIGURE 4-4: PICO WATER DISTRICT PROJECT PARTNER BOUNDARIES AND MAJOR FACILITIES**



**Status**

Terms to be negotiated with Pico Water District, the City of Whittier and Cal Domestic. The Harbor pipeline and pump station have been constructed.

**Supply Source**

Central Basin groundwater (treated) leased pumping rights

**Volume & Seasonality**

2,000 AFY, year-round supply with ability to take only in summer if desired

**Partner Agencies**

Pico Water District, City of Whittier, Cal Domestic

**Required Facilities**

Existing

- Pico Water District well(s)
- Pico Water District treatment plant
- Cal Domestic to RWD interconnection
- Whittier to Cal Domestic interconnection (rehab needed)

New

- Pico Water District to Whittier interconnection pipeline
- VFD motor for pump station

**Cost**

Planning level costs are provided in Table 4-4. Facilities are sized to assume that supplies are delivered in summer months (four out of twelve months of the year). Detailed costs are provided in Appendix C.

**Table 4-4: Pico Water District Project Planning-level Cost Estimate**

<b>Total Capital Cost</b>	\$2,350,000
<b>Annualized Capital Cost</b>	\$150,000/year
<b>Annual O&amp;M Cost</b>	\$2,140,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$400,000/year
<b>Total Annual Cost</b>	\$2,690,000/year
<b>Total Unit Cost</b>	\$1,300/AF

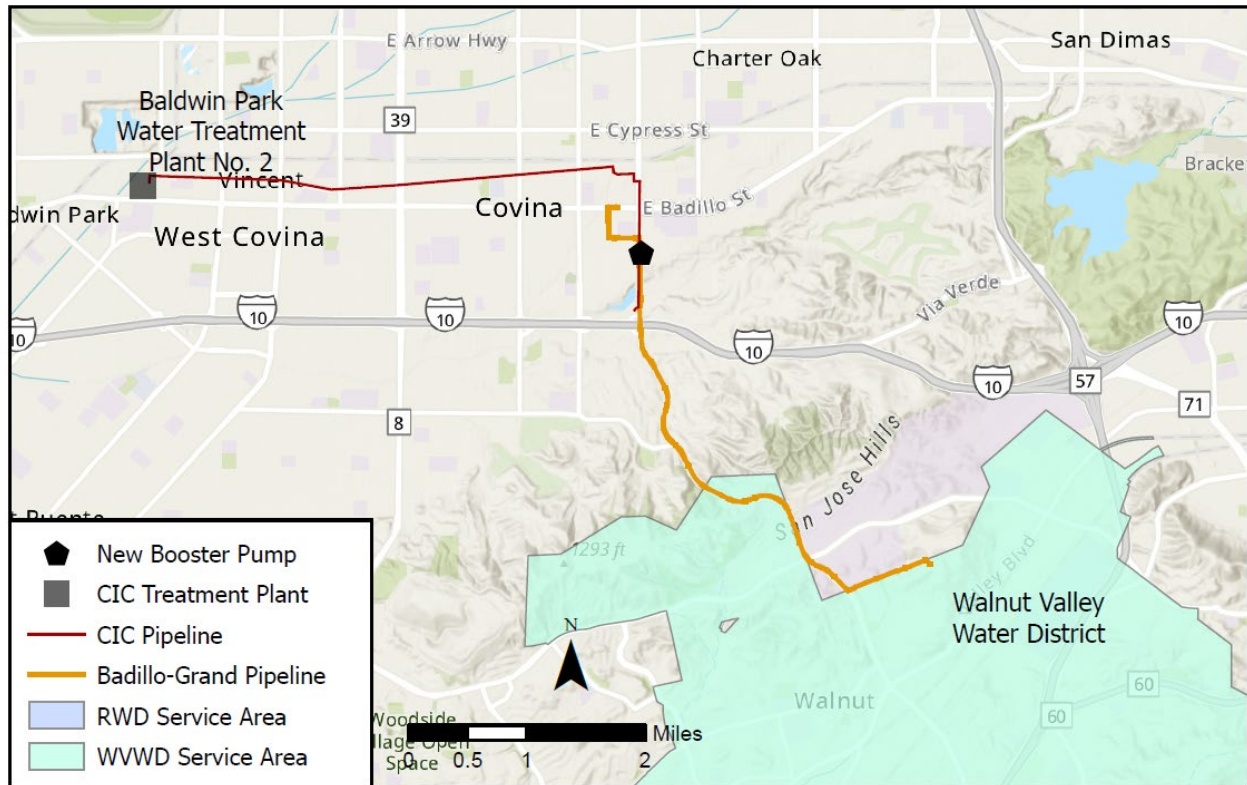
**Overlap with Other Options**

This option will use the Harbor Pipeline, which is also assumed for use by Option 2 (Cal Domestic Supply Increase). If more than one of these options are implemented, the capital cost for these facilities will be shared. If both options are planned to produce water only in summer months, the volume (up to 10.8 mgd) could exceed the Harbor Pipeline’s capacity of 10.1 mgd.

**4.4 Option 4. Covina Irrigating Company Groundwater Project**

The Covina Irrigating Company (CIC) Groundwater Project will use CIC wells to pump stored imported water from the Main San Gabriel Basin and convey through the CIC system to the Badillo-Grand pipeline via a new interconnection and pump station. Pumped water will be treated at CIC’s existing groundwater treatment plant. These facilities are shown in **Figure 4-5**.

**FIGURE 4-5: CIC GROUNDWATER PROJECT MAJOR FACILITIES**



**Status**

Regional interconnection feasibility study completed in 2008 (Civiltec, 2008). Terms to be negotiated with CIC.

**Supply Source**

Stored imported water in Main San Gabriel Basin

**Volume & Seasonality**

1,500-2,500 AFY (function of available well and plant capacity). If desired, can take flows in summer months only.

**Partner Agencies**

Covina Irrigating Company

**Required Facilities**

Existing

- CIC wells

- CIC Baldwin Park Water Treatment Plant No. 2
- CIC 28-in pipeline running along San Bernardino Rd. from the treatment plant to Grand Ave., then south along Grand Avenue until meeting up with the Badillo-Grand pipeline (may require rehabilitation/replacement)
- Badillo-Grand pipeline

New

- Interconnection (including pipeline and pump station) between CIC pipeline and the Badillo-Grand pipeline

**Cost**

Estimated planning level costs for this option are shown in **Table 4-5**. Capital costs include an interconnection between CIC and the Badillo-Grand Pipeline, including a new pump station, as well as a chloramination system. Capital costs do not include potential rehabilitation/replacement of CIC’s 28-in pipeline. Facility capacities assume that 2,000 AF of water is delivered over 4 months of the year. Imported water cost is based on the average cost of Tier 1 untreated imported water over a 25-year period assuming a four percent per year increase and is assumed to have been recharged in previous years, and therefore based on an earlier period of time (2024 to 2028). Detailed costs are provided in **Appendix C**.

**Table 4-5: Planning Level Costs for CIC Groundwater Pumping and Treatment Project**

<b>Total Capital Cost</b>	\$2,780,000
<b>Annualized Capital Cost</b>	\$210,000/year
<b>Annual O&amp;M Cost</b>	\$2,250,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$3,150,000/year
<b>Total Annual Cost</b>	\$5,610,000/year
<b>Total Unit Cost</b>	\$2,800/AF

**Overlap with Other Options**

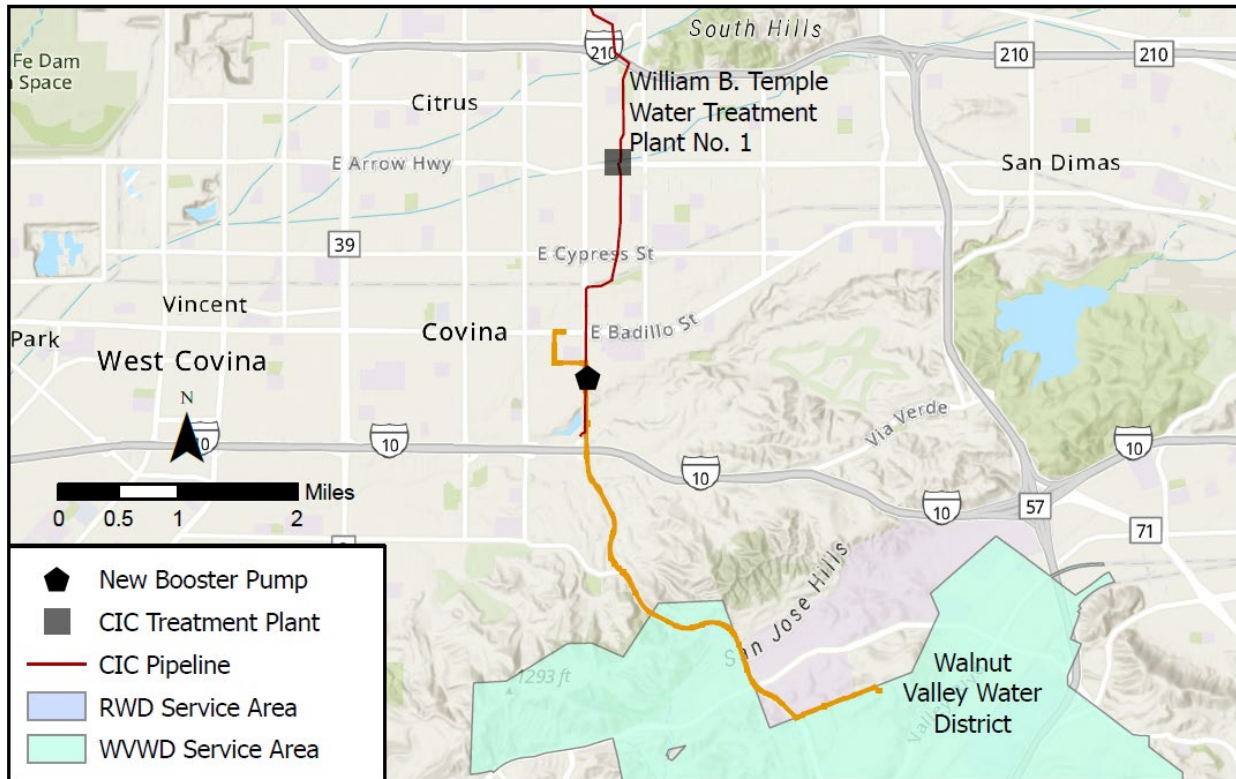
Option 4 assumes a new interconnection and pump station to connect the CIC pipeline to the Badillo-Grand Pipeline, and are the same facilities assumed for Option 5 (CIC Surface Water Treatment Project) and Option 6 (Glendora Project). If more than one of these options are implemented, the capital cost for these facilities will be shared.

This option also assumes use of Main San Gabriel Basin-stored imported water, which is also assumed for Option 2 (Cal Domestic Supply Increase), Option 6 (Glendora Project), and Option 7 (La Puente Valley CWD Project). If storage and export will exceed PBWA’s storage and export agreement with the Main San Gabriel Basin Watermaster, the agreement will need to be revised.

**4.5 Option 5. Covina Irrigating Company Surface Water Treatment Project**

The CIC Surface Water Treatment Project will treat raw imported water at CIC’s surface water treatment plant and convey it through the CIC system to the Badillo-Grand pipeline via a new interconnection. These facilities are shown in **Figure 4-6**.

**FIGURE 4-6: CIC IMPORTED WATER TREATMENT PROJECT MAJOR FACILITIES**



**Status**

Regional interconnection feasibility study completed in 2008 (Civiltec, 2008). CIC already has a connection to imported water from the San Gabriel Valley Municipal Water District for the surface water treatment plant.

**Supply Source**

Raw imported water treated at the CIC surface water treatment plant

**Volume & Seasonality**

1,500-2,500 AFY (expected to be a function of available plant capacity), year-round flow and expecting lower flow in the summer due to shareholder's receiving priority capacity

**Partner Agencies**

Covina Irrigating Company

**Required Facilities**

Existing

- CIC treatment plant

- CIC conveyance system
- Badillo-Grand pipeline

New

- Interconnection (including pipeline and pump station) between CIC pipeline and the Badillo-Grand pipeline

### Cost

Estimated planning level costs for this option are shown in **Table 4-6**. Capital costs include an interconnection between CIC and the Badillo-Grand Pipeline, including a new pump station, as well as a chloramination system. Capital costs do not include potential rehabilitation/replacement of CIC's conveyance pipeline. Imported water cost is based on the average cost of Tier 1 untreated imported water over a 25-year period (2025 to 2050) assuming a four percent per year increase. Detailed costs are available in **Appendix C**.

**TABLE 4-6: PLANNING LEVEL COSTS FOR CIC SURFACE WATER TREATMENT PROJECT**

<b>Total Capital Cost</b>	\$2,780,000
<b>Annualized Capital Cost</b>	\$210,000/year
<b>Annual O&amp;M Cost</b>	\$1,010,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$3,150,000/year
<b>Total Annual Cost</b>	\$4,370,000/year
<b>Total Unit Cost</b>	\$2,200/AF

### Overlap with Other Options

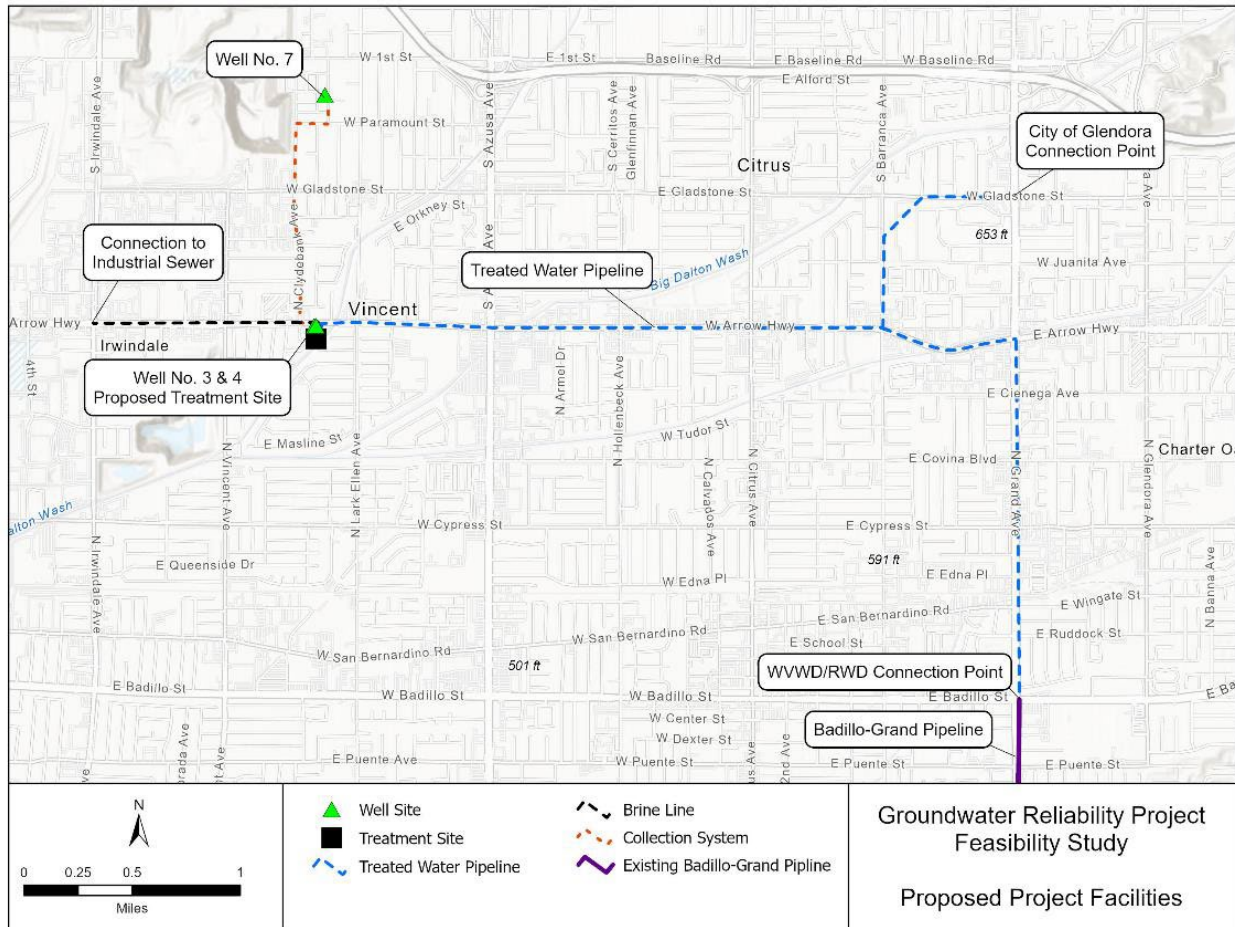
Option 5 assumes a new interconnection and pump station to connect the CIC pipeline to the Badillo-Grand Pipeline, and are the same facilities assumed for Option 4 (CIC Groundwater Project) and Option 6 (Glendora Project). If more than one of these options are implemented, the capital cost for these facilities will be shared.

