Chapter 13.0
Joshua Basin Water District

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Sub-Chapter 13.1 – Introduction

Joshua Basin Water District (District) was formed in 1963 as a public agency through the consolidation of several smaller water systems to provide reliable potable water service within its defined service area in San Bernardino County. The District is governed by an elected Board of Directors and operates through its core functional divisions of Operations, Finance, and Administration.

The District's service area overlies portions of the Copper Mountain and Joshua Tree groundwater subbasins and encompasses areas within and surrounding the communities of Yucca Valley and Twentynine Palms, including portions of Joshua Tree National Park and the Marine Corps Air Ground Combat Center at Twentynine Palms.

The District's water supply portfolio is comprised primarily of groundwater extracted from the Copper Mountain and Joshua Tree subbasins, which represent the predominant source of supply for meeting customer demands. To supplement local groundwater resources and support long-term basin management objectives, the District also utilizes imported water made available through the Mojave Water Agency (MWA), including supplies associated with the Morongo Basin Pipeline (MBP). Ensuring an adequate and reliable water supply for current and future customers is fundamental to the District's mission. Through participation in the 2025 Mojave RUWMP (2025 RUWMP), the District supports coordinated, basin-wide planning. Regional conditions and assumptions are presented in the 2025 RUWMP regional chapters, while this chapter focuses on District-specific system characteristics, demands, demand management measures, and reliability.

13.1.1 Background and Purpose

The District has ensured compliance with the Urban Water Management Plan Act (UWMPA) requirements for urban water suppliers through its participation in the 2025 RUWMP and preparation of this retail-specific chapter.[1] The UWMPA requires urban water suppliers to evaluate the adequacy of their water supplies to meet projected demands under average conditions, single-dry years, and multiple-dry-year scenarios through a 20-year planning horizon. This chapter presents the District's evaluation of these requirements and demonstrates its ability to meet anticipated demands under normal and drought conditions.

The 2025 RUWMP, together with this retail-specific chapter, updates the District's 2020 Urban Water Management Plan (UWMP) and incorporates new data, analyses, and regulatory

[1] California Water Code Sections 10610 through 10657.

guidance issued since 2020 by the California Department of Water Resources (DWR) pursuant to the California Water Code (CWC). In addition to satisfying statutory requirements, the 2025 RUWMP serves as a comprehensive planning document describing existing and future water supplies, projected water demands, demand management progress, and actions necessary to maintain long-term supply reliability. The regional plan also documents cooperative efforts among participating agencies to efficiently manage shared resources and address future water needs across the RUWMP Planning Area.

13.1.2 Basis for Plan Preparation

The District operates a Public Water System as described in California Health and Safety Code Section 116275. The District is also classified as an Urban Water Supplier pursuant to California Water Code (CWC) Section 10617, as it provides water for municipal purposes to more than 3,000 service connections and supplies more than 3,000 acre-feet of water annually. These qualifications require the preparation and adoption of a UWMP every five years. Under CWC Section 10620 (d)(1), these requirements may be satisfied through participation in an RUWMP, which the District and the other Urban Water Suppliers within the Planning Area have elected to prepare collaboratively. Details of the District's Public Water System are provided in **Table 13-1**.

TABLE 13-1: PUBLIC WATER SYSTEM INFORMATION

Public Water System Number	Public Water System Name	Number of Municipal Connections[2]
CA3610025	Joshua Basin Water District	~ 5,574

13.1.3 Coordination and Outreach

Preparation of the 2025 RUWMP involved coordination among the participating Urban Water Suppliers and MWA, which serves as the region's wholesale water supplier. This coordination ensured consistency in assumptions, methodologies and regional analyses. The District actively participated in this collaborative process through technical meetings, data sharing, and review of draft materials addressing both regional conditions and District-specific operations.

As required by the UWMPA, the District coordinated with nearby agencies during development of this chapter to ensure consistency with related land use and water resource

[2] The number of municipal connections presented in Table 13-1 includes both active and inactive municipal service connections.

planning efforts, including General Plans, Water Master Plans, and Specific Plans associated with anticipated development.

Consistent with CWC Section 10641, the District encouraged active participation from a broad cross-section of the community representing diverse social, cultural, and economic interests within its service area during preparation of this chapter. Public notice of the plan's availability and the scheduled public hearing was provided, and a public hearing was conducted prior to adoption to solicit input from customers, stakeholders, and interested parties.

Comprehensive documentation of the regional planning process, including interagency coordination, formal notifications provided in accordance with CWC Section 10621(b), stakeholder engagement, and outreach activities conducted on behalf of all participating agencies, is provided in *Sub-Chapter 1.1.3 Coordination and Outreach of Regional Chapter 1 - Introduction*.

13.1.3.1 Water Supplier Information Exchange

Compliance with CWC Section 10631 is described in Sub-Chapter 1.1.3 Coordination and Outreach of Regional Chapter 1 - Introduction.

13.1.4 RUWMP Adoption

The District elected to hold a public workshop on May 20, 2026, to provide information regarding the 2025 RUWMP and allow for public review and discussion before formal consideration of the plan. No action was taken at the May 20, 2026, public workshop. Prior to the workshop and public hearing, the District made a draft of the 2025 RUWMP available for public inspection at 61750 Chollita Road, Joshua Tree, CA 92252. Pursuant to CWC Section 10642, general notice of the public hearing was provided through publication of the hearing date and time in the local press as required under the UWMPA.

The District's elected body held a public hearing regarding the 2025 RUWMP on June 3, 2026. Following the public hearing, the District's elected body adopted the 2025 RUWMP on June 3, 2026. A copy of the 2025 RUWMP will be submitted to DWR, provided to the County and the California State Library, and posted onto the District's website.

The District plans to submit all required documentation related to the UWMPA through the DWR submittal website soon after adoption, including the on-line submittal of information associated with the following DWR Excel workbooks:

- "FINAL Submittal 2025 UWMP Tables – Joshua Basin WD – 06.01.2026.xls"
- "Appendix F 2025 Checklist – Joshua Basin WD – 06.01.2026.xls"

13.1.5 Document Organization

This chapter is organized as follows:

- Sub-Chapter 13.2 Water Service and System Description
- Sub-Chapter 13.3 Population, Land Use, Economy, and Demographics
- Sub-Chapter 13.4 Water Supply and Infrastructure Characterization
- Sub-Chapter 13.5 Water Use Characterization
- Sub-Chapter 13.6 Water Conservation and Shortage Response
- Sub-Chapter 13.7 Water System Reliability and Drought Risk Assessment
- Sub-Chapter 13.8 Energy Intensity Analysis

Sub-Chapter 13.2 – Water Service and System Description

The Joshua Basin Water District provides potable water service to the residents and businesses within its service area, depicted in **Figure 13-1**, which encompasses Joshua Tree, other census-designated places, and portions of the Joshua Tree National Park.

Water service in the District relies entirely on groundwater extracted from wells located throughout the service area. The District manages five active wells that tap into local aquifers to provide the community's water supply. Once extracted, water is treated to meet all applicable federal and state water quality standards and is either directed into the distribution system or stored in one of the District's 17 reservoir tanks, which collectively provide approximately 12.3 million gallons of storage. These reservoirs help ensure that the community has access to adequate water during periods of high demand, particularly in the summer months.

The District's water system encompasses an extensive distribution network designed to deliver water efficiently to homes, businesses, and fire protection systems. The system includes over 300 miles of water mains, thousands of service connections, 12 booster pump stations, 12 pressure-reducing stations, and thousands of valves and fire hydrants that allow the District to isolate portions of the system for maintenance or emergencies without disrupting service to the broader community. **Table 13-2** summarizes recent historical active service connections by customer type, providing an overview of the composition of the District's customer base.[3] The District also engages in regular inspection, maintenance, and replacement of system components to ensure long-term reliability and safety of the water supply.

[3] Active service connection counts presented in Table 13-2 reflect the customer connection data reported in the District's Electronic Annual Report (EAR) submitted annually to the State Water Resources Control Board (SWRCB).