## 4.6 Option 6. Glendora Project

This project will replace deactivated wells owned by the City of Glendora (Glendora), construct a treatment facility and pipelines to convey water to the City of Glendora via a new interconnection and to PBWA via a new interconnection to the Badillo-Grand pipelines, as well as a new pump station and chloramination system. Wells will pump stored imported water from the Main San Gabriel Basin. These facilities are shown in **Figure 4-7**.



**FIGURE 4-7: GLENDORA PROJECT MAJOR FACILITIES**



**Status**

Three Valley’s Municipal Water District completed a feasibility study in 2023. Pilot study to assess groundwater quality and test treatment systems is underway and expected to be completed in 2025.

**Supply Source**

Stored imported water in Main San Gabriel Basin

**Volume & Seasonality**

4,500 AFY, must take year-round

**Partner Agencies**

Three Valleys Municipal Water District, City of Glendora

## Required Facilities

### Existing

- Badillo-Grand pipeline

### New

- 3 new wells
- Finished water booster pump
- Equalization tank
- IX and GAC treatment plant at the site of Wells 3 and 4
- 4,700 feet brine waste pipeline
- 6,000 feet 16-in raw water pipeline to convey water from the Well 7 site to the treatment site at Wells 3 and 4
- 18,000 feet of 30-in pipeline to convey water from the treatment site to the City of Glendora along East Arrow Highway to Grand Avenue
- 8,000 feet of 30-in pipeline to convey water from East Arrow Highway to the Badillo-Grand pipeline
- Interconnection (including pipeline and pump station) with the Badillo-Grand pipeline

## Cost

The costs shown in Table 4-7 have been summarized from the 2023 Groundwater Reliability Improvement Project Feasibility Study, including variable percentages for contingency and implementation based on the source of cost information. Imported water cost is based on the average cost of Tier 1 untreated imported water over a 25-year period assuming a four percent per year increase, and is assumed to have been recharged in previous years and so is based on an earlier period of time (2024 to 2028). Note that the line-item costs reflect the full project cost, while totals have been split assuming a 50% cost share with other agencies. Detailed cost information is available in **Appendix C**.

**TABLE 4-7: PLANNING LEVEL COSTS FOR GLENDORA PROJECT (AFTER 50:50 SPLIT)**

<b>Total Capital Cost</b>	\$61,180,000
<b>Annualized Capital Cost</b>	\$4,560,000/year
<b>Annual O&amp;M Cost</b>	\$1,970,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$7,410,000/year
<b>Total Annual Cost</b>	\$13,940,000/year
<b>Total Unit Cost</b>	\$3,000/AF

## Overlap with Other Options

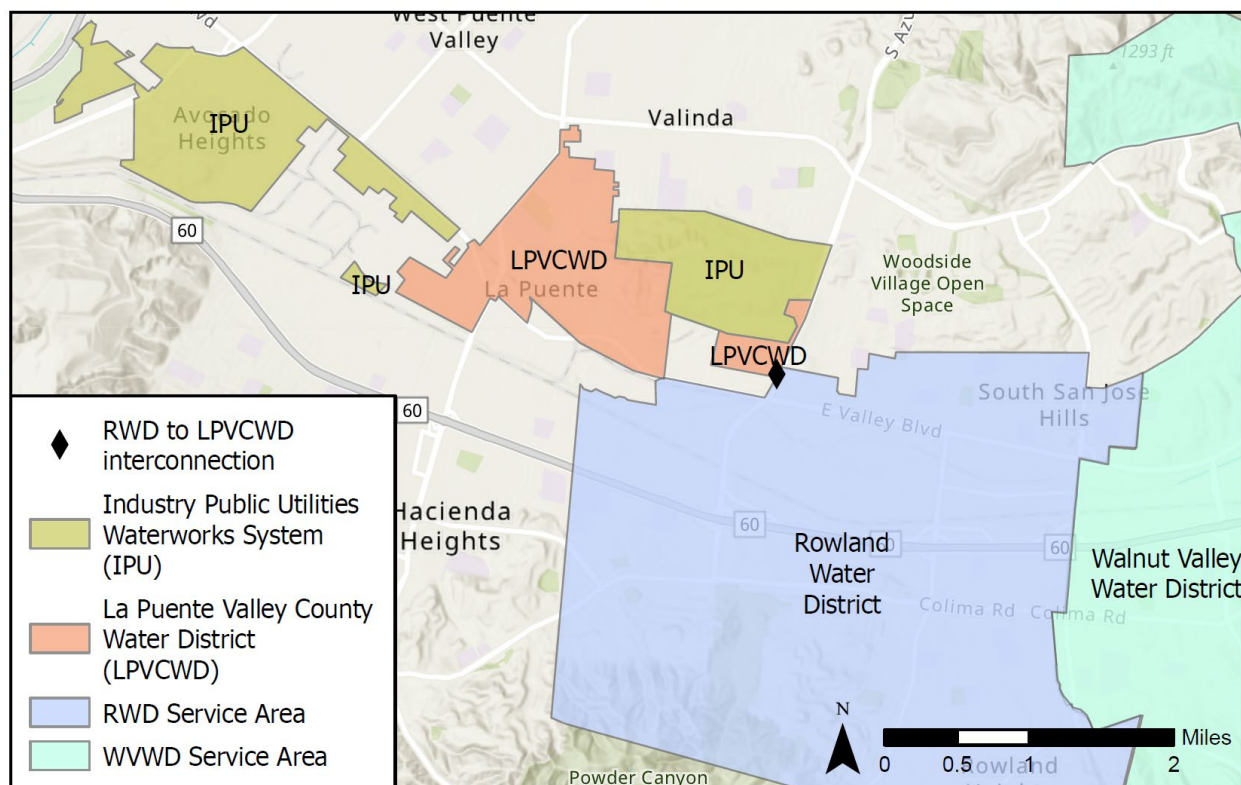
Option 6 assumes a new interconnection and pump station to connect the CIC pipeline to the Badillo-Grand Pipeline, and are the same facilities assumed for Option 4 (CIC Groundwater Project) and Option 5 (CIC Surface Water Treatment Project). If more than one of these options are implemented, the capital cost for these facilities will be shared.

This option also assumes use of Main San Gabriel Basin-stored imported water, which is also assumed for Option 2 (Cal Domestic Supply Increase), Option 4 (CIC Groundwater Project), and Option 7 (La Puente Valley CWD Project). If storage and export will exceed PBWA's storage and export agreement with the Main San Gabriel Basin Watermaster, the agreement will need to be revised.

#### 4.7 Option 7. La Puente Valley County Water District/City of Industry Project

The La Puente Valley County Water District/City of Industry Public Utilities (La Puente/Industry) project will pump stored imported water from the Main San Gabriel Basin using City of Industry wells and treat at a plant to be constructed by La Puente Valley County Water District and the City of Industry. The City of Industry and La Puente are petitioning responsible parties to build the treatment plant. Water will be wheeled through the service areas and enter RWD's system through an interconnection between RWD's and La Puente's systems. Partner service areas and the location of the interconnection are shown in **Figure 4-8**.

**FIGURE 4-8: LA PUENTE/INDUSTRY PROJECT PARTNER BOUNDARIES AND MAJOR FACILITIES**



#### Status

City of Industry and La Puente are currently petitioning responsible parties to build treatment facilities. PBWA would enter into agreement to pay for a portion of the treatment facility.

## Supply Source

Stored imported water in Main San Gabriel Basin

## Volume & Seasonality

To be determined. 2,000 AFY has been assumed for developing planning level costs.

## Partner Agencies

City of Industry Public Utilities, La Puente Valley County Water District

## Required Facilities

Existing

- City of Industry wells
- Pump station
- City of Industry distribution system
- La Puente distribution system

New

- Treatment facility with IX for nitrate and perchlorate, and GAC for VOC and PFAS treatment
- Improved interconnection
- Pressure reducing station and chloramination

## Cost

Planning level costs, shown in **Table 4-8**, assume similar treatment technologies to the Glendora project will be required and scaled to 2,000 AFY and assume water will be delivered four months of the year. Capital costs do not include cost share. Costs for a larger treatment system with cost sharing may be expected to reduce the capital cost share and unit cost. Imported water cost is based on the average cost of Tier 1 untreated imported water over a 25-year period assuming a four percent per year increase, and is assumed to have been recharged in previous years and so is based on an earlier period of time (2024 to 2028). Detailed cost information is available in **Appendix C**.

**TABLE 4-8: PLANNING LEVEL COSTS FOR LA PUENTE PROJECT**

<b>Total Capital Cost</b>	\$14,420,000
<b>Annualized Capital Cost</b>	\$1,080,000/year
<b>Annual O&amp;M Cost</b>	\$1,170,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$3,150,000/year
<b>Total Annual Cost</b>	\$5,400,000/year
<b>Total Unit Cost</b>	\$2,700/AF

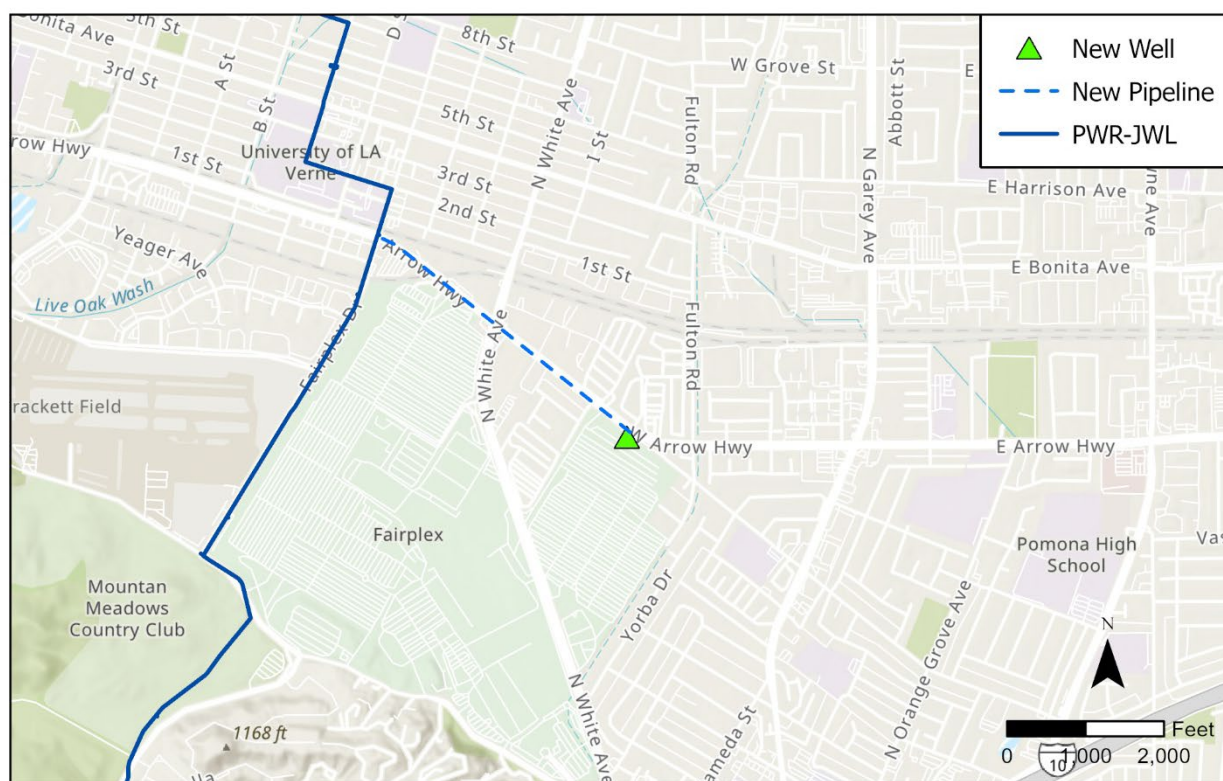
### Overlap with Other Options

This option assumes use of Main San Gabriel Basin-stored imported water, which is also assumed for Option 2 (Cal Domestic Supply Increase), Options 4 & 5 (CIC Groundwater Project), and Option 6 (Glendora Project). If storage and export will exceed PBWA's storage and export agreement with the Main San Gabriel Basin Watermaster, the agreement will need to be revised.

### 4.8 Option 8a. Six Basins Regional Project – Phase 3

The Six Basins Regional Project – Phase 3 will construct one new well and a new pipeline to convey the water to the PWR-JWL as shown in **Figure 4-9**. The well location is yet to be determined, but is assumed that it will be placed on the Pomona Fairplex property in an area of high groundwater. The groundwater quality at the site is unknown and will need to be assessed to determine potential treatment needs. For planning purposes, it is assumed that no treatment will be needed for this option.

**FIGURE 4-9: SIX BASINS REGIONAL PROJECT – PHASE 3 MAJOR FACILITIES**



#### Status

Planning stage

#### Supply Source

Six Basins pumping rights (leased)

## Volume & Seasonality

750 AFY, year-round or summer only, if needed

## Partner Agencies

City of Pomona

## Required Facilities

Existing

- PWR-JWL

New

- 1 new well
- 4,000-feet of 12-in pipeline (sized to include Phase 4)
- Interconnection with PWR-JWL

## Cost

Planning level costs for this project are shown in **Table 4-9**. Costs assume that facilities are sized to deliver water four months of the year and that no treatment is required. The project will need to connect to the blending facility at Bypass 2 Fairplex to address perchlorate and nitrate. Detailed cost information is available in **Appendix C**.