FIGURE 13-1: JOSHUA BASIN WATER DISTRICT SERVICE AREA

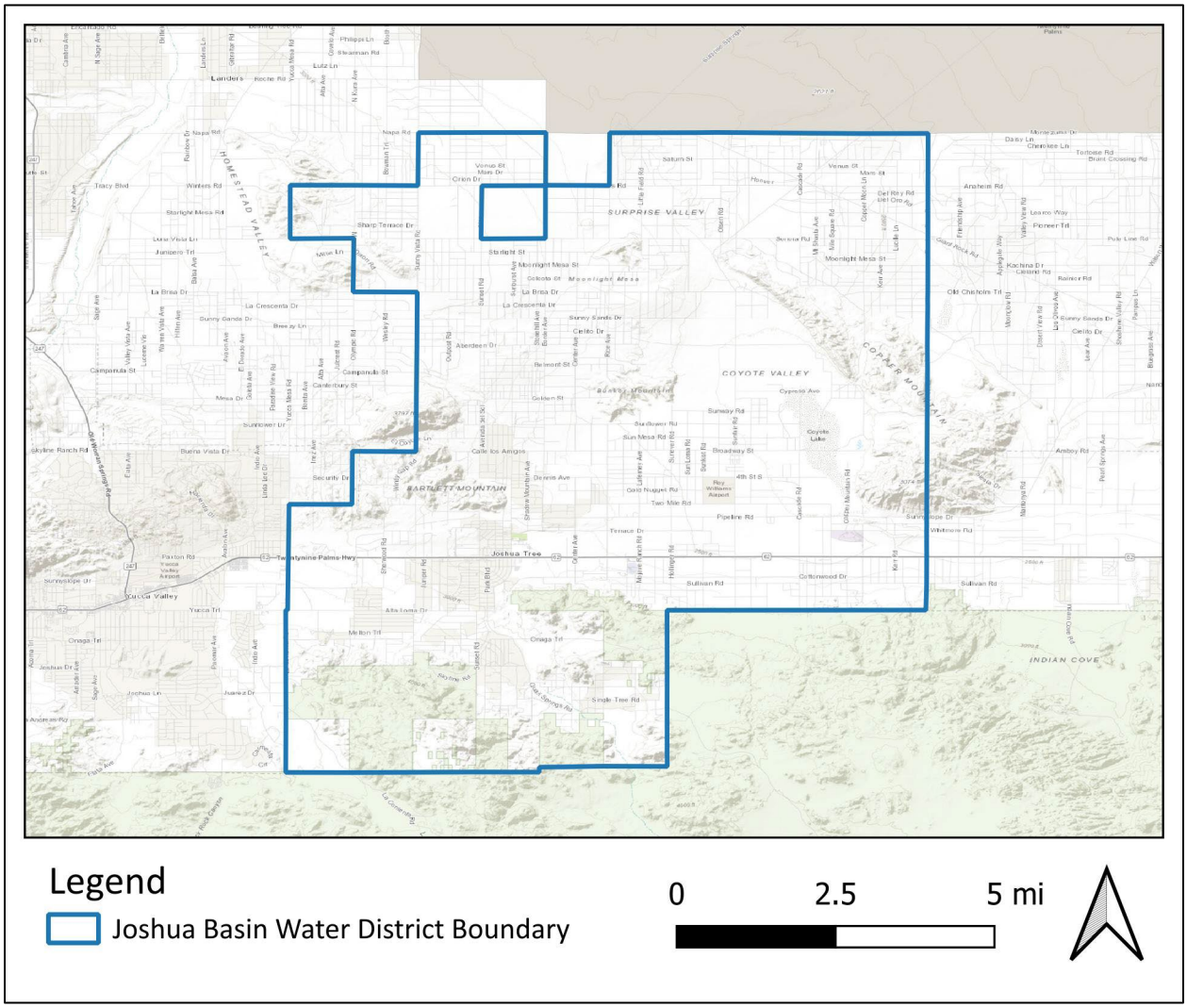

TABLE 13-2: ACTIVE CUSTOMER WATER SERVICE CONNECTIONS

Customer Class	2021	2022	2023	2024	2025
Single-Family Residential	4,831	4,857	4,703	4,629	4,638
Multi-Family Residential	95	95	90	90	83
Commercial/Institutional	142	159	109	147	143
Landscape Irrigation	21	19	19	18	17
Total	5,089	5,130	4,921	4,884	4,881

13.2.1 Service Area Climate

Located in California's Mojave Basin, the District's service area experiences a climate characteristic of the High Desert. The region is highly arid due to the rain shadow effects of surrounding mountain ranges and is marked by hot summers and relatively cool winters. This results in low precipitation and large diurnal temperature variations throughout the year. Average annual precipitation is minimal, with a 30-year average of 4.5 inches, occurring primarily as rainfall between December and March. While late summer monsoonal thunderstorms may contribute episodic precipitation, these events typically account for only a small portion of total annual precipitation. The annual average temperature is approximately 61 degrees Fahrenheit; however, the High Desert climate produces substantial seasonal extremes, with summer temperatures frequently exceeding 100 degrees and winter lows occasionally falling below freezing. Overall, the District's service area climate is generally consistent with climatic conditions across the RUWMP Planning Area. A more detailed discussion of Planning Area's climate characteristics is provided *in Sub-Chapter 2.1.5 Climate of Regional Chapter 2 – The Mojave Region.*

13.2.1.1 Climate Change

Climate change is driven by increasing concentrations of atmospheric carbon dioxide and other greenhouse gases, resulting in rising temperatures and greater hydrologic variability. These effects underscore the importance of considering climate change in this 2025 RUWMP. While the CWC does not prescribe specific climate change planning or management measures for retail water suppliers, it emphasizes that climate change is an appropriate consideration for general water management and planning. Accordingly, climate change is a critical factor in assessing the availability and reliability of water supplies, as well as future demand projections. A detailed discussion of climate change impacts on the District's water supplies and demands, as well as those of the RUWMP Planning Area at-large, is provided in *Sub-Chapter 2.1.5 Climate of Regional Chapter 2 – The Mojave Region*.

Sub-Chapter 13.3 – Population, Land Use, Economy, and Demographics

Service area population and land use projections are critical to developing a useful planning framework as population dynamics and growth are a primary influence on water use. These projections directly influence planning measures for system supply, delivery, infrastructure, and demand management. Similarly, understanding the service area's economic, social, and demographic trends provide valuable insight to water management and planning. This sub-chapter addresses these factors to provide a supportable basis for forecasting future water use.

13.3.1 Current Population and Historic Trends

Population estimates for the District are based on the population forecast prepared in 2020 by the Center for Economic Forecasting and Development at the University of California, Riverside (UCR Study), which was commissioned by MWA as part of the 2020 Urban Water Management Plan cycle. The UCR Study developed population estimates for the entire MWA service area as well as for individual retailer water supplies using a comprehensive economic and demographic modeling approach.

In 2023, as part of MWA's Master Plan development, the agency reviewed and refined the UCR Study population projections using updated information not available during the study's development, including 2020 Census data and other available demographic indicators, to ensure that near-term population levels and growth patterns were accurately represented. Where appropriate, adjustments were applied to align study estimates with observed population totals while maintaining the long-term growth trajectory established by the UCR Study.

Population projections for the District reflect these regionally refined UCR Study estimates and therefore align with those used by the other retailers participating in the 2025 RUWMP. This approach ensures that demand projections developed for participating parties are consistent with basin-wide planning assumptions and analyses. Detailed methodologies used to develop and refine the regional population projections included in the UCR Study are presented in *Sub-Chapter 2.1.6 Current and Projected Population of Regional Chapter 2 – The Mojave Region*.

Historical population trends within the District have generally followed broader regional growth patterns associated with residential development, employment opportunities, and land availability in the High Desert. Much of the growth over the past several decades has been characterized by low-density residential development to serve the needs of a growing population. Continued growth is anticipated over the planning horizon, which will influence future water demand, infrastructure requirements, and resource management strategies. The population estimates presented in this sub-chapter provide the basis for the demand projections discussed in subsequent sub-chapters.

Table 13-3 presents the District's historical population while **Table 13-4** presents the District's population growth over the last decade.

TABLE 13-3: HISTORICAL POPULATION

1990	2000	2010	2015	2020	2025
7,515	8,062	9,534	9,929	10,227	10,375

TABLE 13-4: POPULATION GROWTH RATE - 2015-2024

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Population	9,929	10,012	10,090	10,164	10,216	10,227	10,257	10,286	10,316	10,345
Growth Rate		0.84%	0.78%	0.73%	0.51%	0.11%	0.29%	0.28%	0.29%	0.28%

13.3.2 Projected Population

CWC Section 10631(a) requires urban retail water suppliers to evaluate projected service area populations while considering past growth rates, economic conditions, and anticipated land use changes. Coordination with local land use planning efforts helps ensure that anticipated development patterns are appropriately represented in long-term demand forecasting.

Population within the District is generally stable and characterized by slow growth as compared to other Hi-Desert communities. The District's proximity to Joshua Tree National Park attracts seasonal visitors and short term occupants who contribute to water demand, particularly during peak visitor periods, but these users do not represent permanent service area population. Similarly, the District serves a significant number of intermittently occupied connections, including second homes and short-term rental properties, which may generate demand when occupied but are not equivalent to year-round residential population.

While the Hi-Desert continues to attract modest growth the District's service area is characterized primarily by low-density residential development and limited large-scale economic drivers, which constrain the pace of sustained population expansion over time.

More broadly, incorporated areas served by municipal water providers within the RUWMP Planning Area are projected to accommodate a substantial share of future regional population growth relative to unincorporated areas as illustrated in *Sub-Chapter 2.1.6 Current and Projected Population of Regional Chapter 2 – The Mojave Region.*

Table 13-5 presents the District's projected population and associated growth rates through 2060.

TABLE 13-5: POPULATION FORECAST AND GROWTH RATE

	2025	2030	2035	2040	2045	2050	2055	2060
JBWD	10,375	10,536	10,673	10,800	10,919	11,029	11,131	11,225
Annual Growth Rate		1.55%	1.30%	1.19%	1.10%	1.01%	0.92%	0.84%

13.3.3 Current and Projected Land Use

The predominant land use within the District's service area is residential, consisting largely of low-density, single-family development. While substantial areas of vacant and undeveloped land remain, land use patterns reflect an emphasis on maintaining the community's rural character and open space. In contrast to other MWA retailer service areas, the District's proximity to Joshua Tree National Park has influenced the development of hospitality and commercial land uses that support tourism activity. In addition, several small-scale residential developments have been proposed within the service area. These developments are generally consistent with anticipated infill and modest growth patterns and reflected in the population projections described in this sub-chapter.

13.3.4 Economic Trends & Other Social and Demographic Factors

Economic, social, and demographic conditions within the District's service area are generally consistent with those observed throughout the RUWMP Planning Area. The local economy is influenced by a combination of tourism-related activity associated with Joshua Tree National Park, regional employment centers, and the presence of the Marine Corps Air Ground Combat Center at Twentynine Palms. These factors contribute to a mix of permanent and temporary populations, including residents, visitors, and military personnel.