**TABLE 4-9: PLANNING LEVEL COSTS FOR SIX BASINS REGIONAL PROJECT, PHASE 3**

<b>Total Capital Cost</b>	\$9,360,000
<b>Annualized Capital Cost</b>	\$700,000/year
<b>Annual O&amp;M Cost</b>	\$150,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$225,000/year
<b>Total Annual Cost</b>	\$1,075,000/year
<b>Total Unit Cost</b>	\$1,400/AF

## Considerations

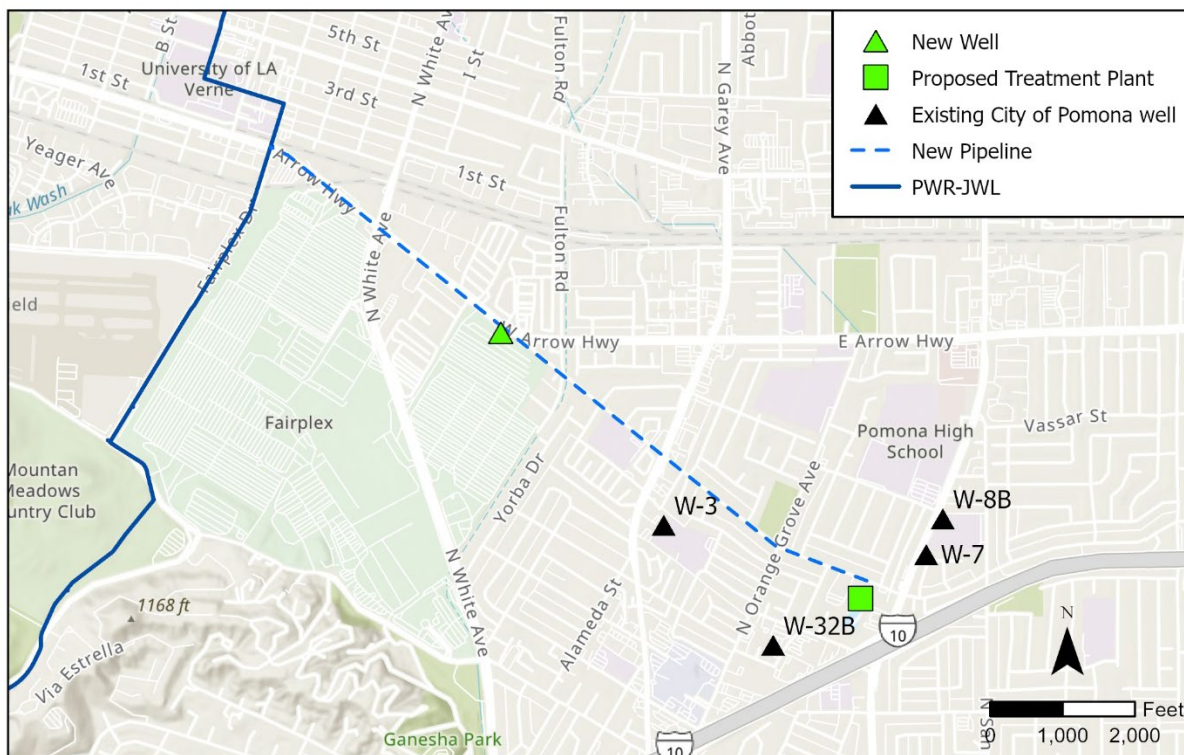
Option 8a includes a pipeline to connect to the PWR-JWL that is sized to include flow from Option 8b (Six Basins Regional Project – Phase 4). If Phase 4 will not be implemented, the pipeline capacity would be reduced.

## 4.9 Option 8b. Six Basins Regional Project – Phase 4

The Six Basins Regional Project – Phase 4 will construct a regional treatment facility in partnership with the City of Pomona at the City's 10 & Towne treatment and reservoir site to address Chromium VI (Cr6) in

exceedance of the MCL. This option assumes that Option 8a (Six Basins Regional Project – Phase 3) is implemented, allowing for the pipeline built along Arrow Highway under Phase 3 to be extended to the City of Pomona’s 10 & Towne treatment site. This project assumes that IX treatment will be constructed, and the air strippers will be replaced with GAC pressure vessels for VOC removal. In total, the treatment plant will have a capacity of 2.9 mgd, of which PBWA is assumed to receive 50 percent. In addition, this option assumed the use of existing City of Pomona wells (potentially wells 3, 8b and 32) in the Pomona Subbasin portion of Six Basins. Well 7 was formerly connected to the existing air strippers, but is currently inactive and is not expected to be brought back online. These facilities are shown in **Figure 4-10**.

**FIGURE 4-10: SIX BASINS REGIONAL PROJECT – PHASE 4 MAJOR FACILITIES**



### Status

This project is in the planning stage. New maximum contaminant levels (MCLs) for PFOA/PFAS and Chromium-6 may require additional treatment and drive project implementation.

### Supply Source

Six Basins pumping rights (leased)

### Volume & Seasonality

1,600 AFY, year-round

### Partner Agencies

City of Pomona

### Required Facilities

Existing

- PWR-JWL

New

- Ion Exchange (IX) and GAC treatment plant
- Booster pump
- Pipeline

### Cost

Planning level costs for this project are shown in Table 4-10. Costs assume that Option 8a (Phase 3) has been implemented, and that the full ion exchange treatment system will be paid for by PBWA while O&M costs reflect only water produced for PBWA. Detailed cost information is available in **Appendix C**.

**TABLE 4-10: PLANNING LEVEL COSTS FOR SIX BASINS REGIONAL PROJECT, PHASE 4**

<b>Total Capital Cost</b>	\$19,550,000
<b>Annualized Capital Cost</b>	\$1,460,000/year
<b>Annual O&amp;M Cost</b>	\$1,570,000/year
<b>Annual Supply Purchase or Lease Cost</b>	\$480,000/year
<b>Total Annual Cost</b>	\$3,510,000/year
<b>Total Unit Cost</b>	\$2,200/AF

### Overlap with Other Options

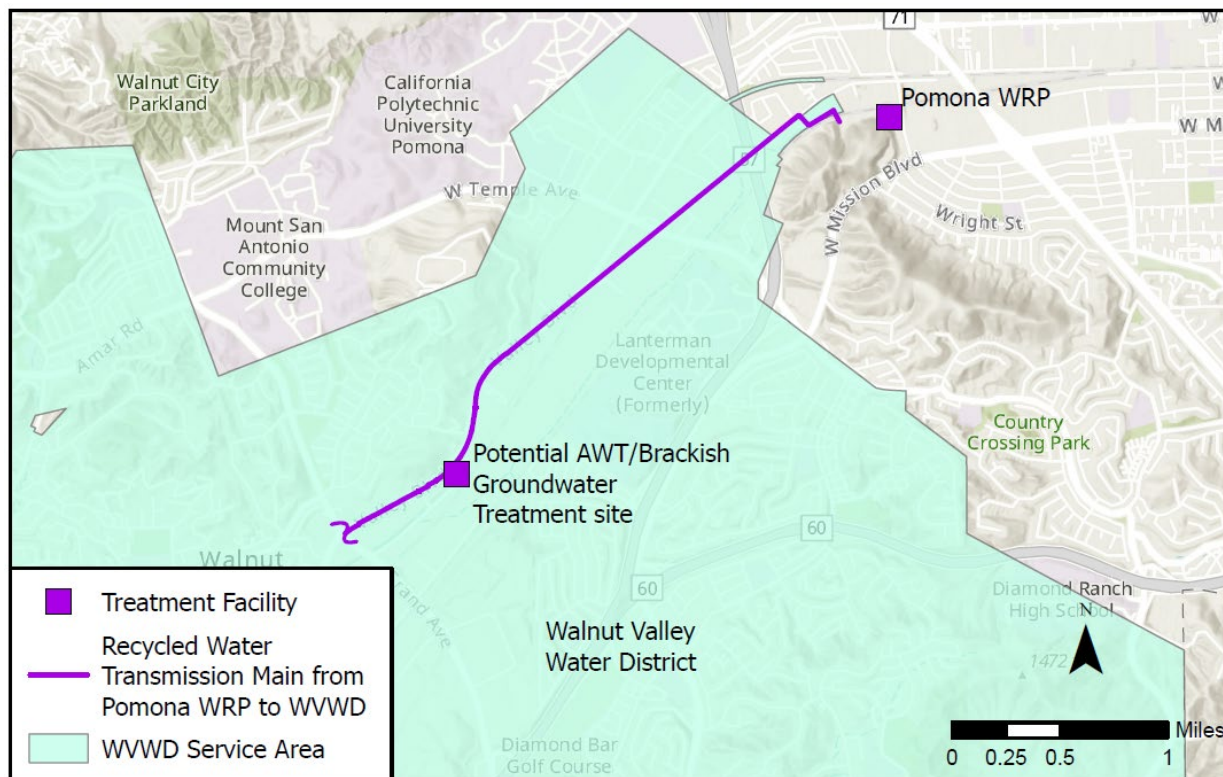
Option 8b assumes that a portion of the pipeline extending to the PWR-JWL is constructed as part of Option 8a (Six Basins Regional Project – Phase 3). If Phase 3 is not implemented, the pipeline length assumed for this option will increase, increasing the cost.

## 4.10 Option 9. Advanced Water Treatment

The Advanced Water Treatment Project will construct an advanced treatment (AWT) facility to treat a blend of tertiary treated recycled water from the Pomona Water Reclamation Plant (WRP), San Jose Creek Water Reclamation Plan, and brackish groundwater from the Puente Basin for direct potable reuse (DPR). This project option assumes the facility will treat 4.5 mgd of influent and provide 3.5 mgd of effluent for direct potable use.



**FIGURE 4-11: ADVANCED WATER TREATMENT MAJOR FACILITIES**



**Status**

Planning stage

**Supply Source**

Pomona WRP recycled water, San Jose Creek WRP recycled water, Puente Basin groundwater, Spadra Basin groundwater

**Volume & Seasonality**

Total volume from this project is still to be determined but would include a percentage of supplies from Rowland Water District/City of Industry’s recycled water allocation from San Jose Creek WRP and Walnut Valley Water District’s recycled water allocation from Pomona WRP, as well as groundwater production from the Puente Basin & Spadra Basin. Currently, the AWT is being sized at 4.5 MGD.

**Partner Agencies**

City of Industry

**Required Facilities**

Existing

- Recycled water conveyance system
- Non-potable wells

#### New

- Property for AWT from City of Industry
- 4.5 mgd AWT Facility
- Connection from the recycled water system to the AWT facility site
- Connection from the Puente Basin well(s) to the AWT facility site
- San Jose Creek pipeline and interconnections
- Fairway Pump Station
- Distribution system connections
- Brine disposal pipeline
- Other facilities to be determined through current planning efforts

#### Cost

Planning-level costs for the AWT facility are under development as part of a separate effort. However, a survey of other California AWT facilities has indicated capital costs of approximately \$100 million for similar sized facilities, with O&M costs of approximately \$2,000 per AFY.

#### Overlap with Other Options

This option does not overlap with other options.

## 5. SUPPLY OPTIONS EVALUATION

A multi-criteria evaluation method was used to compare the supply options' ability to meet the objectives described in the introduction. The following criteria were used to evaluate the options:

- Criterion A: Supply reliability
- Criterion B: Timing flexibility
- Criterion C: Capital cost
- Criterion D: Unit cost
- Criterion E: Likelihood of outside funding
- Criterion F: Leverages partnerships/cost sharing
- Criterion G: Complexity/time needed to implement
- Criterion H: Leverages existing facilities

Based on the objectives identified at the start of the project, two primary criteria were identified as having a higher level of importance than the others: Criterion A: Timing Flexibility and Criterion B: Leverages Existing Facilities. These primary criteria were used to identify higher priority projects, with remaining criteria used to prioritize and better understand considerations of additional options. Criteria were scored using a "most favorable," "somewhat favorable," and "least favorable" scale.

### 5.1 Criterion A: Timing Flexibility

Criterion A measures the ability of an option to provide water in summer months and is scored as follows:

- Most Favorable: Option can provide water in only summer months, if desired
- Somewhat Favorable: Option can provide water year-round only
- Least Favorable: Option can provide water in winter months only

**Table 5-1** provides information on how each option was scored under Criterion A.

**TABLE 5-1: CRITERION A. TIMING FLEXIBILITY**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Least Favorable	Take in winter only
2	Cal Domestic Supply Increase Project	Most Favorable	Would add water in summer months only
3	Pico Water District Project	Most Favorable	Can take in summer only, if desired
4	CIC Groundwater Pumping and Interconnection Project	Somewhat Favorable	Existing customers have priority in summer
5	CIC Imported Water Treatment and Interconnection Project	Somewhat Favorable	Existing customers have priority in summer

6	Glendora Project	Somewhat Favorable	Must use treatment system year-round
7	La Puente Valley County Water District/City of Industry Project	Most Favorable	Can take in summer only, if desired
8a	Six Basins Regional Project, Phase 3	Most Favorable	Can take in summer only, if desired
8b	Six Basins Regional Project, Phase 4	Somewhat Favorable	Must use treatment system year-round
9	Advanced Water Treatment Project	Somewhat Favorable	Must use treatment system year-round

## 5.2 Criterion B: Leverages Existing Facilities

Criterion B is a measure of how well an option leverages existing facilities. By leveraging existing facilities, an option takes advantage of capital already spent on facilities that may be underutilized. Criterion B is scored as follows:

- Most Favorable: Utilizes existing facilities only
- Somewhat Favorable: Utilizes both existing and new facilities
- Least Favorable: Will primarily use new facilities

**Table 5-2** provides information on how each option was scored under Criterion B.

**TABLE 5-2: CRITERION B. LEVERAGES EXISTING FACILITIES**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Most Favorable	Leverages existing wells and distribution systems. Improvements will need to be made to interconnections.
2	Cal Domestic Supply Increase Project	Most Favorable	Leverages Harbor Pipeline
3	Pico Water District Project	Somewhat Favorable	Leverages existing wells, distribution systems and the Harbor Pipeline. New pipeline will be needed. Improvements will need to be made to interconnections.
4	CIC Groundwater Pumping and Interconnection Project	Somewhat Favorable	Leverages existing CIC system and Badillo-Grand Pipeline. Requires new interconnection, booster pump station, and chloramination system.
5	CIC Imported Water Treatment and Interconnection Project	Somewhat Favorable	Leverages existing CIC system and Badillo-Grand Pipeline. Requires new interconnection, booster pump station, and chloramination system.
6	Glendora Project	Least Favorable	Will require new facilities (wells, treatment, pipelines, booster pumps, interconnections) to bring water to the Badillo-Grand pipeline.

No.	Option	Score	Justification
7	La Puente Valley County Water District/City of Industry Project	Somewhat Favorable	Leverages existing wells and distribution systems.. New treatment, interconnections, chloramination system.
8a	Six Basins Regional Project, Phase 3	Somewhat Favorable	Leverages existing PWR-JWL, but will need new well, and pipeline.
8b	Six Basins Regional Project, Phase 4	Least Favorable	Leverages existing City of Pomona wells and PWR-JWL, but will need new treatment, booster pump and pipeline.
9	Advanced Water Treatment Project	Least Favorable	Leverages existing recycled water pipelines but will require new treatment system, including brine disposal and system connection pipelines.

### 5.3 Criterion C: Supply Reliability

Criterion C measures the extent to which an option may improve water supply reliability. Given that treated, imported water is of lower reliability than local supplies, the scoring for this criterion is primarily based on whether treated, imported water may be offset, as follows:

- Most Favorable: Option will increase use of local supplies
- Somewhat Favorable: Option will store untreated, imported water in a groundwater basin
- Least Favorable: Option will use treated, imported water to directly meet demands

Information on how each option was scored under Criterion C is provided in **Table 5-3**.

**TABLE 5-3: CRITERION C. SUPPLY RELIABILITY**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Most Favorable	Purchase or lease of Central Basin pumping rights
2	Cal Domestic Supply Increase Project	Somewhat Favorable	Stored imported water in Main San Gabriel Basin
3	Pico Water District Project	Most Favorable	Purchase or lease of Central Basin pumping rights
4	CIC Groundwater Pumping and Interconnection Project	Somewhat Favorable	Stored untreated imported water in Main San Gabriel Basin
5	CIC Imported Water Treatment and Interconnection Project	Somewhat Favorable	Treatment of untreated imported water directly delivered
6	Glendora Project	Somewhat Favorable	Stored untreated imported water in Main San Gabriel Basin
7	La Puente Valley County Water District/City of Industry Project	Somewhat Favorable	Stored untreated imported water in Main San Gabriel Basin
8a	Six Basins Regional Project, Phase 3	Most Favorable	Purchase or lease of Six Basins pumping rights

No.	Option	Score	Justification
8b	Six Basins Regional Project, Phase 4	Most Favorable	Purchase or lease of Six Basins pumping rights
9	Advanced Water Treatment Project	Most Favorable	Increased use of recycled water and brackish groundwater

#### 5.4 Criterion D: Capital Cost

Criterion D is a measure of the capital cost of the option to PBWA, measured as follows:

- Most Favorable: Option capital cost is \$2,000,000 or less
- Somewhat Favorable: Option capital cost is between \$2,000,000 and \$15,000,000
- Least Favorable: Option capital cost is greater than \$15,000,000

**Table 5-4** provides information on how each option was scored under Criterion D.

**TABLE 5-4: CRITERION D. CAPITAL COST**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Least Favorable	\$51.3M (new wells, new treatment)
2	Cal Domestic Supply Increase Project	Most Favorable	\$0.4M (new VDF motor)
3	Pico Water District Project	Most Favorable	\$2.4M (new pipeline, VFD motor, interconnections)
4	CIC Groundwater Pumping and Interconnection Project	Most Favorable	\$2.8M (new interconnection, new pump station)
5	CIC Imported Water Treatment and Interconnection Project	Most Favorable	\$2.8M (new interconnection, new pump station)
6	Glendora Project	Least Favorable	\$61.2M 50:50 split (new wells, new treatment, new pipelines, new pump station)
7	La Puente Valley County Water District/City of Industry Project	Least Favorable	\$14.4M (new treatment, interconnection improvement)
8a	Six Basins Regional Project, Phase 3	Somewhat Favorable	\$9.4M (new well, new pipeline)
8b	Six Basins Regional Project, Phase 4	Least Favorable	\$19.6M (new treatment, new pipeline, new pump station)
9	Advanced Water Treatment Project	Least Favorable	Costs expected to be >\$20,000,000 (MF/RO, brine line, tank, etc.)