Housing within the service area is predominantly composed of single-family residences, with development patterns characterized by low-density, rural residential uses. Broader economic

and demographic trends, including income levels, employment patterns, and population characteristics, generally reflect those of the surrounding High Desert region. Additional discussion of regional economic, social, and demographic conditions is provided in *Sub-Chapter 2.1.7.2 Economic Trends and Other Social and Demographic Factors of Regional Chapter 2 – The Mojave Region*.

Sub-Chapter 13.4 – Water Supply and Infrastructure Characterization

The District's water supply portfolio is centered on locally managed groundwater resources, supported by infrastructure and management programs that ensure reliable delivery to customers. This sub-chapter describes the District's water supply sources, associated management frameworks, and the infrastructure used to extract, store, and convey water throughout the service area. Together, these elements define the operational and planning foundation for maintaining long-term water supply reliability.

13.4.1 Groundwater

Groundwater is the primary water supply source for the District. The District relies on groundwater pumped from the Copper Mountain Valley Groundwater Basin (DWR Basin No. 7-11) and the Joshua Tree Groundwater Basin (DWR Basin No. 7-62) to meet potable water demands within its service area. These basins are locally managed groundwater systems that serve as the foundation of the District's water supply portfolio.

The District manages its groundwater resources through ongoing monitoring, production management, and the use of supplemental imported supplies from MWA to support groundwater recharge and long-term basin conditions. As a long-term management objective, the District seeks to offset groundwater production through recharge of supplemental supplies to the extent imported water is available, financially feasible, and operationally practical. Although recharge and production may not balance in every individual year due to hydrologic conditions, imported water availability, infrastructure capacity, and cost, this approach supports long-term basin sustainability and allows the District to maintain a reliable, locally controlled groundwater supply portfolio capable of meeting current and projected demands.

13.4.1.1 Copper Mountain Groundwater Basin Supplies

The Copper Mountain Valley Groundwater Basin underlies a substantial portion of the District's service area and serves as a source of groundwater supply. Located in the Morongo Basin area of San Bernardino County, the basin is characterized by alluvial aquifer systems that store and transmit groundwater derived from natural recharge, subsurface inflows, and incidental recharge sources. As described in the District's 2020 UWMP, the basin contains an estimated 264,000 acre-feet of usable groundwater in storage, representing a significant

long-term water supply resource. The basin is not identified by the DWR as being in a condition of overdraft, indicating that current basin conditions support continued groundwater use under existing management practices.

Groundwater within the Copper Mountain Valley Basin is not subject to adjudication but is managed through a combination of local and regional planning efforts. The District monitors groundwater conditions through a combination of local and regional planning efforts. The District monitors groundwater conditions and manages production to support long-term basin sustainability. In addition, the District coordinates with MWA to utilize SWP supplies delivered via the MBP. These imported supplies supplement local groundwater resources and support recharge, contributing to the long-term reliability of the basin.

Historical production from the basin reflects the District's reliance on this resource to meet customer demands. **Table 13-6** presents the District's recent groundwater production from the Copper Mountain Valley Basin, which serves as the basis for estimating the District's managed groundwater supply within the basin under current and projected conditions.

TABLE 13-6: LAST FIVE YEARS OF COPPER MOUNTAIN VALLEY BASIN SUPPLY (AFY)

Year	Copper Mountain Valley Basin Supply
2021	590
2022	370
2023	117
2024	116
2025	44

The District will continue to rely on groundwater from the Copper Mountain Valley Basin as a component of its water supply portfolio. For planning purposes, projected groundwater supply from the basin is based on the District's average production over the 2021-2025 period, as shown in **Table 13-6**. This approach provides a representative estimate of baseline production under recent production patterns and supports evaluation of supply availability under normal, single dry, and multiple dry year scenarios through 2050. However, the projections presented in **Table 13-7** and **Table 13-8** are planning estimates and are not intended to prescribe the precise volume of groundwater that must be produced from the Copper Mountain Valley Basin in any given year. Actual future production from the basin may vary based on operational needs, well availability, water quality considerations, infrastructure improvements, and other District management decisions.

TABLE 13-7: PROJECTED COPPER MOUNTAIN VALLEY BASIN SUPPLY THROUGH 2030 (AFY)

Year Type		Copper Mountain Valley Basin Supply
Normal		245
Single Dry-Year		245
Multi-Year Drought	2026 (1st Year)	245
	2027 (2nd Year)	245
	2028 (3rd Year)	246
	2029 (4th Year)	247
	2030 (5th Year)	247

TABLE 13-8: PROJECTED COPPER MOUNTAIN VALLEY BASIN SUPPLY THROUGH 2050 (AFY)

Total Supply		2030	2035	2040	2045	2050
Normal		247	250	253	255	257
Single Dry-Year		247	250	253	255	257
Multi-Year Drought	Year 1	247	250	253	255	257
	Year 2	248	250	253	255	257
	Year 3	248	251	253	256	257
	Year 4	249	252	254	256	257
	Year 5	249	252	254	257	258

13.4.1.2 Joshua Tree Groundwater Basin Supplies

The Joshua Tree Groundwater Basin underlies a portion of the District's service area and serves as a source of groundwater supply within the District's water supply portfolio. The basin is located within the Morongo Basin area of San Bernardino County and is characterized by alluvial aquifer systems that store and transmit groundwater derived from natural recharge, subsurface inflows, and incidental recharge sources. As described in the District's 2020 UWMP, the basin contains an estimated 293,000 acre-feet of usable groundwater storage, representing a substantial volume of groundwater that supports the District's long-term water supply planning.

Groundwater within the Joshua Tree Basin is not subject to adjudication and is managed through a combination of local and regional planning efforts. The District monitors groundwater conditions and manages production to support improved groundwater management and long-term basin sustainability. In addition, the District coordinates with MWA to utilize imported SWP supplies delivered via the MBP. These imported supplies are used to supplement local groundwater resources and support groundwater replenishment efforts within the basin.

Historical production from the basin reflects its role in supporting system demands in conjunction with supplies from the Copper Mountain Valley Basin. **Table 13-9** presents the District's groundwater production from the Joshua Tree Basin over the 2021-2025 period, which serves as the basis for estimating the District's managed groundwater supply within the basin under current and projected conditions.

TABLE 13-9: LAST FIVE YEARS OF JOSHUA TREE BASIN SUPPLY (AFY)

Year	Joshua Tree Basin Supply
2021	722
2022	925
2023	1,155
2024	1,190
2025	1,232

The District will continue to rely on groundwater from the Joshua Tree Basin as a component of its water supply portfolio. For planning purposes, projected groundwater supply from the basin is based on the District's average production over the 2021-2025 period, as shown in **Table 13-9**. This approach provides a representative estimate of baseline production under recent production patterns and supports evaluation of supply availability under normal, single dry, and multiple dry year scenarios through 2050. However, the projections presented in **Table 13-10** and **Table 13-11** are planning estimates and are not intended to prescribe the precise volume of groundwater that must be produced from the Joshua Tree Basin in any given year. Actual future production from the basin may vary based on operational needs, well availability, water quality considerations, infrastructure improvements, and other District management decisions.

TABLE 13-10: PROJECTED JOSHUA TREE BASIN SUPPLY THROUGH 2030 (AFY)

Year Type		Joshua Tree Basin Supply
Normal		1,045
Single Dry-Year		1,045
Multi-Year Drought	2026 (1st Year)	1,045
	2027 (2nd Year)	1,045
	2028 (3rd Year)	1,049
	2029 (4th Year)	1,053
	2030 (5th Year)	1,053

TABLE 13-11: PROJECTED JOSHUA TREE BASIN SUPPLY THROUGH 2050 (AFY)

Total Supply		2030	2035	2040	2045	2050
Normal		1,053	1,065	1,077	1,085	1,094
Single Dry-Year		1,053	1,065	1,077	1,085	1,094
Multi-Year Drought	Year 1	1,053	1,065	1,077	1,085	1,094
	Year 2	1,057	1,065	1,077	1,085	1,094
	Year 3	1,057	1,069	1,077	1,089	1,098
	Year 4	1,061	1,073	1,081	1,089	1,098
	Year 5	1,061	1,073	1,081	1,094	1,102

13.4.2 Groundwater Quality

Groundwater produced by the District is sourced from wells completed in the Copper Mountain Valley and Joshua Tree Groundwater Basins and is treated, as necessary, to meet all applicable federal and state drinking water standards prior to distribution. Groundwater quality within these basins reflects a combination of natural hydrogeologic conditions and localized influences, including land use and recharge patterns. The District conducts routine groundwater quality monitoring in accordance with regulatory requirements to ensure the continued safety and reliability of its potable water supply.

Detailed information regarding the quality of water delivered to customers, including detected constituents, regulatory compliance status, and treatment practices, is provided annually in the District's Consumer Confidence Report (CCR). The most recent available report is the 2024 CCR, published in June 2025, which reflects water quality data from the 2024 calendar year in accordance with state reporting requirements that mandate annual preparation and distribution of CCRs by July 1 of the following year. The CCR summarizes monitoring results for the most recent reporting year and demonstrates compliance with primary drinking water standards established by the U.S. Environmental Protection Agency and the State Water Resources Control Board Division of Drinking Water (SWRCB). The District's most recent CCR is available through the District's website and provides the most current information on potable water quality conditions.[4]

While this section focuses on groundwater quality as it pertains to the District's supply sources, a broader discussion of water quality conditions throughout the Mojave Region, including basin-wide characteristics, regulatory considerations, and regional management issues is presented in *Sub-Chapter 3.1.2 of Regional Chapter 3 – Regional Water Supply Characterization.*

Table 13-12 presents a summary of groundwater quality constituents based on information reported in the District's 2024 CCR. The table reflects a subset of reported constituents and has been adapted for clarity and relevance to this UWMP.

[4] Joshua Basin Water District 2024 CCR available at: https://www.jbwd.com/files/331985fa3/CCR+ADA+2024.pdf

TABLE 13-12: JOSHUA BASIN WATER DISTRICT POTABLE WATER QUALITY

Water Quality Standards	Goal Level	Max Level	Range	Amount Detected
Primary Standards				
Arsenic (ppb)	0.004	10	ND - 4.9	2.2
Chlorine (ppm)	4 (as Cl2)	4.0 (as Cl2)	0.79 - 1.01	0.91
Chromium (ppb)	100	50	12 - 37	24
Fluoride (ppm)	1	2.0	0.46 - 0.83	0.66
Goss Alpha Particle Activity (pCi/L)	0	15	2.46 - 4.3	3.38
Hexavalent Chromium (ppb)	20	10	13 - 38	22.4
Nitrate as N (ppm)	45	45	2.1 - 6.3	3.22
TTHMs [total trihalomethanes] (ppb)	N/A	80	4.3 - 26	15.15
Copper (ppm)	0.3	1.3	0.013 - 0.092	0.061
Lead (ppb)	0.2	15	ND - 1.2	ND
Secondary Standards				
Chloride (ppm)	N/A	500	7 - 17	13
Color	N/A	15	N/A	ND
Manganese (ppb)	N/A	50	N/A	ND
Specific Conductance (umho/cm)	N/A	1,600	240 - 490	335
Sulfate (ppm)	N/A	500	9.2 - 120	40.8
Total Dissolved Solids (TDS) (ppm)	N/A	1,000	130 - 180	162
Turbidity (NTU)	N/A	5	ND - 3.2	0.3
Zinc (ppm)	N/A	5	N/A	ND
Federal Unregulated Contaminates				
Bromodichloromethane (ppb)	N/A	N/A	1.1 - 4.4	2.75
Bromoform (ppb)	N/A	N/A	1.5 - 11	6.25
Chloroform (ppb)	N/A	N/A	ND - 1.5	0.75
Dibromochloromethane (ppb)	N/A	N/A	1.7 - 9.1	5.4
Sodium (ppm)	N/A	N/A	37 - 60	45.25

13.4.3 Recycled Water Supplies

The District does not currently utilize recycled water as part of its water supply portfolio and has no plans to develop recycled water supplies within the planning horizon. The development of recycled water infrastructure is constrained by the District's relatively small and dispersed customer base, limited wastewater generation, and the absence of centralized wastewater treatment facilities necessary to support recycled water production and distribution. Given these conditions, recycled water is not considered a feasible or cost-effective supply option at this time. Accordingly, no recycled water supplies are included in the District's current or projected water supply portfolio.

13.4.4 Desalination Opportunities

The UWMPA requires urban water suppliers to evaluate potential opportunities for the use of desalinated water CWC Section 10631[i]. Based on current conditions, desalination is not considered a viable supply option for the District due to the absence of suitable source waters and the substantial cost associated with treatment, conveyance, and disposal. Therefore, the District has no plans to develop desalination facilities, and desalinated supplies are not incorporated into the supply projections presented in this sub-chapter.

13.4.5 Water Transfers and Exchanges

The District does not currently participate in formal water transfer or exchange programs as part of its water supply portfolio. Unlike adjudicated basins within the MWA service area, the groundwater basins underlying the District's service area are not subject to court-ordered allocation frameworks that facilitate transfers of production rights among parties. The District's water supply is primarily derived from locally managed groundwater resources, supplemented by imported supplies made available through MWA. While the District coordinates with MWA and regional partners regarding water supply planning and use of imported supplies, these activities do not constitute formal transfer or exchange mechanisms. Accordingly, water transfers and exchanges are not included as a component of the District's current or projected water supply portfolio.

13.4.6 Supply Summary

Groundwater serves as the District's principal water supply source. These supplies, derived from the Copper Mountain Valley and Joshua Tree Groundwater Basins, are sufficient to meet existing and projected demands under a range of hydrologic conditions. The District's overall groundwater system benefits from substantial available storage across both basins and ongoing management actions to support long-term reliability. In addition, the District participates in regional programs with MWA, through which SWP supplies are delivered to the Morongo Basin via the MBP and recharged for storage. These recharged imported supplies augment local groundwater resources and support long-term basin conditions.

The District's water supplies are managed as an integrated groundwater system consisting of locally derived groundwater and recharged imported supplies. This system includes native groundwater in storage within the Copper Mountain Valley and Joshua Tree Basins, supported by natural recharged from precipitation, subsurface inflows, and incidental recharge sources. These supplies are further supported by imported water delivered by MWA and recharged within the basins, which serves to offset groundwater production. The District monitors groundwater levels and manages production across both basins to maintain system reliability and respond to changing demand and hydrologic conditions.

Given the substantial volume of groundwater in storage and the District's active groundwater management approach, sufficient supplies are available to meet projected demands under normal, single dry year, and multiple dry year conditions throughout the planning horizon. Accordingly, the District's managed groundwater production over the planning horizon represents the supply available to meet system demands. Total managed groundwater production from 2021 through 2025 is shown in **Table 13-13**.

TABLE 13-13: DISTRICT'S MANAGED GROUNDWATER PRODUCTION 2021-2025 (AFY)

Year	Groundwater Production
2021	1,333
2022	1,299
2023	1,276
2024	1,307
2025	1,292

Projected groundwater supplies are derived from the demand projections described in *Sub-Chapter 13.5 – Water Use Characterization*. Given the District's actively managed groundwater system, which includes substantial available storage within the Copper Mountain Valley and Joshua Tree Basins as well as imported recharge, groundwater production is adjusted to meet water demands through the managed groundwater system. Accordingly, projected groundwater supplies for the planning horizon are shown in **Table 13-14** and **Table 13-15**.[5]

TABLE 13-14: DISTRICT'S PROJECTED MANAGED GROUNDWATER SUPPLY 2026 – 2030 (AFY)

Year Type		Managed Groundwater Production
Normal		1,290
Single Dry-Year		1,290
Multi-Year Drought	2026 (1st Year)	1,290
	2027 (2nd Year)	1,290
	2028 (3rd Year)	1,295
	2029 (4th Year)	1,300
	2030 (5th Year)	1,300

TABLE 13-15: DISTRICT'S PROJECTED MANAGED GROUNDWATER SUPPLY THROUGH 2050 (AFY)

Managed Groundwater Production		2030	2035	2040	2045	2050
Normal		1,300	1,315	1,330	1,340	1,350
Single Dry-Year		1,300	1,315	1,330	1,340	1,350
Multi-Year Drought	Year 1	1,300	1,315	1,330	1,340	1,350
	Year 2	1,305	1,315	1,330	1,340	1,350
	Year 3	1,305	1,320	1,330	1,345	1,355
	Year 4	1,310	1,325	1,335	1,345	1,355
	Year 5	1,310	1,325	1,335	1,350	1,360

[5] The values presented in **Table 13-14** and **Table 13-15** have been rounded to reflect congruency with the projected demands presented in *Sub-Chapter 13.5 – Water Use Characterization*.

13.4.7 Delivery System Details

The District's potable water system conveys groundwater from wells located throughout the service area to storage and distribution facilities that deliver water to customers. Extracted groundwater is conveyed to one of the District's storage reservoirs, which collectively provide approximately 12.3 million gallons of storage before being distributed through a pressurized potable water system. The distribution system consists of more than 300 miles of pipeline and approximately active 4,881 service connections.

Sub-Chapter 13.5 – Water Use Characterization

Understanding water use characteristics is essential for the District to reliably and cost-effectively manage its water supplies and meet the needs of customers within its service area. This sub-chapter characterizes the District's retail customer water needs – current and forecast over the next few decades. Characteristics regarding how water use varies amongst different land use classifications, throughout the year, and under differing hydrologic conditions, help to bolster that understanding.

A thorough characterization and analysis provides a realistic prediction of future water use based upon the District's past and current water use, in addition to considerations of anticipated growth, new regulations, climate change conditions and trends in customer water use behaviors. The analysis presented in this sub-chapter utilizes the water use forecast methodology presented in *Sub-Chapter 4.2 of Regional Chapter 4 – Water Use Characterization* which examines each water use sector for a variety of factors before aggregating the information into a comprehensive projection of customer water use that becomes the foundation for integration with the District's water supplies, presented in *Sub-Chapter 13.4 – Water Supply and Infrastructure Characterization,* to assess long-term water system reliability, presented in *Sub-Chapter 13.7 – Water System Reliability and Drought Risk Assessment.*

As discussed in *Regional Chapter 1 – Introduction*, there have been no legislative changes to the UWMPA since the adoption of the District's 2020 UWMP; however, updates to annual water use reporting have been implemented. These include Urban Water Use Objective (UWUO) reports, and monthly drought and conservation reporting to the Safe and Affordable Funding for Equity and Resilience (SAFER) portal that are consolidated annually into an auto-generated Clearinghouse Annual Inventory Report (CAIR).

This section is organized as follows:

Current Customer Water Use – This subsection presents actual water use data reflecting the District's residential and non-residential customers for 2021 through 2025 as well as distribution system losses for this same period.

Compliance with Urban Water Use Objectives and past urban water use efficiency efforts – This subsection documents the derivation of the District's UWUO, comparison to the District's

actual water use, UWUO reporting process, and past urban water use efficiency efforts, including the District's 2020 GPCD target.

Forecasting Customer Use – This subsection presents the derivation and results of future water use forecasts for potable and non-potable water within the District's service area and estimation of distribution system losses. This subsection also estimates the variations in customer water use the District should expect during years with low rainfall as well as discusses longer-term climate change considerations.