## 5.5 Criterion E: Unit Cost

Criterion E is a measure of the unit cost of the option, which adds annualized capital, O&M, and purchase supply costs divided by the assumed volume of supply. This criterion is scored based on how the unit costs compare to the average unit cost of Tier 1 untreated, imported water from MWD, which is projected to increase by four percent per year from 2025 to 2050, resulting in the following scoring:

- Most Favorable: Unit cost is less than Tier 1 untreated, imported water (<\$1,813/AF)
- Somewhat Favorable: Unit cost is higher than Tier 1 untreated, imported water (\$1,813/AF average 2025-2050) but less than Tier 1 treated, imported water from MWD (\$2,522/AF average 2025-2050)
- Least Favorable: Unit cost is higher than Tier 1 treated, imported water from MWD (\$2,522/AF average 2025-2050)

**Table 5-5** provides information on how each option was scored under Criterion E.

**TABLE 5-5: CRITERION E. UNIT COST**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Least Favorable	\$2,700/AF
2	Cal Domestic Supply Increase Project	Most Favorable	\$1,500/AF
3	Pico Water District Project	Most Favorable	\$1,400/AF
4	CIC Groundwater Pumping and Interconnection Project	Least Favorable	\$2,800/AF
5	CIC Imported Water Treatment and Interconnection Project	Somewhat Favorable	\$2,200/AF
6	Glendora Project	Least Favorable	\$3,000/AF
7	La Puente Valley County Water District/City of Industry Project	Least Favorable	\$2,700/AF
8a	Six Basins Regional Project, Phase 3	Most Favorable	\$1,400/AF
8b	Six Basins Regional Project, Phase 4	Somewhat Favorable	\$2,200/AF
9	Advanced Water Treatment Project	Least Favorable	>\$3,000/AF

## 5.6 Criterion F: Likelihood of Funding

Criterion F qualitatively evaluates each option based on eligibility and competitiveness for common water supply funding sources. The evaluation of fundability will consider current funding programs, assuming similar programs will be available in the future, such as the Drinking Water State Revolving Fund (SRF), the Clean Water SRF, the Sustainable Groundwater Management Program, the Title XVI Water Reclamation and Reuse program, and WaterSmart. The scoring is related to the project objectives funded by these programs, as follows:

- Most Favorable: Project will address a primary MCL or access unused local supply, or funding expected from responsible parties
- Somewhat Favorable: Project will increase imported water storage
- Least Favorable: Project is unlikely to qualify for funding programs

**Table 5-6** provides information on how each option was scored under Criterion F.

**TABLE 5-6: CRITERION F. LIKELIHOOD OF FUNDING**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Most Favorable	Will address MCL exceedance
2	Cal Domestic Supply Increase Project	Least Favorable	Facilities already in place
3	Pico Water District Project	Least Favorable	Facilities already in place
4	CIC Groundwater Pumping and Interconnection Project	Least Favorable	Facilities already in place
5	CIC Imported Water Treatment and Interconnection Project	Least Favorable	Facilities already in place
6	Glendora Project	Most Favorable	Will increase imported water storage and address MCL exceedance/clean-up groundwater.
7	La Puente Valley County Water District/City of Industry Project	Most Favorable	Responsible parties to pay portion of treatment facility construction.
8a	Six Basins Regional Project, Phase 3	Somewhat Favorable	Potential for funding to access local supply
8b	Six Basins Regional Project, Phase 4	Most Favorable	Will address MCL exceedance
9	Advanced Water Treatment Project	Most Favorable	Funding expected to be available for recycled water projects

## 5.7 Criterion G: Leverages Partnerships/Cost Sharing

Criterion G is a measure of whether the project leverages partnerships and cost sharing, and is scored based on the number of expected partners, as follows:

- Most Favorable: Two or more project partners
- Somewhat Favorable: One project partner
- Least Favorable: No project partners

**Table 5-7** provides information on how each option was scored under Criterion G.



**TABLE 5-7: CRITERION G. PARTNERSHIPS/COST SHARING**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Most Favorable	LHHCWD, ODWD
2	Cal Domestic Supply Increase Project	Least Favorable	No cost sharing
3	Pico Water District Project	Most Favorable	Pico Rivera, Whittier
4	CIC Groundwater Pumping and Interconnection Project	Somewhat Favorable	CIC
5	CIC Imported Water Treatment and Interconnection Project	Somewhat Favorable	CIC
6	Glendora Project	Most Favorable	TVMWD, Glendora
7	La Puente Valley County Water District/City of Industry Project	Most Favorable	La Puente Valley County Water District, City of Industry
8a	Six Basins Regional Project, Phase 3	Least Favorable	No cost sharing
8b	Six Basins Regional Project, Phase 4	Somewhat Favorable	City of Pomona
9	Advanced Water Treatment Project	Somewhat Favorable	City of Industry

### 5.8 Criterion H: Complexity/Time Needed to Implement

Criterion H is a measure of the complexity and/or time needed to implement. This criterion assumes that projects with more complicated regulatory or permitting requirements, or the need for more complex negotiations or design will take longer to complete. Criterion G is scored as follows:

- Most Favorable: Option is not complex and can be implemented within the next three to four years
- Somewhat Favorable: Option is somewhat complex and can be implemented in five to seven years
- Least Favorable: Option is highly complex and is expected to take over seven years to implement

**Table 5-8** provides information on how each option was scored under Criterion H.

**TABLE 5-8: CRITERION H. COMPLEXITY/TIME NEEDED TO IMPLEMENT SCORING**

No.	Option	Score	Justification
1	La Habra Heights Pipeline Project	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Awaiting willing partner to construct treatment facility</li> <li>• Pipeline interconnection is complete</li> </ul>
2	Cal Domestic Supply Increase Project	Most Favorable	<ul style="list-style-type: none"> <li>• Could implement quickly with existing facilities</li> </ul>
3	Pico Water District Project	Most Favorable	<ul style="list-style-type: none"> <li>• Need to negotiate terms to get excess capacity from wells and wheel through Pico, Whittier, and Cal Domestic systems</li> <li>• Pico to Whittier pipeline to be constructed.</li> <li>• Cal Domestic interconnection would need to be upgraded</li> </ul>
4	CIC Groundwater Pumping and Interconnection Project	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Need to negotiate terms to get excess capacity from wells and groundwater treatment, then wheel through CIC's system</li> <li>• Need to construct an interconnection to the Badillo-Grand pipeline, a booster pump, and chlorination system</li> </ul>
5	CIC Imported Water Treatment and Interconnection Project	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Need to negotiate terms to get excess capacity from surface water treatment, then wheel through CIC's system</li> <li>• Need to construct an interconnection to the Badillo-Grand pipeline, a booster pump, and chlorination system</li> </ul>
6	Glendora Project	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Pilot project underway and TVMWD is seeking funding and contracting for CEQA/NEPA</li> <li>• Assuming project can be completed within 5 years to meet funding program requirements</li> </ul>
7	La Puente Valley County Water District/City of Industry Project	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Industry/La Puente have petitioned responsible parties to build treatment</li> </ul>
8a	Six Basins Regional Project, Phase 3	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Project is conceptual and will require additional planning prior to design and construction.</li> </ul>
8b	Six Basins Regional Project, Phase 4	Least Favorable	<ul style="list-style-type: none"> <li>• Project is at least 10 years out</li> </ul>
9	Advanced Water Treatment Project	Somewhat Favorable	<ul style="list-style-type: none"> <li>• Will require pilot testing, design, permitting</li> </ul>

## 5.9 Evaluation Summary

A summary of the evaluation results is provided in **Table 5-9**. The evaluation indicates that the three options most favorable under both primary evaluation criteria, which include timing flexibility and leveraging existing facilities are: Cal Domestic Supply Increase, Pico Water District Project, and La Puente Valley County Water District/City of Industry Project. The remaining projects generally received scores of most favorable or somewhat favorable in at least one of these categories.

Secondary evaluation criteria, which include supply reliability, capital cost, unit cost, likelihood of funding, partnerships/cost sharing, complexity/time needed to implement, appear to have tradeoffs that result in these criteria not being strong differentiators. In general, projects that require treatment to be constructed and/or will rely on imported water tend to have lower favorability scores for capital cost and unit cost. There is also a strong correlation between capital cost and likelihood of outside funding, which is due to higher cost projects typically being associated with projects that require new treatment facilities, which are commonly funded by state and federal programs.

**TABLE 5-9: OPTIONS EVALUATION SUMMARY**

No.	Option	Primary Criteria		Secondary Criteria					
		A. Timing Flexibility	B. Leverages existing facilities	C. Improves Supply Reliability	D. Capital Cost	E. Unit Cost	F. Likelihood of outside funding	G. Leverages partnerships/cost sharing	H. Complexity/Timing
1	La Habra Heights Pipeline Project	Least Favorable	Most Favorable	Most Favorable	Least Favorable	Least Favorable	Most Favorable	Most Favorable	Somewhat Favorable
2	Cal Domestic Supply Increase Project	Most Favorable	Most Favorable	Somewhat Favorable	Most Favorable	Most Favorable	Least Favorable	Least Favorable	Most Favorable
3	Pico Water District Project	Most Favorable	Most Favorable	Most Favorable	Most Favorable	Most Favorable	Least Favorable	Most Favorable	Most Favorable
4	CIC GW Pumping and Interconnection Project	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Most Favorable	Least Favorable	Least Favorable	Somewhat Favorable	Most Favorable
5	CIC IW Treatment and Interconnection Project	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Most Favorable	Somewhat Favorable	Least Favorable	Somewhat Favorable	Somewhat Favorable
6	Glendora Project	Somewhat Favorable	Least Favorable	Somewhat Favorable	Least Favorable	Least Favorable	Most Favorable	Most Favorable	Somewhat Favorable
7	La Puente/Industry Project	Most Favorable	Somewhat Favorable	Somewhat Favorable	Somewhat Favorable	Least Favorable	Most Favorable	Most Favorable	Somewhat Favorable
8a	Six Basins Regional Project, Phase 3	Most Favorable	Somewhat Favorable	Most Favorable	Somewhat Favorable	Most Favorable	Somewhat Favorable	Least Favorable	Somewhat Favorable
8b	Six Basins Regional Project, Phase 4	Somewhat Favorable	Least Favorable	Most Favorable	Least Favorable	Somewhat Favorable	Most Favorable	Somewhat Favorable	Least Favorable
9	Advanced Water Treatment	Somewhat Favorable	Least Favorable	Most Favorable	Least Favorable	Least Favorable	Most Favorable	Somewhat Favorable	Somewhat Favorable

## 6. PROGRAM IMPLEMENTATION

This section describes the prioritization methodology and results based upon the supply option evaluation. In addition, an implementation strategy with recommended supply option groupings (portfolios) and next steps.

### 6.1 Option Prioritization

Projects were divided into three priority levels to allow PBWA to focus first on projects that best meet the highest priority criteria and are able to be readily implemented now and then determine which other options should be considered next relative to external drivers such as development of partnerships, water quality regulations, responsible party identification, or groundwater rights purchase opportunities. Priority tiers were developed as follows:

- Priority 1: Options score as most favorable under the primary criteria (timing flexibility and leverages existing facilities), and can move forward immediately
- Priority 2: Options score as most favorable in at least one of the primary criteria and somewhat favorable in the other, and will improve supply reliability
- Priority 3: Options score either somewhat favorable or least favorable in the primary criteria

The supply options grouped by priority tiers are shown in **Table 6-1**. Pros and cons for each option are provided that provide option-specific considerations for implementation.

**TABLE 6-1: PROJECT PRIORITIES AND NEXT STEPS**

Option	Pros	Cons
<b>Priority 1: Move forward with implementation</b>		
Cal Domestic Supply Increase Project	<ul style="list-style-type: none"> <li>• Summertime water that leverages existing facilities</li> </ul>	none
Pico Water District Project	<ul style="list-style-type: none"> <li>• Summertime water that leverages existing facilities</li> </ul>	none
<b>Priority 2: Continue exploring funding opportunities, partnership agreements and project development</b>		
CIC Groundwater Pumping and Interconnection Project	<ul style="list-style-type: none"> <li>• Leverages existing facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Cost for treatment O&amp;M seems high, but needs to be negotiated</li> <li>• CIC shareholders have priority</li> </ul>
Six Basins Regional Project, Phase 3	<ul style="list-style-type: none"> <li>• Water to WWWD &amp; RWD systems</li> <li>• Summertime water</li> </ul>	<ul style="list-style-type: none"> <li>• New well, pipelines</li> <li>• Not a party to the Six Basins judgment and therefore cannot access areas of high groundwater that may not count against water rights</li> </ul>
La Puente/ City of Industry Project	<ul style="list-style-type: none"> <li>• Summertime water</li> <li>• Leverages existing pumping and conveyance</li> </ul>	<ul style="list-style-type: none"> <li>• Needs new treatment</li> </ul>

Option	Pros	Cons
<b>Priority 3: Continue to track projects</b>		
La Habra Heights Pipeline Project	<ul style="list-style-type: none"> <li>Leverages existing facilities</li> </ul>	<ul style="list-style-type: none"> <li>Winter water only</li> <li>Expensive relative to value (cost may come down)</li> </ul>
CIC Imported Water Treatment and Interconnection (purchased from CIC)	<ul style="list-style-type: none"> <li>Leverages existing facilities</li> </ul>	<ul style="list-style-type: none"> <li>Already have access to treated, imported water (decreases supply diversity)</li> <li>CIC shareholders have priority system use</li> </ul>
Six Basins Regional Project, Phase 4	<ul style="list-style-type: none"> <li>Local water supply</li> <li>Improves groundwater quality and DAC = highly fundable</li> </ul>	<ul style="list-style-type: none"> <li>Challenges to partnership</li> </ul>
Glendora Project	<ul style="list-style-type: none"> <li>Improves groundwater quality making project highly fundable</li> </ul>	<ul style="list-style-type: none"> <li>Cost is high</li> </ul>
Advanced Water Treatment Project	<ul style="list-style-type: none"> <li>Local water supply</li> </ul>	<ul style="list-style-type: none"> <li>Responsible for owning/operating</li> <li>Cost is high</li> <li>Reducing non-potable recycled water may result in the need to supply current non-potable demands with either potable water or add treatment to improve quality of non-potable well water</li> </ul>

## 6.2 Summary Supply Priority Tiers

The new supplies provided by these options are a mix of local groundwater, recycled water, stored imported water and even treated imported water. Each phase has a mix of these supply types, as shown in **Table 6-2**.