Forecasting Water Use for DRA and Annual Assessment – This subsection focuses on the subset of the customer water use forecast that is necessary for completing the five-year Drought Risk Assessment (DRA) and defining the "unconstrained demand" for purposes of the District's annual water supply and demand assessment.

Projecting Disadvantaged Community Water Use – This subsection presents the estimated water use necessary to meet lower income households, pursuant to CWC Section 10631.1.

13.5.1 Current Customer Water Use

As described in *Sub-Chapter 13.2 – Water Service and System Description*, the District provides water service to approximately active 4,881 service connections within its service area. Under normal operating conditions, customers are served groundwater supplies pumped from wells located throughout the District and treated to meet all applicable state and federal drinking water standards. Information regarding the District's current customers, recent water use patterns, and expected trends in water demand provides the basis for developing the water use forecasts presented in this 2025 RUWMP. Furthermore, annual records of actual water use provide the basis for determining the District's compliance with its UWUO, reported annually to DWR beginning in January of 2024.

13.5.1.1 Customer Water Use 2021-2025

Recent customer water use data assists the District in understanding water use trends, effects of any temporary use restrictions imposed during the most recent prolonged drought and recovery from such temporary restrictions, effects of long-term demand management measures, and other pertinent water use factors relevant to its forecast of future water use. The District is also required to quantify past customer water use pursuant to CWC Section 10631(d)(1). The District records potable water use within five primary categories:

Single-Family Residential

Multi-Family Residential

Commercial and Institutional

Irrigation

Other

Table 13-16 presents the District's past customer potable water use by customer classification for 2021-2025 in acre-feet.

TABLE 13-16: POTABLE CUSTOMER USE 2021-2025 (AF)

Use Category	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Single-Family Residential	2021	55	47	44	59	67	72	88	90	80	79	52	54	785
	2022	48	45	43	62	58	68	84	56	76	56	51	44	692
	2023	45	35	40	42	46	61	64	76	73	55	52	47	635
	2024	42	37	40	38	49	63	70	83	83	60	73	35	673
	2025	48	45	39	44	55	61	66	84	69	53	55	41	660
Multi-Family Residential	2021	7	6	6	7	8	7	8	9	8	8	6	6	87
	2022	7	6	6	7	6	7	8	6	8	7	6	6	79
	2023	6	6	6	6	6	8	8	8	9	6	6	5	81
	2024	6	6	6	6	6	8	7	10	9	7	8	5	84
	2025	6	6	5	5	6	7	7	9	8	8	7	6	80
Commercial/ Institutional	2021	11	9	8	12	15	16	20	23	18	21	13	12	176
	2022	11	10	10	14	14	15	23	10	18	13	13	11	160
	2023	12	9	8	9	11	15	14	17	18	14	12	11	151
	2024	9	8	8	8	10	15	16	20	21	15	14	10	153
	2025	10	10	9	10	12	15	16	20	17	15	13	11	157
Irrigation	2021	0.2	0.1	0.2	0.3	0.3	0.3	0.5	0.4	0.5	0.5	0.3	0.3	4
	2022	0.3	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	3
	2023	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.1	2
	2024	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.3	0.3	0.3	0.3	0.2	2
	2025	0.2	0.1	0.1	0.2	0.3	0.6	0.5	1.2	0.5	0.2	0.2	0.1	4
Other	2021	10	10	8	11	12	12	16	17	16	15	12	15	154
	2022	13	11	12	17	14	16	21	15	18	15	15	13	181
	2023	22	12	14	14	13	18	17	20	21	17	16	16	201
	2024	15	12	14	15	17	19	19	23	25	17	20	15	211
	2025	17	18	15	16	19	19	19	26	21	17	19	17	225
Total Metered Deliveries	2021	84	72	65	89	101	108	133	138	123	124	83	87	1,206
	2022	80	72	71	100	92	105	137	88	121	91	85	74	1,115
	2023	85	62	68	72	77	102	103	122	121	91	87	80	1,070
	2024	72	62	69	67	83	105	112	136	138	99	116	65	1,123
	2025	81	79	69	75	92	102	109	140	117	93	94	75	1,126

The "Other" water use category included in **Table 13-16** captures a range of small, non-standard uses including fire services, vacation rentals, and long-term rentals.

13.5.1.2 Existing Distribution System Losses

Distribution system water losses (also known as "real losses") are the physical water losses from the District's water distribution system up to the point of delivery to the customer's system (e.g., up to the residential water meter).

Since 2016, the District has been required to quantify its distribution system losses using the American Water Works Association Method (AWWA).[6] An electronic copy of the audit in Excel format is to be submitted to DWR by January 1 of each year for the prior year's estimated system losses, using DWR's online submittal tool pursuant to California Code of Regulations (CCR) Section 638.5. Although the AWWA-based audit remains in effect as the primary tool for monitoring distribution system losses, mandated water loss reductions are on the horizon with the SWRCB's April 1, 2023 adoption of volumetric water loss performance standards. Pursuant to CCR Section 996, the SWRCB will require suppliers to reduce real loss by January 1, 2028 to no greater than the real water loss standard calculated in its 2027 audit. After 2028, the District shall assess compliance every three years as an average of recent losses. Additionally, the District will be required to evaluate apparent losses and submit an inventory of apparent losses should average losses exceed the real water loss standard.

Consistent with DWR's 2025 UWMP guidance, distribution system losses are reported using values submitted through DWR's Water Loss Audit Program. **Table 13-17** summarizes the District's reported losses for 2021 through 2024. 2025 data was not available at the time this 2025 RUWMP was prepared due to the reporting schedule associated with the AWWA water loss audit process.

TABLE 13-17: DISTRIBUTION SYSTEM LOSS 2021-2024

2021	2022	2023	2024
7.3%	14.3%	16.3%	12.6%
		Average:	12.6%

Due to the dynamic functions of a pressurized potable water distribution system, the estimated annual distribution system loss as a percentage of water entering the system will vary year to year and month to month. On average, however, the District's distribution system loss represents about 12.6% of water entering the system.

[6] Title 23 California Code of Regulations Section 638.1 et seq.

13.5.1.3 Water Loss Control Standard

CWC Section 10608.34 required the SWRCB to develop water loss control and performance standards (Real Water Loss Standards) applicable to urban retail water suppliers. The Real Water Loss Standard for the District was developed using information submitted as part of the District's annual water loss reporting to the State, specifically for the period 2017 through 2020. The resulting Real Water Loss Standard is 474 gallons per mile of the distribution system (i.e., mains) per day. The resulting Real Water Loss Standard as an average percent of total water supplied is 10.6%. Using the information from the same period, the average "apparent" water loss averaged 2.5% (of total water supplied). The total water loss estimate as a percentage of total water supplied is 13.1%, although recent AWWA audits discussed above show losses closer to 12.6%.

13.5.2 Compliance with Water Use Targets and Objectives

This subsection examines the District's derivation and compliance with state-mandated water use targets and objectives. The Water Conservation Act of 2009, also known as SB X7-7, introduced water conservation targets that served as a valuable measure of progress through 2020 and beyond.

13.5.2.1 Compliance with 2020 Urban Water Use Target

SB X7-7, also known as the Water Conservation Act of 2009, introduced sustainable water use and demand reduction legislation requiring the District to make incremental progress in reducing per capita water use. Specifically, urban water retailers were tasked with achieving a 10% reduction in per capita water use by December 31, 2015, and a 20% reduction by December 31, 2020. Beyond 2020, although reporting on compliance is no longer required, this target remains valuable as a baseline for the District to measure progress on achieving water efficiency goals.

The District's 2020 GPCD target was established in the 2015 UWMP as 157 GPCD, derived as the "gross water use" divided by the population during a defined baseline period, and reduced pursuant to one of four methods defined under CWC Section 10608.20(b). The District's calculation of their 2020 actual GPCD used the same methodology: "Gross water" was defined as total water production measured and reported based upon well production records. This value, divided by the District's estimated population in 2020, resulted in a compliance value of 116 GPCD. Because this value was less than the District's established target, the District was determined to be in compliance with CWC Section 10608.24(b).

Although not required by the UWMPA, in 2025, the District was determined to have an actual GPCD of 111, calculated using the same methodology presented above.

13.5.2.2 Urban Water Use Objective Compliance

In 2018, the California Legislature passed Senate Bill 606 and Assembly Bill 1668, directing the SWRCB to adopt standards to encourage more efficient urban water use. This legislation, known as "Making Conservation a California Way of Life," was adopted in 2024, establishing individualized UWUO for each urban retail water supplier. In contrast to the SB X7-7 per capita targets, this legislation functions as a water budget tailored to a supplier's service area, considering residential indoor use, residential and commercial outdoor use based on local evapotranspiration and irrigable landscape area, water loss, and bonus incentives for potable reuse. In addition to the volumetric UWUO, the regulation establishes performance measures for commercial, industrial, and institutional (CII) sectors. The standards become progressively more stringent through 2040. In each of the first three reporting years, the District submitted required annual reports to the SWRCB and demonstrated that actual water use remained below its calculated UWUO, confirming compliance in 2025

13.5.3 Forecasting Customer Use

Future water use within the District's service area is projected using a regionally consistent forecasting methodology developed as part of the 2025 RUWMP. As described in *Sub-Chapter 4.2 Future Regional Use of Regional Chapter 4 – Water Use Characterization,* this methodology integrates population and land use projections, historical water use trends, and demand management assumptions to estimate future water demands across participating agencies.