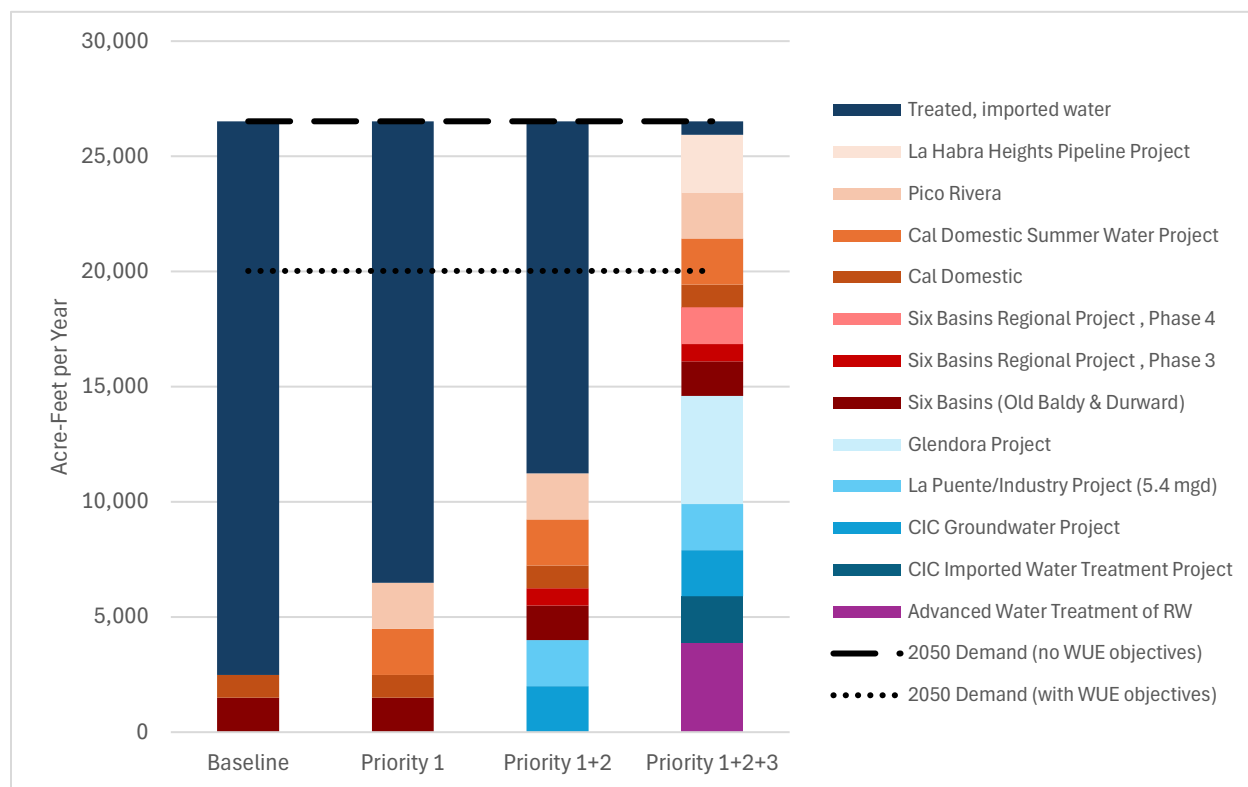
**TABLE 6-2: NEW SUPPLY SOURCES AND VOLUMES BY PHASE**

Option	Supply Source	Average Annual Volume (AFY)
<b>Priority 1</b>		
Pico Water District Project	Central Basin groundwater purchase	2,000
Cal Domestic Supply Increase Project	Stored imported water in Main San Gabriel Basin	2,000
	<b>Priority 1 Total New Supply</b>	<b>4,000</b>
<b>Priority 2</b>		
CIC Groundwater Pumping and Interconnection	Stored imported water in Main San Gabriel Basin	1,500 - 2,500
Six Basins Regional Project, Phase 3	Six Basins rights lease	750

La Puente Valley County Water District/City of Industry project	Stored imported water in Main San Gabriel Basin	1,500 - 2,500
	<b>Priority 2 Total New Supply</b>	<b>3,750 – 5,750</b>
<b>Priority 3</b>		
La Habra Heights Pipeline Project	Central Basin groundwater purchase	2,500
CIC Imported Water Treatment and Interconnection	CIC Treated imported water	1,500 - 2,500
Six Basins Regional Project, Phase 4	Six Basins rights lease	1,600
Glendora Project	Stored imported water in Main San Gabriel Basin	4,700
Advanced Water Treatment	Advanced treated recycled water	3,900
	<b>Priority 3 Total New Supply</b>	<b>14,200 – 15,200</b>
	<b>All Priorities Total New Supply</b>	<b>21,950– 24,950</b>

The total supply portfolios for PBWA are shown in **Figure 6-1**. These charts show the supply mix needed to meet the 2050 demand forecast in an average hydrologic year without the inclusion of water use objectives (the higher dashed line). If the demand forecast that includes water use efficiency objectives is considered (the lower dashed line), then not all options are needed. As shown in the chart, as options are added, the volume of treated, imported water supply decreases. Under 2050 demand without water use efficiency objectives, a small amount of treated, imported water is needed, but with water use efficiency objectives included in demand, there is excess supply if all options are implemented.

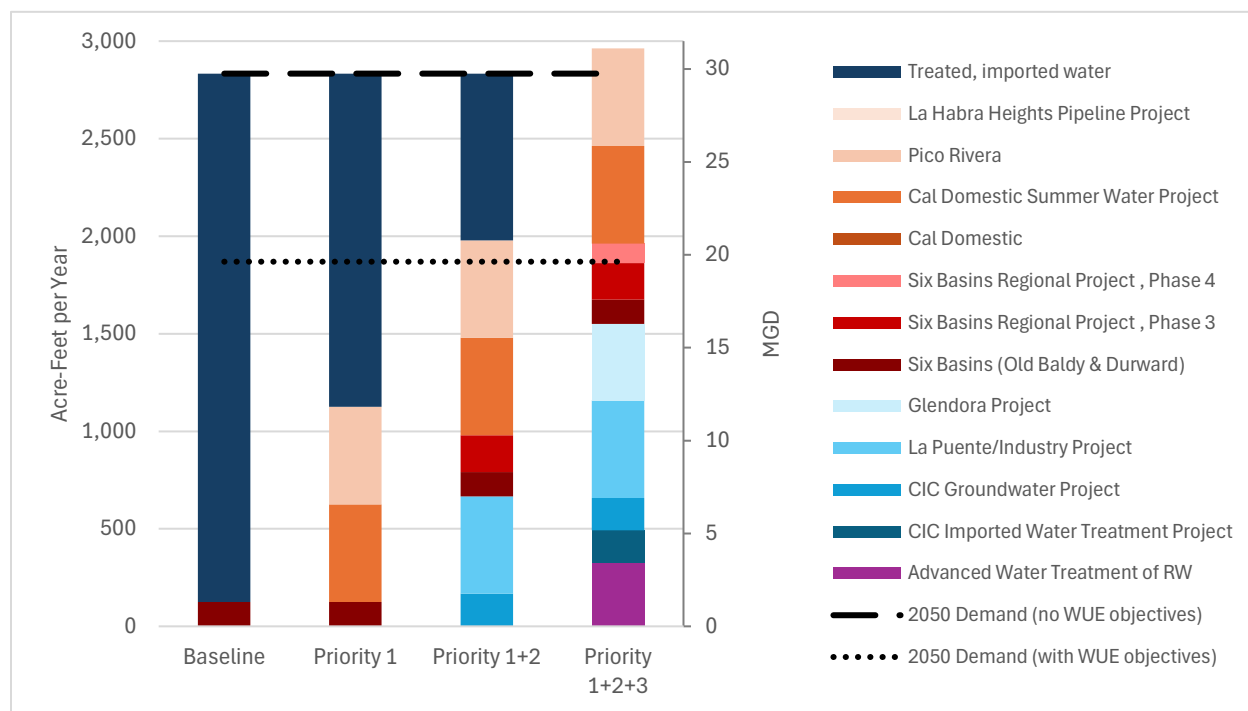
**FIGURE 6-1: AVERAGE ANNUAL SUPPLY PORTFOLIOS BY PRIORITY (DEMAND YEAR 2050)**



In addition to average annual supplies, it is helpful to look at peak monthly supplies given that a primary objective of the program update is to increase supplies in summer months. **Figure 6-2** shows the supply portfolios assumed for the peak demand month (August) under 2050 demands. As with average annual supplies, peak monthly supplies assume 2050 demand without water use objectives (long dashed line), while demands with water use objectives are shown as the shorter dashed line. In the peak months of July through October, treated, imported water use is again reduced as options are added. There is sufficient supply under the Priority 3 options to not require treated imported water. Under demand without water use objectives, there is sufficient supply to not require treated imported water if all options are implemented. Under demand with water use objectives, there is sufficient supply under the Priority 1 and Priority 2 option lists. When considering a reduction in imported water use, it should be noted that using less imported water may result in reduced imported Tier 1 water allocations from MWD in the future.



**FIGURE 6-2: PEAK MONTHLY SUPPLIES BY PRIORITY (DEMAND YEAR 2050)**



### 6.3 Recommendations for Next Steps

The decision to implement options will vary based on various internal and external factors including:

- Partnership agreements:** Several options rely on working with cities and other water districts to successfully implement the option and provide cost sharing. If PBWA cannot come to agreement with the potential partner, then the project will not likely move forward.
- Supply availability:** Changes to the expected volume and timing of delivery would be expected to impact the potential need for other options, change facility capacities, and impact capital and unit cost. Changes to supply volumes could be due to factors such as changes to local groundwater availability due to varying use by rights holders, or increased variability of imported water due to climate change.
- Regulatory requirements:** In addition to typical requirements to meet environmental requirements and coordination with State and County drinking water agencies, some projects will require additional regulatory coordination, such as with groundwater basin Watermasters to lease rights or revise storage and export agreements, or to meet new MCL requirements.
- Material and energy costs:** Material and energy costs are expected to increase over time, which can significantly affect the cost of constructing and operating facilities.

**Table 6-3** provides recommendations for next steps for each option. However, as PBWA moves forward with project planning and implementation, the priority and implementation steps of remaining projects will most likely change based on the above factors.

**TABLE 6-3: RECOMMENDATIONS FOR NEAR-TERM NEXT STEPS (WITHIN THE NEXT FIVE YEARS)**

Option	Recommendations
<b>Priority 1: Move forward with implementation</b>	
Cal Domestic Supply Increase Project	<ul style="list-style-type: none"> <li>• Revise Cal Domestic agreement</li> <li>• Install new VFD motor and (optional) new back-up power supply</li> </ul>
Pico Water District Project	<ul style="list-style-type: none"> <li>• Begin discussions with Pico Water District, City of Whittier, and Cal Domestic</li> </ul>
<b>Priority 2: Continue exploring funding opportunities, partnership agreements and project development</b>	
CIC Groundwater Pumping and Interconnection Project	<ul style="list-style-type: none"> <li>• Begin discussions with CIC to develop this project</li> <li>• Increase Main San Gabriel Basin storage/export agreement</li> </ul>
Six Basins Regional Project, Phase 3	<ul style="list-style-type: none"> <li>• Start negotiating Fairplex site (LA County)</li> <li>• Start negotiation on leasing/purchasing Six Basins rights</li> </ul>
La Puente/ City of Industry Project	<ul style="list-style-type: none"> <li>• Continue following progress of getting responsible parties to pay for treatment</li> </ul>
<b>Priority 3: Continue to track projects</b>	
La Habra Heights Pipeline Project	<ul style="list-style-type: none"> <li>• Pursue funding for treatment</li> </ul>
CIC Imported Water Treatment and Interconnection (purchased from CIC)	<ul style="list-style-type: none"> <li>• Determine treatment costs</li> <li>• Pursue if treatment cost is lower than from Weymouth &amp; Miramar</li> </ul>
Six Basins Regional Project, Phase 4	<ul style="list-style-type: none"> <li>• Continue pursuing partnership</li> </ul>
Glendora Project	<ul style="list-style-type: none"> <li>• Continue to participate in feasibility analysis to see if costs change based on pilot project findings or can be offset by funding (funding currently being pursued by TVMWD)</li> </ul>
Advanced Water Treatment Project	<ul style="list-style-type: none"> <li>• Continue site analysis</li> <li>• Develop cost estimate</li> </ul>

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## **APPENDIX A: DEMAND FORECASTING BY DISTRICT**

Appendix A includes a detailed description of the demand analysis completed separately for RWD and WVWD. The results of these demand forecasts are summarized in Section 2.

## A.1 RWD Potable Demand Forecast

RWD's service area covers approximately 17 square miles of portions of Rowland Heights, Hacienda Heights, La Puente and the cities of Industry and West Covina. The service area is primarily residential, with areas of commercial and open space. RWD has approximately 13,500 service connections and serves a population of approximately 56,100 according to the 2020 census. The following sections walk through the process described above to forecast RWD demand out to 2050.

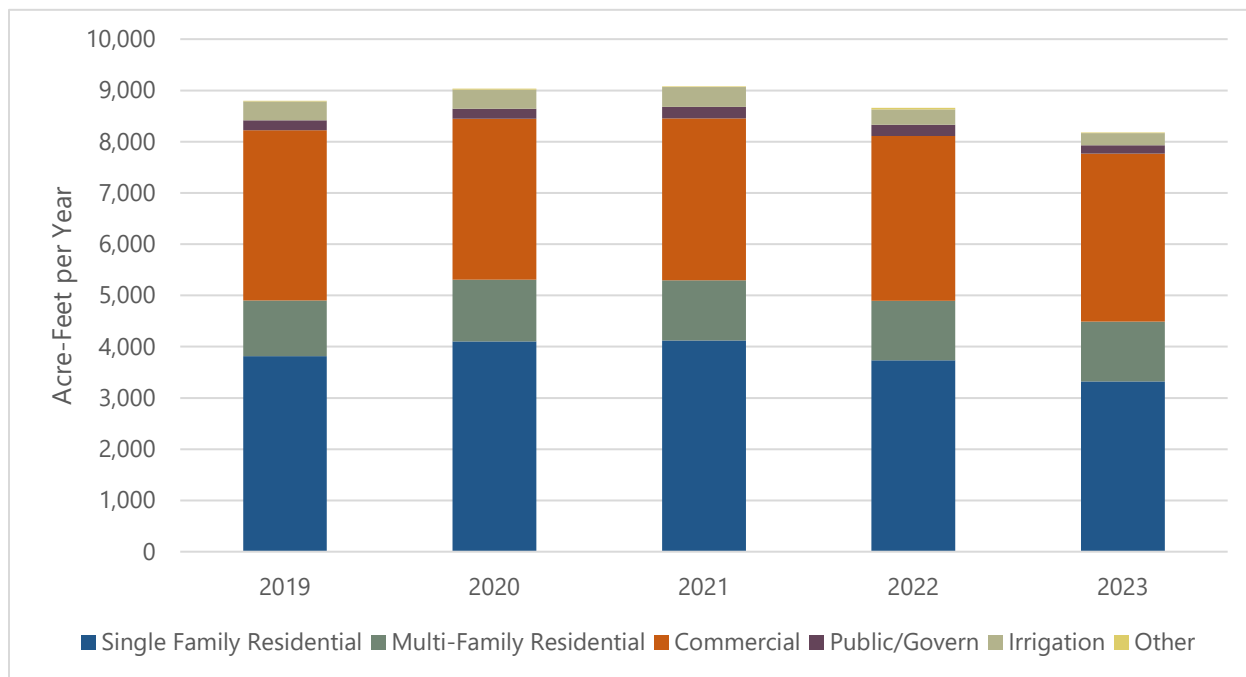
### A.1.1 RWD Historic Water Use by Sector

Water use in the RWD service area has fluctuated since 2010, with potable use ranging from a high of 11,700 in 2013/2014 to a low of 8,600 in 2023. Water use for the past five years (2019-2023) was compiled by sector by grouping the billing categories of monthly billing data as shown in **Table A-1**. As show in the chart in **Figure A-1**, potable water use has remained at or below 9,600 AFY for the past five years. Single family residential and commercial/industrial demand make up most of the service area demand, followed by multi-family residential, irrigation, public/governmental uses, and other uses.

**TABLE A-1: DEMAND SECTOR ALIGNMENT TO RWD BILLING CATEGORIES**

Demand Sector	Billing Category
Single Family Residential	Residential
Multi-Family Residential	Apartment, Condominium, Multi-Res
Commercial/Industrial	Business
Public/Government	Public/Govern
Irrigation	Irrigation
Other	Construction, Fire Service, Street Sweep

**FIGURE A-1: RWD ANNUAL POTABLE WATER USE BY SECTOR**



### A.1.2 RWD Baseline Water Use

The five-year average of potable demands from 2019 to 2023 was used for estimating baseline water use and is shown in **Table A-2**.

**TABLE A-2: RWD BASELINE WATER USE**

Sector	5-Year Average Water Use (AFY)
Single Family	3,819
Multiple Family	1,158
Commercial/Industrial	3,225
Public/Government	196
Irrigation	336
Other	17
<b>Total</b>	<b>8,751</b>

### A.1.3 RWD Indoor versus Outdoor Use

The estimated indoor versus outdoor water use percentages by sector are provided in **Table A-3**.

**TABLE A-3: RWD INDOOR VERSUS OUTDOOR WATER USE**

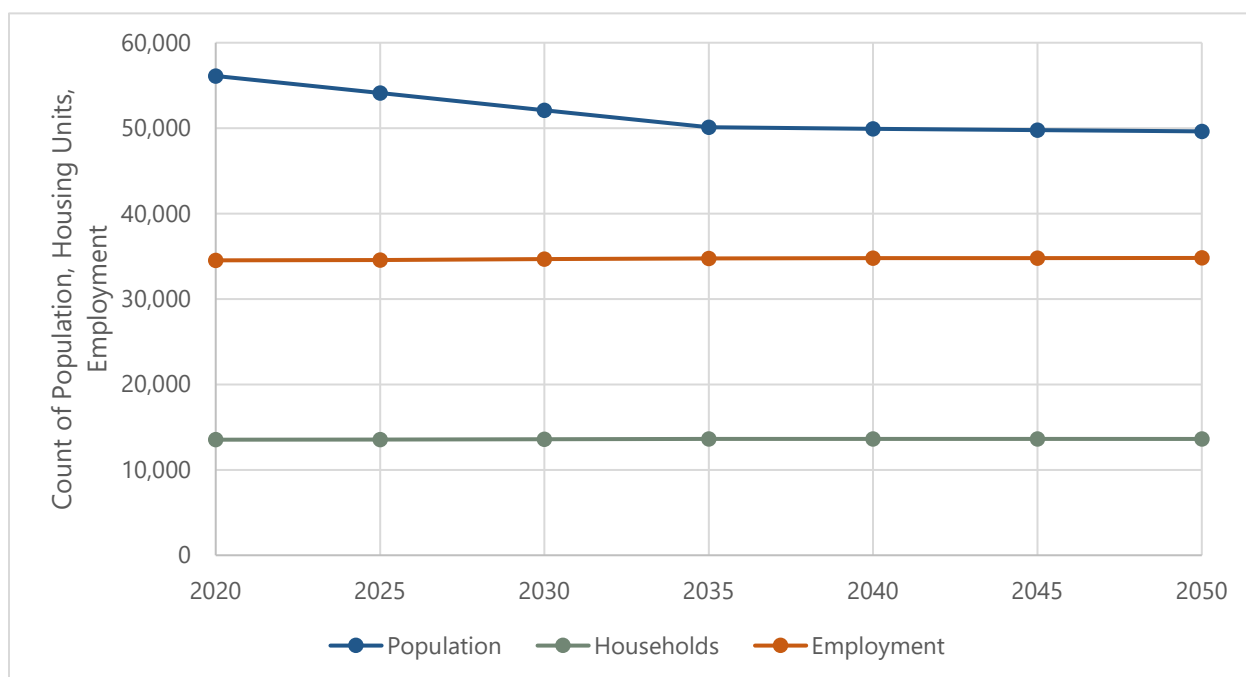
Sector	Indoor Percentage	Outdoor Percentage
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Single Family Residential	62%	38%
Multi-Family Residential	83%	17%
Commercial/Industrial	74%	26%
Public/Government	3%	97%
Irrigation	0%	100%
Other	23%	77%

#### A.1.4 RWD Growth Factors

Population, households and employment were projected using 2020 Census data and forecasting developed as part of the SCAG 2024 Connect SoCal Plan. Population and housing forecasts were estimated by starting with 2020 Census estimates for population and housing units, then adjusted by the same rate as estimated for the SCAG 2024 forecasting. This adjustment to the SCAG forecast was necessary because the starting point for the SCAG forecast (2019) estimated population and housing units to be higher than census data indicate for 2020. Employment is assumed to be equal to SCAG forecasting. Forecasts are shown in **Figure A-2**, and indicate that population is expected to decrease, while housing units and employment are expected to remain steady.

**FIGURE A-2: RWD POPULATION, HOUSING UNIT AND EMPLOYMENT GROWTH FORECAST**



#### A.1.5 RWD Unit Factors

Unit factors for indoor and outdoor use by sector are shown in **Table A-4** and are based on the baseline water use described above. Single family and multi-family residential sectors use population to generate the unit factor for indoor use and households for the outdoor use unit factor due to differences in growth



rates for households versus population. Remaining sectors use the same unit to calculate both indoor and outdoor unit factors.

**TABLE A-4: RWD BASELINE UNIT FACTORS**

Sector	Unit	Indoor Unit Factor	Outdoor Unit Factor
Single Family Residential	Single Family Population (indoor) Single Family Housing Units (outdoor)	52 gallons per capita per day (gpcd)	134 gallons per household per day (gphd)
Multi-Family Residential	Multi-Family Population (indoor) Multi-Family Housing Units (outdoor)	57 gpcd	46 gphd
Commercial/Industrial	Employment	62 gallons per employee per day (gped)	21 gped
Public/Government	Employment	0 gped	5 gped
Irrigation	Total Housing Units	Not applicable	22 gphd
Other	Total Housing Units	0 gphd	1 gphd

#### A.1.6 Water Loss Estimates

Four years of available validated Water Loss Audit Reports were retrieved from the American Water Works Association to estimate water loss. The four-year average of water loss as percent of water supplied, shown in **Table A-5**, was used to project water losses and are assumed to be unchanged in the future.

**TABLE A-5: RWD WATER LOSSES**

	2018	2019	2020	2021	2022	AVG
Real Losses (AF)	295	293	162	173	96	<b>204</b>
Apparent Losses (AF)	245	184	425	163	157	<b>235</b>
Total Losses (AF)	539	477	587	336	253	<b>439</b>
Water Supplied (AF)	10,195	9,558	9,699	9,538	9,168	<b>9,631</b>
Total Losses as % of Water Supplied	5.3%	5.0%	6.1%	3.5%	2.8%	<b>5.0%</b>

#### A.1.7 RWD Demand Projections (without water use objectives)

The unit factors in **Table A-4** were applied to the growth forecast to project demand to generate the demand forecast shown in **Table A-6**.

**TABLE A-6: RWD DEMAND FORECAST WITHOUT WATER USE OBJECTIVES (AFY)**

Sector	2025	2030	2035	2040	2045	2050
Single Family Residential	3,765	3,682	3,599	3,593	3,586	3,579

Multi-Family Residential	1,133	1,099	1,065	1,062	1,059	1,056
Commercial/Industrial	3,235	3,244	3,253	3,253	3,255	3,256
Public/Government	197	197	198	198	198	198
Irrigation	337	338	338	338	338	338
Other	17	17	17	17	17	17
Losses	431	426	420	420	420	419
<b>Total</b>	<b>9,114</b>	<b>9,002</b>	<b>8,890</b>	<b>8,881</b>	<b>8,873</b>	<b>8,865</b>

### A.1.8 Forecast Adjusted for Water Use Objective

Demand was adjusted to include water use objectives for residential water use and water losses, and is shown in **Table A-7**. While there are expected to be outdoor requirements for CII uses, the budgets were not available at the time this forecast was prepared.

**TABLE A-7: RWD DEMAND FORECAST WITH WATER USE OBJECTIVES (AFY)**

Sector	2025	2030	2035	2040	2045	2050
Single Family Residential	3,698	3,407	3,008	2,848	2,842	2,837
Multi-Family Residential	991	884	813	789	787	785
Commercial/Industrial	3,235	3,244	3,253	3,253	3,255	3,256
Public/Government	197	197	198	198	198	198
Irrigation	337	338	338	338	338	338
Other	17	17	17	17	17	17
Losses	343	343	343	343	343	343
<b>Total</b>	<b>8,818</b>	<b>8,430</b>	<b>7,970</b>	<b>7,787</b>	<b>7,781</b>	<b>7,776</b>

## A.2 WVWD Potable Demand Forecast

WVWD's service area covers approximately 29 square miles of portions of the Cities of Diamond Bar, Industry, Pomona, Walnut, and West Covina, as well unincorporated Los Angeles County, including a portion of Rowland Heights. The service area is primarily residential, with areas of commercial, industrial, institutional and open space. WVWD has approximately 27,100 service connections and serves a population of approximately 95,700 according to the 2020 census. While the service area is largely built out, some growth is still expected. The following sections walk through the process described above to forecast WVWD demand out to 2050.

### A.2.1 WVWD Historic Water Use by Sector

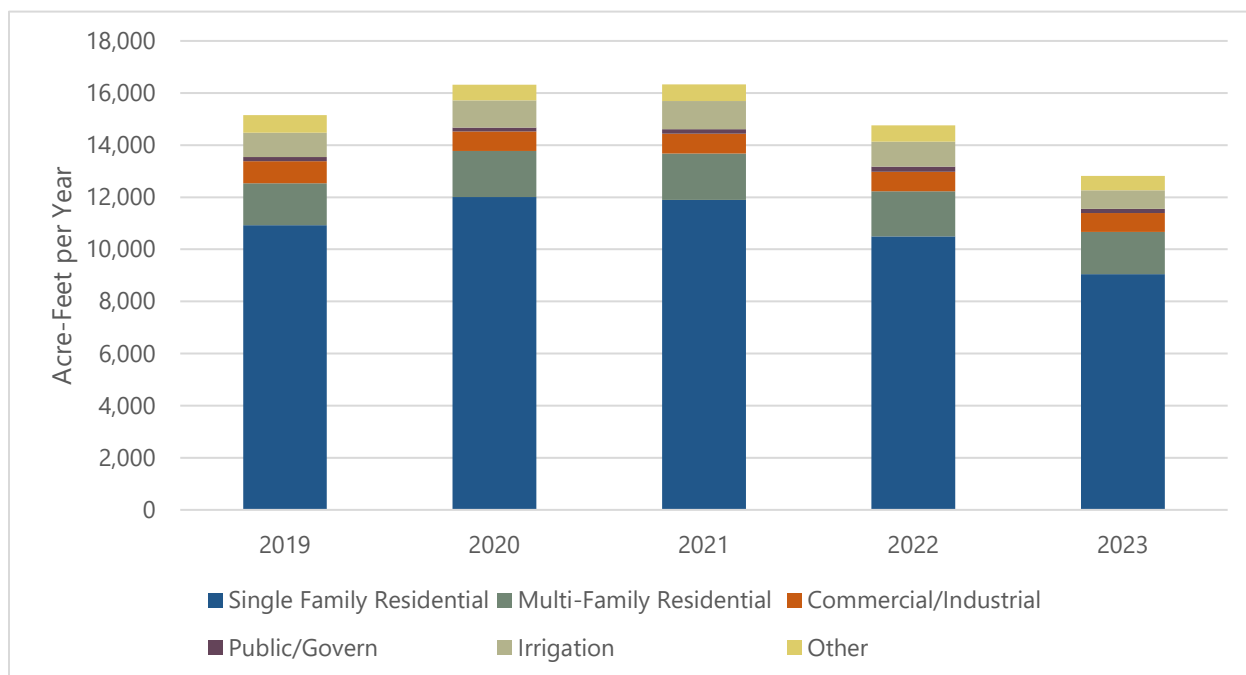
Water use in the WVWD service area has fluctuated significantly since 2010. Development led to a potable water use of over 21,000 AFY in 2013/2014 but decreased to as low as 15,900 AFY in 2015/2016 due to a combination of drought restrictions from previous years and having a wet local winter. Water use for the

past five years (2019-2023) was compiled by sector by grouping the billing categories of monthly billing data as shown in **Table A-8**. As show in the chart in **Figure A-3**, potable water use has remained at or below 16,300 AFY for the past five years. Single family residential demand makes up most of the service area demand, followed by multi-family residential, irrigation, commercial/industrial, other uses, and finally public/governmental uses.

**TABLE A-8: DEMAND SECTOR ALIGNMENT TO WVWD BILLING CATEGORIES**

Demand Sector	Billing Category
Single Family Residential	RES Residential, RES Townhouse
Multi-Family Residential	MUL Condo/Townhouse, MUL Apartment, MUL Apartment – Club House, MUL Apartment – Pool, MUL Condo/Townhouse Pool, MUL SFDH Community – Guard Hut
Commercial/Industrial	COM Commercial, COM Commercial Other, IND Industrial, Office, Services, Warehouse/Storage
Public/Government	COG Government
Irrigation	IRR Commercial, IRR Government, IRR Industrial, IRR Residential, IRR MUL Apartment, IRR MUL SFDH Community, IRR RES SFDH Community
Other	Fire Protection

**FIGURE A-3: WVWD ANNUAL POTABLE WATER USE BY SECTOR**



### A.2.1 WVWD Baseline Water Use

The five-year average of potable demands from 2019 to 2023 was used for estimating baseline water use and is shown in **Table A-9**.

**TABLE A-9: WVWD BASELINE WATER USE**

Sector	5-Year Average Water Use (AFY)
Single Family	10,877
Multiple Family	1,701
Commercial/Industrial	767
Public/Government	168
Irrigation	942
Other	621
<b>Total</b>	<b>15,076</b>

### A.2.3 WVWD Indoor versus Outdoor Use

The estimated indoor versus outdoor water use percentages by sector are provided in **Table A-10**.

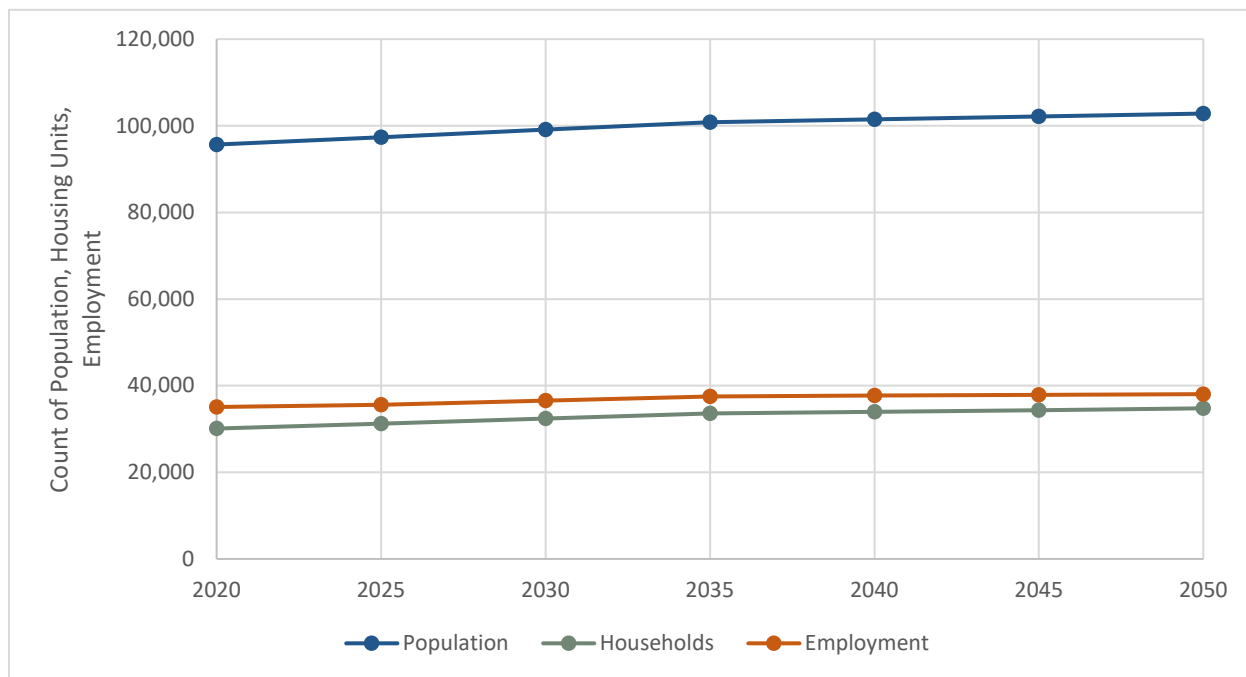
**TABLE A-10: WVWD INDOOR VERSUS OUTDOOR WATER USE**

Sector	Indoor Percentage	Outdoor Percentage
Single Family Residential	59%	41%
Multi-Family Residential	68%	32%
Commercial/Industrial	79%	21%
Public/Government	21%	79%
Irrigation	0%	100%
Other	68%	32%

### A.2.4 WVWD Growth Factors

Population, households and employment were projected using 2020 Census data and forecasting developed as part of the SCAG 2024 Connect SoCal Plan. Population and housing forecasts were estimated by starting with 2020 Census estimates for population and housing units, then increasing by the same rate as estimated for the SCAG 2024 forecasting. This adjustment to the SCAG forecast was necessary because the starting point for the SCAG forecast (2019) estimated population and housing units to be higher than census data indicate for 2020. Employment is assumed to be equal to SCAG forecasting. Forecasts are shown in **Figure A-4**.