Consistent with this approach, the District's future water use projections reflect both anticipated changes in customer demand and continued implementation of water use efficiency measures. Forecasts are developed by considering existing customer use characteristics, projected growth in population and service connections, and expected changes in per capita water use over the planning horizon.

The results of this regional forecasting framework, as applied to the District, are presented in the following subsections and corresponding tables.

13.5.3.1 Existing Customer Future Use

Future water use associated with the District's existing customer base is projected based on current potable water use characteristics and representative GPCD values. As described in Subsection 13.5.2.1, the District's current GPCD, derived from recent water production and population data, reflects the combined water use of all customer sectors, including both residential and non-residential demands.

The methodology used to develop the representative GPCD value for existing customers is fully described in *Sub-Chapter 4.2 Future Regional Use of Regional Chapter 4 – Water Use Characterization.* In general, this approach utilizes total annual potable water production

divided by the corresponding service area population to establish a baseline GPCD value representative of current conditions.

For purposes of projecting future demand associated with existing customers, the District has assumed that current water use levels will remain constant over the planning horizon. This assumption reflects observed demand conditions within the District's service area, where water use has stabilized following prior conservation efforts, regulatory requirements, and long-term demand management measures. As such, existing customer demand is considered "hardened" and no additional reductions in per capita water use have been applied to this customer group.

Accordingly, the District's existing customer demand is projected to remain at approximately 1,285 acre-feet per year, based on a representative GPCD of 111, for the duration of the planning horizon. Because the representative GPCD is derived from total potable water production, it inherently includes distribution system losses; therefore, no separate adjustment for the District's representative loss percentage, as described in the prior subsection, has been applied to the existing customer demand projections.

13.5.3.2 New Customer Future Use

Future water use associated with new customers is projected using a regionally consistent forecasting methodology developed as part of the 2025 RUWMP as described in *Sub-Chapter 4.2 Future Regional Use of Regional Chapter 4 – Water Use Characterization.* This approach applies representative water use factors to projected population growth to estimate incremental demand associated with new development within the District's service area.

Unlike existing customer demand, which is based on observed production, the new customer forecast is developed by aggregating the individual components of the District's GPCD to reflect anticipated water use characteristics for future growth and development. These components distinguish between residential indoor and outdoor use, as well as non-residential demands, and are applied to projected population growth to estimate future demand.

For the District, the representative GPCD components applied to new customers are as follows:

- Indoor Residential Use: 47 GPCD
- Outdoor Residential Use: 0 GPCD
- Total Non-Residential Use: 47 GPCD
- Total Use: 94 GPCD

As with the existing customer demand GPCD, the resulting new GPCD represents total potable water production. However, the composition of this GPCD differs for new customers, as residential indoor water use is reduced over time to reflect compliance with applicable UWUO

indoor standards, while outdoor residential and non-residential (CII) components are assumed to remain constant. The specific implementation schedule and applicable indoor water use standards are described in *Sub-Chapter 4.2 Future Regional Use of Regional Chapter 4 – Water Use Characterization.* Accordingly, the aggregate GPCD applied to new customers declines over the planning horizon as indoor efficiency requirements are incrementally achieved. Because the representative GPCD is based on total potable water production, it inherently includes distribution system losses; therefore, no separate adjustment for the District's representative loss percentage has been applied to new customer demand projections.

Table 13-18 presents the resulting combined existing and future customer water use forecast, with values rounded to the nearest five acre-feet, which serves as the basis for evaluating the District's ability to meet projected demands under normal and drought conditions as described in *Sub-Chapter 13.7 – Water System Reliability and Drought Risk Assessment.*

TABLE 13-18: FORECAST FUTURE WATER USE (VALUES IN ACRE-FEET PER YEAR)

2025	2030	2035	2040	2045	2050
1,285	1,300	1,315	1,330	1,340	1,350

13.5.3.3 Adjusting Water Use Forecasts for Single-Dry and Multiple Dry Conditions

The water use forecast presented in **Table 13-18** represents expected water needs under normal climatic conditions. In some regions, adjustments to this forecast may be warranted under drier conditions to reflect increased irrigation resulting from reduced rainfall. However, within the High Desert climate of the RUWMP Planning Area, urban water use is not typically influenced by variations in rainfall. Landscape and agricultural irrigation demands are not dependent on precipitation to meet water needs; therefore, reduced rainfall does not result in increased water use as it might in more temperate or rainfall-dependent regions. Accordingly, no adjustments have been made to the forecast to account for single dry or multiple dry year conditions. The values presented in **Table 13-18** represent unconstrained demand and are assumed to be consistent across all hydrologic year types.[7]

[7] California Water Code Section 10632(a)(2) states water suppliers should use "unconstrained demand" when performing their annual water supply and demand assessment. This reflects the expected demand prior to implementing shortage response actions as detailed in a Water Shortage Contingency Plan.

13.5.3.4 Climate Change Considerations

Incorporating climate change considerations into water use analysis can help inform long-term planning by identifying potential shifts in demand patterns, such as increased landscape irrigation associated with hotter and drier conditions. However, within the High Desert climate of the RUMWP Planning Area, baseline conditions are already characterized by low precipitation and high evapotranspiration rates. As a result, near-term climate change is not expected to materially alter water use behavior or increase demand beyond levels already reflected in existing conditions. Accordingly, no adjustments have been made to the water use forecast to account for climate change. While long-term climate change may incrementally increase evapotranspiration, such effects are expected to be nominal relative to current conditions. The District will continue to evaluate potential climate-related impacts in future UWMP updates and through ongoing regional water planning efforts.

13.5.4 Forecasting Water Use for DRA and Annual Assessment

This subsection presents the subset of the District's customer water use forecast that is used to evaluate short-term water supply reliability under drought and operational planning conditions. Specifically, this subsection supports two related but distinct analyses required under California Water Code: the five-year Drought Risk Assessment (DRA) and the Annual Water Supply and Demand Assessment (Annual Assessment).

The DRA evaluates projected water demand over a five-year planning horizon under a sequence of dry conditions to assess potential supply shortfalls. The Annual Assessment, by contrast, is conducted each year and evaluates water supply and demand conditions over a rolling twelve-month period spanning July through June, incorporating both current year conditions and near-term projections. Together, these analyses rely on a consistent representation of "unconstrained demand" derived from the District's long-term water use forecast presented in the preceding subsections. The following subsections describe the methodology and results used to develop water demand projections for each of these planning efforts.

13.5.4.1 Projecting Water Use for Five-Year Drought Risk Assessment

The DRA requires the District to evaluate water supply reliability over a five-year planning horizon under a sequence of dry conditions. Consistent with CWC Section 10635 and guidance provided in the 2025 UWMP Guidebook, this assessment is based on a projection of "unconstrained demand" representing anticipated customer water use absent shortage response actions.

For the purposes of the DRA, the District's projected water demands are derived directly from the long-term water use forecast described in the preceding subsections. This forecast incorporates projected changes in population, service connections, and per capita water use, as well as the effects of ongoing water use efficiency measures and regulatory requirements. Because the DRA is intended to evaluate baseline system reliability, no additional demand reductions associated with the District's Water Shortage Contingency Plan (WSCP) are applied.

Projected demands for the DRA are derived from the District's long-term water use forecast developed for the 2025 RUWMP and the District's retail-specific chapter and are expressed on an annual basis for each of the five years within the planning horizon. No additional adjustments are applied; the annual values reflect the same underlying methodology and assumptions used to develop the five-year planning increment forecasts presented elsewhere in this sub-chapter. These demand projections reflect total potable water demand, including residential, commercial, institutional, and other customer uses, as well as distribution losses. The demand projections used for the DRA are consistent with those used in the Annual Assessment to ensure alignment in the District's evaluation of water supply reliability across planning timeframes.

Table 13-19 presents the District's projected unconstrained water demands for the DRA period (2026-2030), with values rounded to the nearest five acre-feet. These values form the basis for the reliability analysis presented in *Sub-Chapter 13.7 – Water System Reliability and Drought Risk Assessment.*

TABLE 13-19: FORECAST DRA WATER USE FOR 2026 THROUGH 2030 (AFY)

2026	2027	2028	2029	2030
1,290	1,290	1,295	1,300	1,300

13.5.4.2 Projecting Water Use for Annual Assessments

The District conducts an Annual Water Supply and Demand Assessment each year in accordance with CWC requirements. These assessments are prepared and submitted to DWR by July 1 and evaluate anticipated water supply and demand conditions over a rolling twelve-month period spanning July through June.

The District has completed and submitted an Annual Assessment each year since 2022, as required by statute. While the results of these assessments are not included in this UWMP, the methodology and demand assumptions applied are consistent with those presented in this sub-chapter.

13.5.5 Projecting Disadvantaged Community Water Use

Pursuant to CWC Section 10631.1, urban retail water suppliers are required to include projected water use for lower income households in their UWMPs. Per California Health and Safety Code Section 50079.5, a lower income household is defined as one with an income below 80 percent of the area median income, adjusted for family size. For the purposes of the District's sub-chapter within the 2025 RUWMP, the District's service area is recognized as a Disadvantaged Community, and median income assumptions are consistent with those presented in *Sub-Chapter 2.1.7.2 Economic Trends and Other Social and Demographic Factors of Regional Chapter 2 – The Mojave Region.*[8] Accordingly, the water use forecast presented in **Table 13-19** is inclusive of disadvantaged community water use.

[8] California Department of Water Resources, Disadvantaged Communities Mapping Tool, available at: https://gis.water.ca.gov/app/dacs/

Sub-Chapter 13.6 – Water Conservation and Shortage Response

Pursuant to CWC Sections 10631(e) and 10632, this sub-chapter summarizes the District's demand management measures and water shortage response framework. These efforts support efficient use of available water supplies and provide the foundation for managing water use under both normal and shortage conditions.