**FIGURE A-4: WVWD POPULATION, HOUSING UNIT AND EMPLOYMENT GROWTH FORECAST**



### A.2.5 Unit Factor Calculations

Unit factors for indoor and outdoor use by sector are shown in **Table A-11**, and are based on the baseline water use described above. Single family and multi-family residential sectors use population to generate the unit factor for indoor use and households for the outdoor use unit factor due to differences in growth rates for households versus population. Remaining sectors use the same unit to calculate both indoor and outdoor unit factors.

**TABLE A-11: WVWD BASELINE UNIT FACTORS**

Sector	Unit to be applied	Indoor Unit Factor	Outdoor Unit Factor
Single Family Residential	Single Family Population (indoor) Single Family Housing Units (outdoor)	68 gpcd	175 gphd
Multi-Family Residential	Multi-Family Population (indoor) Multi-Family Housing Units (outdoor)	83 gpcd	65 gphd
Commercial/Industrial	Employment	15 gped	4 gped
Public/Government	Employment	1 gped	3 gped
Irrigation	Total Housing Units	Not applicable	28 gphd
Other	Total Housing Units	12 gphd	6 gphd

### A.2.6 Estimate Water Loss

Four years of available validated Water Loss Audit Reports were retrieved from the American Water Works Association to estimate water loss. The four-year average of water loss as percent of water supplied, shown in **Table A-12**, was used to project water losses and are assumed to be unchanged in the future.

**TABLE A-12: WVWD WATER LOSSES**

	2018	2019	2020	2021	2022	AVG
Real Losses (AF)	634	632	1,007	876	898	<b>809</b>
Apparent Losses (AF)	255	124	132	132	120	<b>153</b>
Total Losses (AF)	889	756	1,139	1,009	1,018	<b>962</b>
Water Supplied (AF)	17,685	15,996	17,679	17,225	15,983	<b>16,914</b>
Total Losses as % of Water Supplied	5.0%	4.7%	6.4%	5.9%	6.4%	<b>5.7%</b>

### A.2.7 WVWD Demand Projections (without water use objectives)

The above unit factors were applied to the growth forecast to project demand to generate the demand forecast shown in **Table A-13**.

**TABLE A-13: WVWD DEMAND FORECAST WITHOUT WATER USE OBJECTIVES (AFY)**

Sector	2025	2030	2035	2040	2045	2050
Single Family Residential	11,094	11,378	11,662	11,767	11,871	11,976
Multi-Family Residential	1,733	1,774	1,815	1,830	1,846	1,861
Commercial/Industrial	776	797	818	822	826	829
Public/Government	170	175	179	180	181	182
Irrigation	969	1,005	1,041	1,053	1,066	1,078
Other	639	663	686	694	703	711
Losses	874	898	921	929	937	946
<b>Total</b>	<b>16,256</b>	<b>16,689</b>	<b>17,122</b>	<b>17,276</b>	<b>17,430</b>	<b>17,583</b>

### A.2.8 Forecast Adjusted for Water Use Objectives

Demand was adjusted to include water use objectives for residential water use and water losses, and is shown in **Table A-14**. While there are expected to be outdoor requirements for CII uses, the budgets were not available at the time this forecast was prepared.

**TABLE A-14: WVWD DEMAND FORECAST WITH WATER USE OBJECTIVES (AFY)**

Sector	2025	2030	2035	2040	2045	2050
Single Family Residential	10,341	9,936	8,806	8,269	8,297	8,325

Multi-Family Residential	1,373	1,313	1,179	1,116	1,120	1,124
Commercial/Industrial	776	797	818	822	826	829
Public/Government	170	175	179	180	181	182
Irrigation	969	1,005	1,041	1,053	1,066	1,078
Other	639	663	686	694	703	711
Losses	830	830	830	830	830	830
<b>Total</b>	<b>15,099</b>	<b>14,719</b>	<b>13,540</b>	<b>12,965</b>	<b>13,022</b>	<b>13,079</b>

**APPENDIX B: METROPOLITAN WATER DISTRICT  
IMPORTED WATER RELIABILITY AND COST PROJECTIONS**



Appendix B includes a discussion of metropolitan Water Districts reliability analysis completed as part of the Integrated Resources Plan, as well as the forecast of imported water unit costs.

### **Metropolitan Water District Imported Water Reliability**

Imported water reliability is expected to decrease over time due to climate change. MWD performed a regional needs assessment as part of its 2022 Integrated Resources Plan (IRP) that projects member agency demand, local supplies and imported supplies to estimate the probability of imported water shortage and surplus. MWD modeled imported water availability based on four scenarios that incorporate various “drivers of change,” including climate change, regulatory requirements and economic growth. As shown in **Table B-15**, the reliability analysis results under each scenario vary greatly, where Scenario A (Low Demand/Stable Imports) showing no net shortage and sufficient surplus to fill storage while Scenario D (High Demand/Reduced Imports) results in high levels of shortages and insufficient surplus to store water.

While all four scenarios of the MWD IRP incorporate climate change, those scenarios that incorporate more extreme climate change impacts (Scenarios C and D) indicate more frequent and extreme shortages may occur, along with less water available for storage. In addition, MWD member agencies that are highly reliant on SWP water (which includes TVMWD) are more susceptible to shortages.

**TABLE B-15: MWD IRP RELIABILITY ANALYSIS RESULTS**

<b>MWD IRP Scenario</b>	<b>Description</b>	<b>IRP Reliability Analysis Results</b>
Scenario A – Low Demand/Stable Imports	Gradual climate change impacts, low regulatory impacts, slow economic growth, resulting in lower retail demands, stable regional and local supplies	<ul style="list-style-type: none"> <li>All shortages are met with available storage, leaving no net shortage</li> <li>Up to 770 thousand acre-feet (TAF) of net surplus occurs 50% of the time</li> <li>End-of-year storage expected to be full 87% of the time</li> </ul>
Scenario B – High Demand/Stable Imports	Gradual climate change impacts, low regulatory impacts, high economic growth, resulting in higher retail demands, stable regional and local supplies	<ul style="list-style-type: none"> <li>Net shortages occur 5% of the time with a maximum magnitude of 300 TAF, and only in SWP dependent areas</li> <li>Up to 400 TAF of net surplus occurs 25% of the time</li> <li>End-of-year storage expected to be full 45% of the time</li> </ul>
Scenario C – Low Demand/Reduced Imports	Severe climate change impacts, high regulatory impacts, slow economic growth, resulting in lower retail demands, less stable regional and local supplies	<ul style="list-style-type: none"> <li>Net shortages occur 5% of the time with a maximum magnitude of 200 TAF, and only in SWP dependent areas</li> <li>Up to 350 TAF of net surplus occurs 25% of the time</li> <li>End-of-year storage expected to be full 4% of the time</li> </ul>

<p>Scenario D – High Demand/Reduced Imports</p>	<p>Severe climate change impacts, high regulatory impacts, high economic growth, resulting in higher retail demands, less stable regional and local supplies</p>	<ul style="list-style-type: none"> <li>• Net shortages occur 66% of the time with a maximum magnitude of 1.22 million acre-feet. Shortages occur system-wide beyond 2035.</li> <li>• Frequent shortages and fewer surplus conditions indicate that supply improvements are required</li> <li>• Not enough surplus is available for Metropolitan to fill storage</li> </ul>
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Source: Metropolitan, 2022. Integrated Resources Plan Special Committee Board Action. 4/12/2022.

### **Imported Water Cost Forecast**

Imported water costs can be highly variable. For the purposes of the Regional Supply Program, imported water costs are assumed to increase at four percent per year. The resulting projected unit costs for full service, Tier 1 Treated and Untreated imported water are shown in Figure B-1.

**FIGURE B-1: PROJECTED IMPORTED WATER COSTS (4% PER YEAR INCREASE)**



## **APPENDIX C: DETAILED OPTION COSTS**

Appendix C includes planning level costs developed for each option in March 2024 dollars, including estimated capital, operations and maintenance (O&M) and supply lease or purchase costs. To make costs comparable among options, the same assumptions were used where possible. All assumptions are shown in **Table C-1**.

**TABLE C-1: COST ASSUMPTIONS**

Item	Unit Cost (Mar 2024)	Units
<b>Capital Costs</b>		
Pump Station	$2.63 * \text{POWER}(10, 0.7572 * \text{LOG}(B7 * 694) + 2.82)$	formula, Q = Flow rate in million gallons per day; Maximum flow rate
Pipeline	\$37	in-dia*LF for 6" and 8" diameter pipe
	\$30	in-dia*LF for 10" and 12" diameter pipe
	\$27	in-dia*LF for 16" and 20" diameter pipe
	\$24	in-dia*LF for 24"+ diameter pipe
Treatment - Ion Exchange (IX)	\$3,300,000	dollars per MGD capacity
Treatment - Air Stripper (AS)	\$1,700,000	dollars per MGD capacity
Treatment - Ion Exchange (IX)+GAC	\$3,800,000	dollars per MGD capacity
Treatment - GAC	\$2,000,000	dollars per MGD capacity
Treatment - Chloramination	\$30,000	dollars per MGD capacity
Well Cost - Drilling & equipping	\$4,500,000	lump sum
Generator (per gpm)	\$758	per kW
VFD Motor	\$500	per hp
CIC/Badillo-Grand Interconnection + Pump Station	\$1,620,000	lump sum
Construction Cost Contingency	20%	of Construct Cost Subtotal
Implementation Costs	30%	of Total Construct Cost
<b>O&amp;M Costs (\$/yr)</b>		
Well pump maintenance	\$15,000	per year (\$100,000 every 10 years)
Well Redevelopment	\$15,000	per year (\$100,000 every 10 years)
Well pumping electricity and chlorination	\$160	per AF

Treatment - Ion Exchange (IX)	\$300,000	dollars per MGD
Treatment - Air Stripper (AS)	\$11,400	dollars per MGD
Treatment - Chloramination	\$14	dollars per MGD per day
Pump Station	\$15,000	per year
Pump Station		of construction costs
Pump Electricity Cost	\$0.291	per KW-hr
Brine Disposal	\$10	per acre-foot treated groundwater
Pipeline	\$0.90	per linear foot (LF)
<b><u>Water Purchase or Lease Price</u></b>		
Six Basins lease	\$300	per AF
Central Basin Lease	\$200	per AF
MSGB Watermaster Assessment	\$200	per AF
<b><u>Electricity Usage</u></b>		
Pump Station	$[(Q/1.613 \cdot H)/3956] \cdot (1/0.75)$	KWh
<b><u>Financing Costs</u></b>		
Lifecycle Finance Rate	5.5%	
Lifecycle Period	25	years
<b><u>Pressure</u></b>		
PWR-JWL (psi)	10	psi
PWR-JWL (feet)	23	feet
Badillo/Grand Pipeline - pump station	590	feet elevation
Terminal Storage	850	feet elevation
Cal Domestic start	400	feet elevation
Cal Domestic highest point	880	feet elevation

**TABLE C-2: OPTION 1. LA HABRA HEIGHTS PROJECT PLANNING-LEVEL COST ESTIMATE**

Item	Pipe Diam (in)	Quantity	Units	Unit Cost	Unit	Total
<b>Capital Costs</b>						
New well		1	well	\$4,500,000	LS	\$4,500,000
Well 9 rehab		1	well	\$2,250,000	LS	\$2,250,000
8-in parallel pipe (Fullerton Rd between East Rd and Kanola Rd)	8	1600	feet	\$37	in-dia*LF	\$470,000
GAC treatment plant		6.7	mgd	\$3,800,000	per mgd	\$25,460,000
Chloramination System		6.7	mgd	\$30,000	per mgd	\$200,000
<b>Subtotal</b>						<b>\$32,870,000</b>
Contingency	\$6,574,000			20%		\$6,570,000
<b>Subtotal</b>						<b>\$39,440,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)	\$11,833,200			30%		\$11,830,000
<b>Total Capital Cost</b>						<b>\$51,270,000</b>
<b>O&amp;M Cost</b>						
Well pumping and wheeling fee		2500	AFY	\$160	per AF	\$400,000
Groundwater treatment (IX)		6.7	mgd	\$300,000	per mgd	\$2,010,000
Chloramination System		6.7	mgd	\$14	per mgd per day	\$11,000
<b>Total O&amp;M Cost</b>						<b>\$2,420,000</b>
<b>Unit Cost</b>						
Annualized Capital Cost				5.5%, 25 years		\$3,820,000
O&M Cost						\$2,420,000
Supply Cost		2500	AFY	\$200	per AF	\$500,000
<b>Total Annual Cost</b>						<b>\$6,740,000</b>
<b>Cost per AF</b>						<b>\$2,700</b>

**TABLE C-3: OPTION 2. CAL DOMESTIC SUPPLY INCREASE PROJECT PLANNING-LEVEL COST ESTIMATE**

Item					Total
<b>Capital Costs</b>					
VFD Upgrade to Booster		500	hp	\$500	\$250,000
Back-up Power Generator (not required for project to operate, therefore costs not included)					
				<b>Subtotal</b>	<b>\$250,000</b>
Contingency				20%	\$50,000
<b>Total Construction Cost</b>					<b>\$300,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)				30%	\$90,000
<b>Total Capital Cost</b>					<b>\$390,000</b>
<b>O&amp;M Cost</b>					
Booster Station O&M <sup>1</sup>			\$285	per AF	\$570,000
<b>Total O&amp;M Cost</b>					<b>\$570,000</b>
<b>Unit Cost</b>					
Annualized Capital Cost			5.5%, 25 years		\$30,000
O&M Cost					\$570,000
Supply Cost	2000	AFY	\$1,210	per AF	\$2,420,000
Total Annual Cost					<b>\$3,020,000</b>
Cost per AF					<b>\$1,500</b>

Option specific cost sources:

1. Booster Station O&M based on Whitter Pump cost O&M of \$341,600 for 1,200 AF. Provided by Dusty Moio, June 26, 2024
2. Supply cost O&M based on Whittier Pump cost for purchased water (\$536,100), stored water used (\$675,900), and MSGB Watermaster Assessment (\$240,000) for 1,200 AF. Provided by Dusty Moio, June 26, 2024.