The District has historically implemented a range of demand management measures aimed at improving water use efficiency, reducing long-term demand, and supporting compliance with applicable State requirements. These measures include ongoing programs, policies, and regional coordination efforts designed to manage existing customer use and guide future water use patterns.

This sub-chapter also highlights key components of the District's Water Shortage Contingency Plan (WSCP), including shortage levels, response actions, monitoring procedures, and communication strategies. The WSCP establishes the framework through which the District evaluates water supply conditions and implements staged response actions during periods of constrained supply. No substantive changes have been made to the District's 2020 WSCP, and the shortage levels, response actions, monitoring procedures, and communication protocols described therein remain applicable; however, water supply reliability information has been updated and is presented in the 2025 RUWMP and this chapter, reflecting current data, assumptions, and planning conditions.

A complete description of the District's WSCP, including detailed implementation procedures and supporting documentation, is provided in Appendix 13a.

13.6.1 Demand Management Measures

The District has implemented a comprehensive set of demand management measures (DMMs) to promote the efficient use of water and support long-term water supply reliability. These measures are consistent with the requirements of CWC Section 10631(e) and are designed to reduce water use, improve system efficiency, and support compliance with State water use objectives.

The District is a member of the Alliance for Water Awareness and Conservation (AWAC), a regional partnership of water agencies within the Mojave Water Agency service area focused on promoting water conservation, public outreach, and coordination of demand management efforts. Through its participation in AWAC and collaboration with regional partners, the District leverages shared resources and consistent messaging to enhance the effectiveness of its conservation programs.

The District will continue to implement and refine its DMMs to support efficient water use and meet applicable regulatory requirements. Additional information regarding recent and planned demand management activities is provided in the following subsections.

13.6.1.1 Foundational Demand Management Measures

The District's foundational DMMs remain generally consistent with those described in the 2020 UWMP and continue to serve as the basis for ongoing water conservation efforts. These measures include water waste prevention ordinances and prohibited provisions, universal metering, conservation-oriented pricing, public education and outreach, programs to monitor and manage distribution system losses, and coordination and staffing support for conservation program implementation through customer communication, enforcement, demand monitoring, and rate-based conservation actions.

Water Waste Prevention Ordinances

The District has adopted and enforces water waste prevention ordinances that prohibit inefficient water use practices. As reflected in the 2020 UWMP and WSCP, these provisions include restrictions on outdoor irrigation during specified hours, limitations on irrigation following measurable rainfall, prevention of runoff to adjacent properties and public rights-of-way, restrictions on washing of hard surfaces except for health and safety purposes, requirements for automatic shut-off nozzles for vehicle washing, and prompt repair of leaks. These ordinances establish the regulatory framework for reducing unnecessary water use and are implemented through monitoring, customer notifications, and enforcement actions as needed.

Metering

All potable water connections within the District are metered, allowing for accurate measurement of customer water use. Metering supports volumetric billings, enables customers to better understand and manage their water use, and provides the data necessary for system monitoring and implementation of water shortage response actions.

Conservation Pricing

The District utilizes a water rate structure designed to recover the costs of providing service across varying levels of water usage. As described in the WSCP, the District has the ability to

implement drought- or shortage- based rate adjustments during periods of constrained supply, which may incidentally encourage reductions in water demand.

Public Education and Outreach

The District implements public education and outreach programs to promote water conservation and increase customer awareness of efficient water use practices. These efforts include ongoing communication through newsletters, website updates, social media, and direct customer outreach, as well as coordination with regional partners to promote consistent conservation messaging.

Programs to Assess and Manage Distribution System Losses

The District conducts ongoing efforts to monitor and manage distribution system losses, including leak detection, routine system maintenance, and repair activities. As described in the WSCP, the District evaluates production and metered use data to identify potential losses and prioritize corrective actions to improve system efficiency and reduce real water losses.

Customer Service and Support

The District provides customer support services to assist with water use efficiency, including customer notifications for unusually high water use, assistance with identifying leaks, and access to water use information. These services enable customers to identify and address inefficiencies and support overall conservation efforts.

Conservation Program Coordination and Staffing Support

The District supports implementation of DMMs through internal staffing and coordination with regional partners, including MWA. This coordination supports consistency in conservation messaging, facilitates information sharing, and enhances the overall effectiveness of conservation program implementation.

13.6.1.2 Recent DMM Activities

Since adoption of the 2020 UWMP, the District has continued to implement its foundational demand management measures as the primary approach to water conservation. Efforts have focused on maintaining and reinforcing existing programs, including ongoing customer outreach, enforcement of water waste prevention provisions, and implementation of water shortage response actions as needed. The District continues to coordinate with regional partners and evaluate opportunities to enhance conservation program effectiveness consistent with local conditions and available resources.

13.6.1.3 Planned DMM Activities

At this time, the District does not anticipate implementing new demand management programs beyond those currently in place. The District's existing DMMs provide a

comprehensive framework for promoting efficient water use and will continue to be implemented and refined as necessary to meet evolving regulatory requirements and operational needs. Planned activities are focused on continued implementation and enhancement of existing measures, including ongoing customer outreach and education, enforcement of water waste provisions, and monitoring of water use and system conditions to support efficient operations. The District will continue to coordinate with regional partners to maintain consistent conservation messaging and identify opportunities for program improvements, as appropriate. The District remains committed to the efficient and responsible use of water resources and will continue to support customer awareness and conservation practices. Consistent with applicable State requirements, including UWUO and water loss reporting requirements, the District will continue to monitor water use and adjust its demand management approach as needed to support long-term water use efficiency and regulatory compliance.

13.6.2 Water Shortage Contingency Plan

The District has adopted a Water Shortage Contingency Plan (WSCP) in accordance with CWC Section 10632. The WSCP establishes a structured framework for managing water supply shortages through defined shortages levels, corresponding response actions, and ongoing monitoring of water supply and demand conditions. The WSCP is designed to ensure that the District can respond effectively to a range of water shortage conditions, from minor supply constraints to more severe drought scenarios. The plan identifies stages of water shortage based on severity of supply conditions and outlines the actions the District may implement to reduce demand, manage available supplies, and maintain essential public health and safety services.

The WSCP also incorporates procedures for evaluating water supply reliability, including coordination with the District's Annual Water Supply and Demand Assessment, which serves as the primary mechanism for identifying and responding to changing water supply conditions on an ongoing basis. Public communication and outreach are integral components of the WSCP and are used to inform customers of water supply conditions, required conservation actions, and applicable restrictions during shortage events. The following subsections summarize key components of the District's WSCP, including shortage levels, response actions, and monitoring and implementation procedures.

13.6.2.1 Summary of Water Shortage Response Actions

The District's WSCP establishes six defined water shortage levels that correspond to increasing degrees of supply constraint, targeted demand reductions, and specific customer and District response actions. This staged framework allows the District to implement progressively more restrictive measures as conditions warrant, while maintaining essential public health, sanitation, and fire protection services. The WSCP defines shortage states ranging from up to a 10% shortage through shortages greater than 50%, and identifies

associated District actions, customer restrictions, and supply augmentation measures, outreach, and enforcement tools. The general framework of shortage levels and representative response actions is summarized below:

- Stage 1 – Up to 10% Shortage:

  The District emphasizes voluntary conservation, expanded public information, customer education, and continued enforcement of baseline water waste prohibitions. Actions include increasing awareness of conservation measures, promoting methods to reduce water use, focused outreach to large users, and publishing WSCP stages and actions. Customers are encouraged to conserve voluntarily and comply with existing water waste restrictions.

- Stage 2 – Up to 20% Shortage:

  The District expands public outreach and steps up enforcement of conservation measures. Stage 2 also includes mandatory restrictions such as limits on outdoor irrigation hours and reduced watering frequency. The WSCP identifies drought rate or surcharge measures and continued enforcement as tools available to help achieve the required reduction.

- Stage 3 – Up to 30% Shortage:

  The District intensifies conservation messaging and enforcement and may provide direct notices to all customers, suspend issuance of potable construction meters, and active emergency intertie or mutual aid actions if needed. Customer restrictions become more stringent, including limiting outdoor irrigation to two days per week, prohibiting irrigation of ornamental turf on public street medians, and restricting irrigation during daytime hours.

- Stage 4 – Up to 40% Shortage:

  Stage 4 builds on prior measures with additional mandatory restrictions and operational controls. Outdoor watering is further reduced to one day per week, customers may be required to repair leaks, breaks, or malfunctions within 48 hours, and the District may limit new meter installations and prohibit certain decorative or non-essential uses. These actions are intended to achieve significant demand reductions while preserving critical service levels.

- Stage 5 – Up to 50% Shortage:

  The District may impose severe restrictions on non-essential uses and compel mandatory water consumption goals or allocations for customers. Outdoor irrigation with potable water may be prohibited, and stronger enforcement and pricing actions may be used to manage increasingly constrained supplies. Stage 5 reflects emergency shortage conditions in which demand management actions become substantially more restrictive.

- Stage 6 – Greater than 50% Shortage:

- Stage 6 represents catastrophic failure or extreme shortage conditions. In addition to all prior measures, the District may activate crisis communications, coordinate with regulatory and public safety agencies, recall temporary meters, suspend new development approvals and new water connections, and restrict outdoor water use to health and safety purposes only. Customer actions at this stage focus on curtailing all non-essential uses and prioritizing critical water needs.

Response actions are cumulative across stages, such that measures implemented at earlier stages remain in effect and are intensified as shortage conditions worsen. The WSCP also provides for supply augmentation and operational adjustments, including use of additional groundwater production and, where available, SWP supplies through MWA, alongside customer demand reductions. The District determines the appropriate shortage stage based on its Annual Water Supply and Demand Assessment and may also act in response to emergency conditions, infrastructure failures, or disaster declarations.

13.6.2.2 Summary of Monitoring Procedures and Implementation

The District's WSCP includes procedures for monitoring water supply and demand conditions and implementing appropriate response actions based on observed and anticipated conditions. These procedures ensure that shortage response actions are timely and commensurate with the severity of supply constraints. The District monitors key indicators of water supply reliability, including groundwater production, groundwater levels, customer demand, and overall system conditions. This information is used to evaluate supply availability and inform decisions regarding the initiation, modification, and termination of water shortage stages.

The District's Annual Water Supply and Demand Assessment serves as the primary mechanism for evaluating near-term supply reliability and informing implementation of shortage response actions. Additional detail regarding the Annual Assessment is provided in *Subsection 13.5.4 Forecasting Water Use for DRA and Annual Assessment* of *Sub-Chapter 13.5 – Water Use Characterization*.

Implementation of the WSCP includes coordination among District staff and communication with customers and regional partners. When a water shortage stage is implemented, the District provides public notification of applicable restrictions and conservation measures and monitors compliance to ensure demand reduction targets are achieved.

Sub-Chapter 13.7 – Water System Reliability and Drought Risk Assessment

This sub-chapter evaluates the reliability of the District's water supplies to meet projected demands under a range of hydrologic conditions, consistent with CWC Sections 10631 (c) and 10635. The analysis integrates the water supply characterization presented in *Sub-Chapter 13.4 – Water Supply and Infrastructure Characterization* with the water use projections developed in *Sub-Chapter 13.5 – Water Use Characterization* to assess the District's ability to meet customer demands during normal, single dry, and multiple dry year conditions.

The reliability analysis considers the availability of the District's water supplies, including groundwater production and supplemental supplies, in relation to projected customer demands over the planning horizon. This evaluation is intended to identify potential supply shortfalls and assess the District's capacity to maintain reliable water service under varying conditions. In addition to the long-term reliability analysis, this sub-chapter incorporates the District's Drought Risk Assessment, which evaluates water supply reliability over a five-year planning horizon under a sequence of dry conditions.

The results of this analysis provide the basis for evaluating the District's water supply reliability and inform the implementation of the District's WSCP, as described in *Sub-Chapter 13.6 – Water Conservation and Shortage Response*.

13.7.1 Five Year Drought Risk Assessment

The DRA evaluates the District's ability to meet projected water demands over a five-year planning horizon under a sequence of dry conditions. This assessment provides a forward-looking evaluation of water supply reliability and is intended to identify potential supply-demand imbalances under extended drought scenarios. Projected water demands for the DRA are based on the District's unconstrained demand forecast described in *Sub-Chapter 13.5 – Water Use Characterization* and are expressed on an annual basis over the five-year planning period. These demands reflect anticipated customer use absent implementation of shortage response actions.

Available water supplies are evaluated based on the District's managed groundwater supplies, which include groundwater production from the Copper Mountain Valley and Joshua Tree Basins, stored groundwater, and recharged imported supplies delivered via the MBP. As described in – *Water Supply and Infrastructure Characterization*, the District actively manages these resources as an integrated groundwater system to support long-term reliability. Given the substantial volume of groundwater in storage across both basins and the District's groundwater management approach, the District has flexibility to adjust groundwater production and utilize available stored supplies to meet projected demands under a range of hydrologic conditions.

The DRA compares projected water demand to available supplies to evaluate the District's capacity to meet customer needs over the five-year period. **Table 13-20** presents the results of this analysis, including projected demand, available supplies, and any resulting surplus or shortage for each year of the DRA planning horizon, with values rounded to the nearest five acre-feet.

TABLE 13-20: FIVE YEAR DROUGHT RISK ASSESSMENT (AFY)

	2026	2027	2028	2029	2030
Supply	1,290	1,290	1,295	1,300	1,300
Demand	1,290	1,290	1,295	1,300	1,300
Difference	0	0	0	0	0

13.7.2 Long Term Service Reliability

The UWMPA directs urban water purveyors to analyze water supply reliability in a normal, single dry, and five consecutive dry years over a 20-year planning horizon. The 2025 UWMP Guidebook recommends extending that period to twenty-five (25) years to provide a guiding document for future land use and water supply planning through the next UWMP cycle. The District's long-term service reliability reflects the recommended 25-year planning horizon anticipating a normal, single dry, and five consecutive dry years from 2025 – 2050.

13.7.2.1 Normal and Single Dry Conditions 2030 – 2050

The following analysis evaluates the District's availability to meet projected water demands under normal and single dry year conditions for the 2030 through 2050 planning horizon. This evaluation compares available water supplies to projected customer demands to assess the District's capacity to reliably meet water needs under varying hydrologic conditions. Under both normal and single dry year conditions, the District's supplies are managed through its integrated groundwater system, which provides flexibility in balancing groundwater production, stored supplies, and supplemental recharge resources to meet projected

demands. As a result, available supplies are sufficient to meet projected demands throughout the planning horizon.

Table 13-21 presents the results of the normal and single dry year reliability analyses, including projected demands, available supplies, and resulting surplus or shortage for each timestep from 2030 through 2050. Values are rounded to the nearest five acre-feet.

TABLE 13-21: NORMAL AND SINGLE DRY YEAR WATER SUPPLY AND DEMAND THROUGH 2050 (AFY)

Normal Year	2030	2035	2040	2045	2050
Supply	1,300	1,315	1,330	1,340	1,350
Demand	1,300	1,315	1,330	1,340	1,350
Difference	0	0	0	0	0

Single Dry Year	2030	2035	2040	2045	2050
Supply	1,300	1,315	1,330	1,340	1,350
Demand	1,300	1,315	1,330	1,340	1,350
Difference	0	0	0	0	0

13.7.2.2 Five Consecutive Dry Years 2030 – 2050

The following analysis evaluates the District's ability to meet projected water demands over a five-year period of consecutive dry conditions for the 2030 through 2050 planning horizon. This assessment provides a more conservative evaluation of water supply reliability by examining the potential effects of extended drought conditions on available supplies. Under multiple dry year conditions, the District continues to manage its supplies within its integrated groundwater system, which provides flexibility in balancing groundwater production, stored supplies, and supplemental recharge resources to meet projected demands. This managed approach enables the District to adjust its supply portfolio over time to meet projected demands, even during extended periods of drought.

Table 13-22 presents the results of the multiple dry year reliability analysis, including projected demands, available supplies, and any resulting surplus or shortage for each year of the five-year dry sequence. Values are rounded to the nearest five acre-feet.

Together, the available supplies, when paired against projected demand conditions, demonstrate that the District has sufficient supplies to meet water demands under five consecutive dry year conditions through 2050.

TABLE 13-22: FIVE CONSECUTIVE DRY YEARS WATER SUPPLY AND DEMAND THROUGH 2050 (AFY)

		2030	2035	2040	2045	2050
Year 1	Supply	1,300	1,315	1,330	1,340	1,350
	Demand	1,300	1,315	1,330	1,340	1,350
	Difference	0	0	0	0	0
Year 2	Supply	1,305	1,315	1,330	1,340	1,350
	Demand	1,305	1,315	1,330	1,340	1,350
	Difference	0	0	0	0	0
Year 3	Supply	1,305	1,320	1,330	1,345	1,355
	Demand	1,305	1,320	1,330	1,345	1,355
	Difference	0	0	0	0	0
Year 4	Supply	1,310	1,325	1,335	1,345	1,355
	Demand	1,310	1,325	1,335	1,345	1,355
	Difference	0	0	0	0	0
Year 5	Supply	1,310	1,325	1,335	1,350	1,360
	Demand	1,310	1,325	1,335	1,350	1,360
	Difference	0	0	0	0	0

13.7.3 Annual Reliability Assessment

Each year, the District considers current supply and demand conditions and performs an Annual Water Supply and Demand Assessment pursuant to CWC Section 10632.1 to evaluate real time or near-term circumstances that are different than the DRA scenario. This assessment evaluates actual current water supply and use conditions for a prescribed 12-month forecast (July through the following June). Procedures for conducting the Annual Assessment are contained in the District's Water Shortage Contingency Plan. The District has conducted the assessment as required by the CWC and will continue this planning exercise to provide a reliability assessment for then-current conditions regarding supplies and expected (unconstrained) demands.

13.7.4 Water Supply Reliability Summary

The District's water supply portfolio is capable of meeting the water uses in its service area in normal, single dry, and five consecutive dry years from 2025 through 2050.

Sub-Chapter 13.8 – Energy Intensity Analysis

Pursuant to CWC Section 10631.2, the District evaluates the energy intensity of its water supply and distribution system. Energy intensity is defined as the amount of energy used to extract, treat, and deliver water to customers and is typically expressed in kilowatt-hours per acre-foot (kWh/AF). The District's water supply portfolio is primarily comprised of locally produced groundwater. As a result, energy use is largely associated with groundwater extraction and distribution within the District's service area, rather than long-distance conveyance or advanced treatment processes.

The District continues to monitor energy use associated with its water system operations and will evaluate opportunities to improve operational efficiency where feasible. Total energy intensity is reported in **Table 13-23**.

TABLE 13-23: ENERGY INTENSITY – TOTAL UTILITY APPROACH FOR JAN 2025 THROUGH JAN 2025

Sum of All Water Management Processes	
Volume of Water Entering Process (acre-feet)	1,292
Energy Consumed (kWh)	35,720
Energy Intensity (kWh/acre-foot)	28