Flow Rates			
	Annual flow rate	2000	AFY
	MGD if water delivered over 4 months	5.4	mgd
		3720	gpm
		122	Days per year

**TABLE C-4: OPTION 3. PICO WD PROJECT PLANNING-LEVEL COST ESTIMATE**

Item					Total
<b>Capital Costs</b>					
Pico WD to Whittier Interconnection				LS	\$1,000,000
Whittier to Cal Domestic Interconnection Rehab				LS	\$100,000
VFD motor	500	Hp	\$500	Per HP	\$250,000
Chloramination system	5.4	mgd	\$30,000	per mgd	\$160,000
				<b>Subtotal</b>	<b>\$1,510,000</b>
Contingency				20%	\$300,000
<b>Total Construction Cost</b>					<b>\$1,810,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)				30%	\$540,000
<b>Total Capital Cost</b>					<b>\$2,350,000</b>
<b>O&amp;M Cost</b>					
Pico WD well pumping and wheeling fee	2,000	AFY	\$160	per AF	\$320,000
Whittier wheeling fee	2,000	AFY	\$100	per AF	\$200,000
Groundwater treatment fee (IX)	5.4	mgd	\$300,000	per mgd	\$1,610,000
Chloramination System	5.4	mgd	\$14	per mgd per day	\$9,000
<b>Total O&amp;M Cost</b>					<b>\$2,140,000</b>
<b>Unit Cost</b>					
Annualized Capital Cost			5.5%, 25 years		\$180,000
O&M Cost					\$2,140,000
Supply Cost	2,000	AFY	\$150	per AF	\$400,000
<b>Total Annual Cost</b>					<b>\$2,720,000</b>
Cost per AF					<b>\$1,400</b>

Flow Rates			
Annual flow rate	2000	AFY	
MGD if water delivered over 4 months	5.4	mgd	
	3720	gpm	
	122	Days per year	



**TABLE C-5: OPTION 4. CIC GROUNDWATER PROJECT PLANNING-LEVEL COST ESTIMATE**

Item	Pipe Diam (in)	Quantity	Units	Unit Cost	Unit	Total
<b>Capital Costs</b>						
CIC Interconnection + Pump Station					LS	\$1,620,000
Chloramination system						160,000
<b>Subtotal</b>						\$1,780,000
Contingency				20%		\$360,000
<b>Total Construction Cost</b>						<b>\$2,140,000</b>
Implementation Costs (design, construction management, permitting)				30%		\$640,000
<b>Total Capital Cost</b>						<b>\$2,780,000</b>
<b>O&amp;M Cost</b>						
Pumping Energy (Pump Station)		271	kW	0.291	\$/kWh	\$230,000
Pump Station Maintenance				5%	of construction	\$80,000
CIC well pumping and wheeling fee		2,000	AFY	\$160	per AF	\$320,000
Groundwater treatment fee (IX)		5.4	mgd	\$300,000	per mgd	\$1,610,000
Chloramination		5.4	mgd	\$14	per mgd	\$10,000
<b>Total O&amp;M Cost</b>						<b>\$2,250,000</b>
<b>Unit Cost</b>						
Annualized Capital Cost				5.5%, 25 years		\$210,000
O&M Cost						\$2,250,000
Supply Cost (Tier 1 untreated imported water, 30-year average with 4% escalation)		2,000	AFY	\$1,576	per AF	\$3,150,000
<b>Total Annual Cost</b>						<b>\$5,610,000</b>
<b>Cost per AF</b>						<b>\$2,800</b>

**TABLE C-6: OPTION 5. PLANNING LEVEL COSTS FOR CIC SURFACE WATER TREATMENT PROJECT**

Item	Pipe Diam (in)	Quantity	Units	Unit Cost	Unit	Total
<b>Capital Costs</b>						
CIC Interconnection + Pump Station					LS	\$1,620,000
Chloramination System		5.4	mgd	\$30,000	per mgd	\$160,000
<b>Subtotal</b>						<b>\$1,780,000</b>
Contingency				20%		\$360,000
<b>Total Construction Cost</b>						<b>\$2,140,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)				30%		\$640,000
<b>Total Capital Cost</b>						<b>\$2,780,000</b>
<b>O&amp;M Cost</b>						
Pumping Energy (Pump Station)		271	kW	0.291	\$/kWh	\$230,000
Pump Station Maintenance				5%	of construction	\$80,000
CIC treatment and wheeling fee		2,000	AFY	\$160	per AF	\$690,000
Chloramination System		5.4	mgd	\$14	per mgd	\$10,000
<b>Total O&amp;M Cost</b>						<b>\$1,010,000</b>
<b>Unit Cost</b>						
Annualized Capital Cost				5.5%, 25 years		\$210,000
O&M Cost						\$1,010,000
Supply Cost		2,000	AFY	\$1,576	per AF	\$3,150,000
<b>Total Annual Cost</b>						<b>\$4,370,000</b>
<b>Cost per AF</b>						<b>\$2,200</b>

**TABLE C-7: OPTION 6. PLANNING LEVEL COSTS FOR GLENDORA PROJECT**

Item	Unit Cost	Units	Price
<b>Capital Cost</b>			
<i>Treatment</i>			
Nitrate and Perchlorate Treatment Equipment (Ion Exchange)	\$12,000,000	LS	\$12,000,000
VOC and PFAS Treatment Equipment (GAC)	\$6,000,000	LS	\$6,000,000
Contractor overhead	15%	of treatment equipment cost	\$2,700,000
Particulate Filters, pre-treatment	\$430,000	LS	\$430,000
Backwash Handling System (pumps, pipes, acid, brine, softener)	\$1,500,000	LS	\$1,500,000
pH adjustment treatment	\$500,000	LS	\$500,000
Chlorine Disinfection Equipment	\$750,000	LS	\$750,000
Ammonia for Chloramines	\$500,000	LS	\$500,000
General items (general site items, equalization tank, finished water booster pumps)	\$8,000,000	LS	\$8,000,000
Brine Waste Pipeline (4,700 ft)	\$2,800,000	LS	\$2,800,000
16-inch Pipe from Well 7 (6,000 ft)	\$3,600,000	LS	\$3,600,000
Treatment support (Foundation, electrical, SCADA, buildings/structures, misc. mechanical and equipment, plumbing, HVAC)	\$7,750,000	LS	\$7,750,000
<b>Treatment Construction Subtotal (full project)</b>			<b>\$46,530,000</b>
Mobilization/Demobilization	5%	of construction cost	\$2,326,500
Bonds and Insurance	5%	of construction cost	\$2,326,500
Contingency	30%	of construction cost	\$13,959,000
Implementation (Engineering, Planning, Admin, Permitting)	15%	of construction cost + contingency	\$9,073,350
<b>Treatment Capital Cost (full project)</b>			<b>\$74,215,000</b>
<i>Wells</i>			
Glendora 3 Well Drilling & Equipping	\$4,500,000	LS	\$4,500,000
Glendora 4 Well Drilling & Equipping	\$4,500,000	LS	\$4,500,000
07 Well Drilling & Equipping	\$4,500,000	LS	\$4,500,000
<b>Well Construction Subtotal</b>			<b>\$13,500,000</b>
Mobilization/Demobilization	Costs included in line items above.		\$0
Bonds and Insurance	Costs included in line items above.		\$0
Contingency	10%	of construction cost	\$1,350,000
Implementation (Engineering, Planning, Admin, Permitting)	10%	of construction cost + contingency	\$1,485,000

<b>Wells Capital Cost</b>			<b>\$16,335,000</b>
<i>Treated Water Conveyance</i>			
18,000 ft of 30-in Pipeline (E Arrow Hwy to Grand Avenue)	\$14,760,000	LS	\$14,760,000
3,500 ft of 24-in Pipeline (E Arrow Hwy along Grand Ave to City of Glendora distribution system)	\$2,870,000	LS	\$2,870,000
8,000 ft of 30-in Pipeline (Grand Ave from E Arrow Hwy to the Badillo-Grand pipeline)	\$6,560,000	LS	\$6,560,000
Pump station and interconnection	\$1,620,000	LS	\$1,620,000
Sub Total			\$25,810,000
<b>Conveyance Construction Subtotal</b>			<b>\$25,810,000</b>
Mobilization/Demobilization	Costs included in line items above.		\$0
Bonds and Insurance	Costs included in line items above.		\$0
Contingency	10%	of construction cost	\$2,919,000
Implementation (Engineering, Planning, Admin, Permitting)	12%	of construction cost + contingency	\$3,853,080
<b>Conveyance Capital Cost</b>			<b>\$31,800,000</b>
<b>Total Project Capital Cost</b>			<b>\$122,350,000</b>
<b>Project Capital Cost with 50:50 Split</b>			<b>\$61,180,000</b>
<b>O&amp;M Cost</b>			
Electrical	271 KW	\$0.285/kWh	\$1,960,000
Brine for IX	5%	of construction	\$300,000
Brine Discharge	\$30,000	LACSD permit per year	\$30,000
Chemicals	6,450 gpm	\$25/gpm	\$160,000
Replacement materials	6,450 gpm	\$85/gpm	\$550,000
Equip maintenance	6,450 gpm	\$114/gpm	\$730,000
O&M Staffing	1-2 FTE	\$200,000	\$200,000
<b>Total Annual O&amp;M Cost</b>			<b>\$3,930,000</b>
<b>O&amp;M Cost with 50:50 Split</b>			<b>\$1,970,000</b>
<b>Unit Cost</b>			
Annualized Capital Cost		5.5% over 25 years	\$9,120,000
Annualized Capital Cost with 50:50 split		5.5% over 25 years	\$4,560,000
O&M Cost			\$3,930,000
O&M Cost with 50:50 split			\$1,970,000
Supply Cost	9,400 AF	\$1,576 per AF	\$14,820,000
Supply Cost with 50:50 split	4,700 AF	\$1,576 per AF	\$7,410,000
<b>Total Annual Cost</b>			<b>\$27,870,000</b>
<b>Annual Cost with 50:50 Split</b>			<b>\$13,940,000</b>
<b>Cost per AF</b>			<b>\$2,970</b>

**TABLE C-8: OPTION 7. PLANNING LEVEL COSTS FOR LA PUENTE/INDUSTRY PROJECT**

Item	Qty	Units	Unit Cost	Units	Price
<b>Capital Cost</b>					
Nitrate and Perchlorate Treatment Equipment (Ion Exchange)	1	LS	\$2,550,000	LS	\$2,550,000
VOC and PFAS Treatment Equipment (GAC)	1	LS	\$1,280,000	LS	\$1,280,000
Contractor overhead			15%	of treatment equipment cost	\$574,500
Particulate Filters, pre-treatment	1	LS	\$90,000	LS	\$90,000
Backwash Handling System (pumps, pipes, acid, brine, softener)	1	LS	\$320,000	LS	\$320,000
pH adjustment treatment	1	LS	\$110,000	LS	\$110,000
Chlorine Disinfection Equipment	1	LS	\$160,000	LS	\$160,000
Ammonia for Chloramines	1	LS	\$110,000	LS	\$110,000
General items (general site items, equalization tank, finished water booster pumps)	1	LS	\$1,700,000	LS	\$1,700,000
Brine Waste Pipeline (4,700 ft)	1	LS	\$600,000	LS	\$600,000
Treatment support (Foundation, electrical, SCADA, buildings/ structures, misc. mechanical and equipment)	1	LS	\$1,650,000		\$1,650,000
Interconnection RWD system				LS	\$100,000
<b>Subtotal</b>					<b>\$9,240,000</b>
Contingency			20%		\$1,850,000
<b>Total Construction Cost</b>					<b>\$11,090,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)			30%		\$3,330,000
<b>Total Capital Cost</b>					<b>\$14,420,000</b>
<b>O&amp;M Cost</b>					
Booster Electrical	364	hp	\$0.291	\$/kWh	\$240,000
Brine for IX			5%	of construction	\$30,000
Brine Discharge LACSD permit			\$30,000	per year	\$30,000
Chemicals	2,480	gpm	\$25	per gpm	\$60,000
Replacement materials	2,480	gpm	\$85	per gpm	\$210,000

Equip maintenance	2,480	gpm	\$114	per gpm	\$282,000
Well Pumping			\$160	per AF	\$320,000
<b>Total Annual O&amp;M Cost</b>					<b>\$1,170,000</b>
<b>Unit Cost</b>					
Annualized Capital Cost				5.5%, 25 years	\$1,080,000
O&M Cost					\$1,170,000
Supply Cost	2000	AF	\$1,576	per AF	\$3,150,000
<b>Total Annual Cost</b>					<b>\$5,400,000</b>
<b>Cost per AF</b>					<b>\$2,700</b>

**TABLE C-9: OPTION 8A. PLANNING LEVEL COSTS FOR SIX BASINS REGIONAL PROJECT - PHASE 3**

Item	Pipe Dia	Qty	Units	Unit Cost	Cost
<b>Capital Costs</b>					
Wells		1	LS	\$4,500,000	\$4,500,000
Pipeline (new well to PWR-JWL)	12	4,000	in-dia*LF	\$30	\$1,500,000
<b>Construction Cost Estimate Subtotal</b>					<b>\$6,000,000</b>
Construction Cost Contingency			Allowance	20%	\$1,200,000
<b>Total Construction Cost Subtotal</b>					<b>\$7,200,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)			Allowance	30%	\$2,160,000
<b>Total Capital Cost</b>					<b>\$9,360,000</b>
<b>O&amp;M Costs</b>					
Well pump maintenance & redevelopment		1	well	\$30,000	\$30,000
Well pumping cost		750	AF	\$160	\$120,000
<b>O&amp;M Cost Subtotal</b>					<b>\$150,000</b>
<b>Annual Costs</b>					
Annualized Capital Costs				5.5%, 25 years	\$700,000
Annual O&M Costs					\$150,000
Supply Cost		750	AF	300	\$225,000
<b>Total Annual Cost</b>					<b>\$1,075,000</b>
<b>Cost per AF</b>					<b>\$1,400</b>

**TABLE C-9: OPTION 8B. PLANNING LEVEL COSTS FOR SIX BASINS REGIONAL PROJECT - PHASE 4**

Item	Pipe Dia	Qty	Units	Unit Cost	Cost
<b>Capital Costs</b>					
Treatment - IX (at 10 & Towne)		2	EA	\$1,300,000	\$2,600,000
Treatment – GAC (at 10 & Towne)		2	EA	\$560,000	\$1,120,000
Onsite feed line		1	LS	\$36,000	\$36,000
Brine conveyance		1	LS	\$1,690,000	\$1,690,000
Process building		1	LS	\$1,200,000	\$1,200,000
Demolition of existing facilities (Reservoir 5a, Air Strippers)		1	LS	\$450,000	\$450,000
yard piping, sitework landscaping, site electrical and controls		1	LS	\$2,484,000	\$2,484,000
Booster Pump		2.9	MGD	formula	\$550,000
Pipeline (10&Town to Phase 3 pipeline)	12	6,400	in-dia*LF	\$30	\$2,400,000
<b>Construction Cost Estimate Subtotal</b>					<b>\$12,530,000</b>
Construction Cost Contingency			Allowance	20%	\$2,510,000
<b>Total Construction Cost Subtotal</b>					<b>\$15,040,000</b>
Implementation Costs (Engineering, Planning, Admin, Permitting)			Allowance	30%	\$4,510,000
<b>Total Capital Cost</b>					<b>\$19,550,000</b>
<b>O&amp;M Costs</b>					
Well pump maintenance & redevelopment		50% of 3 wells	well	\$30,000	\$50,000
Well lease (3/7/8/32)		50% of 3 wells	well	\$50,000	\$75,000
Well pumping cost		1,600	AF	\$160	\$260,000
Treatment - IX		50% of 2.9	MGD	\$300,000	\$430,000
Treatment - GAC		50% of 2.9	MGD	\$401,500	\$578,000
Brine Disposal		1,600	AF	\$10.40	\$20,000
Booster Pumps		5%	construction cost	\$30,000	\$30,000
Booster Pump Electricity Cost		67	hp	\$0.29	\$130,000



<b>O&amp;M Cost Subtotal</b>					<b>\$1,570,000</b>
<b>Annual Costs</b>					
Annualized Capital Costs				5.5%, 25 years	\$1,460,000
Annual O&M Costs					\$2,580,000
Supply Cost		1600	AF	300	\$480,000
<b>Total Annual Cost</b>					<b>\$3,510,000</b>
<b>Cost per AF</b>					<b>\$2,200</b>

## **APPENDIX D:      BASELINE SYSTEMS MODEL DIAGRAM**

**FIGURE D-1: BASELINE SYSTEMS DIAGRAM**

