Chapter 10
Golden State Water Company – Barstow System

Golden State
Water Company
A Subsidiary of American States Water Company

TABLE OF CONTENTS

[To insert TOC after all retailer and regional chapters have been compiled]

LIST OF TABLES

[To insert LOT after all retailer and regional chapters have been compiled]

SUB-CHAPTER 10.1
INTRODUCTION

The Golden State Water Company – Barstow System (GSWC Barstow) is an investor-owned public utility providing water service to approximately 1 million customers and over 270,000 connections in 80 communities throughout California. Its water systems serve communities spanning from the Clearlake System in the northern portion of the state to the Calipatria System in Southern California. While water rates are set separately for GSWC's customer service areas, oversight of the water rate setting process and operations is provided by the California Public Utilities Commission (CPUC).

GSWC Barstow is located in San Bernardino County in the center of the Mojave River Basin area of the Mojave Desert. The City of Barstow area has long been an important transportation corridor, dating back to its American settlement in the 1830s. People, goods, and animals would travel through the area from Utah and New Mexico to Los Angeles and back. Importantly, water was readily available in the areas where the Mojave River rose to the surface during and after the rainy season on its course through the desert. These locations came to be known as the Fish Ponds and Grapevines areas which are located in and around the GSWC Barstow service area. During a mining boom east of the City of Barstow in the 1860s and 1870s, railways were built to transport goods and people through the area and further into the American interior. These railways were eventually accompanied by major interstate highways, including Route 66, Interstate 15, Interstate 40 and California State Route 58, all of which converge in the City of Barstow. The local economy is closely tied to transportation industry, and it also includes a strong military presence.

Today, the GSWC Barstow service area serves mostly residential connections in the City of Barstow and surrounding unincorporated areas of the San Bernardino County, along with some commercial and industrial customers. Water supply for the GSWC Barstow service area is now primarily derived from groundwater within the Lower Mojave River Valley Groundwater Basin. GSWC Barstow also incorporates water supplies derived from Mojave Water Agency (MWA) water management activities into its groundwater development and use.

Through its participation in the 2025 Mojave RUWMP (2025 RUWMP), GSWC Barstow advances regional strategy that aligns local planning with basin-wide resource management, supports coordinated supply reliability, and positions GSWC Barstow to adapt effectively as conditions evolve.

10.1.1 Background and Purpose

GSWC Barstow 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 chapter.[1] The UWMPA requires urban water suppliers to assess the availability of their supplies to meet forecast water use during average, single-dry and five consecutive drought years through 2050. This chapter specifically addresses GSWC Barstow's evaluation of the aforementioned requirements and verifies that future demands will not exceed supplies while also assuring the availability of supplies in dry-year conditions.

The 2025 RUWMP along with this chapter provides an update to the GSWC Barstow's 2020 UWMP and presents new data and analysis as required by the California Department of Water Resources (DWR) and the California Water Code (CWC) since 2020. The 2025 RUWMP is also a comprehensive regional water planning document that describes existing and future supply reliability, forecasts future water uses, presents demand management progress, and identifies local and regional cooperative efforts to meet projected water use for all urban water suppliers and water users within the Planning Area.

10.1.2 Basis for Plan Preparation

GSWC Barstow operates a Public Water System (PWS) as described in California Health and Safety Code Section 116275. Additionally, GSWC Barstow is classified as an Urban Water Supplier as described in CWC Section 10617, providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. These qualifications require the preparation and adoption of an UWMP every five years. Under CWC Section 10620(d)(1), these requirements may be met through participation in a RUWMP, which the GSWC Barstow, along with all the other Urban Water Suppliers within the Planning Area, have elected to pursue. GSWC Barstow's Public Water System detail is listed in **Table 10-1**.

TABLE 10-1: PUBLIC WATER SYSTEM INFORMATION

PWS NUMBER	PWS NAME	NUMBER OF MUNICIPAL CONNECTIONS
CA1910004	GOLDEN STATE WATER CO - BARSTOW	9,219

[1] California Water Code Sections 10610 through 10657.

10.1.3 Coordination and Outreach

GSWC Barstow coordinated with neighboring agencies and relevant public entities, as required by the UWMPA to ensure consistency with related land use and water resource planning efforts. This coordination included agencies that share common water sources, regional water management entities, and local governments with land use authority. The GSWC Barstow also met the requirements of CWC Section 10621(b) by conducting a required public hearing to encourage community participation. As part of 2025 RUWMP development, these coordination and outreach activities were carried out at the regional level. A detailed description of these efforts is provided in *Sub-Chapter 1.3 Coordination and Outreach of Regional Chapter 1*.

10.1.3.1 Water Supplier Information Exchange

Compliance with CWC Section 10631 is described in *Section 1.3.*

10.1.4 RUWMP Adoption

GSWC Barstow held a public hearing regarding the 2025 RUWMP on May 27, 2026. Before the hearing, the GSWC Barstow made a draft of the 2025 RUWMP available for public inspection on the City's website. 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.

GSWC's Vice President adopted this 2025 RUWMP on May 27, 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 City's website.

GSWC 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 2025 Submittal Tables
- Final Energy Use Tables

10.1.5 Document Organization

This chapter is organized as follows:

- Section 10.2 Water Service and System Description
- Section 10.3 Population, Land Use, Economy, and Demographics
- Section 10.4 Water Supply and Infrastructure Characterization

- Section 10.5 Water Use Characterization
- Section 10.6 Water Conservation and Shortage Response
- Section 10.7 Water System Reliability and Drought Risk Assessment (DRA)
- Section 10.8 Energy Intensity Analysis
- Section 10.9 Summary

SUB-CHAPTER 10.2
WATER SERVICE AND SYSTEM DESCRIPTION

GSWC Barstow is located in the County of San Bernardino and serves approximately 66% of the City of Barstow and surrounding unincorporated areas of the Mojave Desert. The GSWC Barstow service area and City of Barstow boundaries are depicted in **Figure 10-1**.

Elevations within the service area range from 2,073 feet to 2,760 feet above mean sea level. The Mojave River, an intermittent river whose headwaters are in the San Bernardino Mountains, flows mostly underground through the City of Barstow area from west to east and is a major source of groundwater for GSWC Barstow.

GSWC Barstow relies entirely on groundwater from the Centro Subarea of the adjudicated Lower Mojave River Valley Groundwater Basin. GSWC Barstow currently operates 15 active wells with a total well capacity is 15,010 gallons per minute (gpm), or approximately 24,211 acre-feet per year (AFY). This excludes one inactive well that is planned to go back into service following installation of iron treatment.

Table 10-2 shows the historical and current service connections by customer class. Single family and multifamily residential customers account for approximately 90% of service connections in the GSWC Barstow service area.

FIGURE 10-1: GSWC - BARSTOW WATER SERVICE AREA

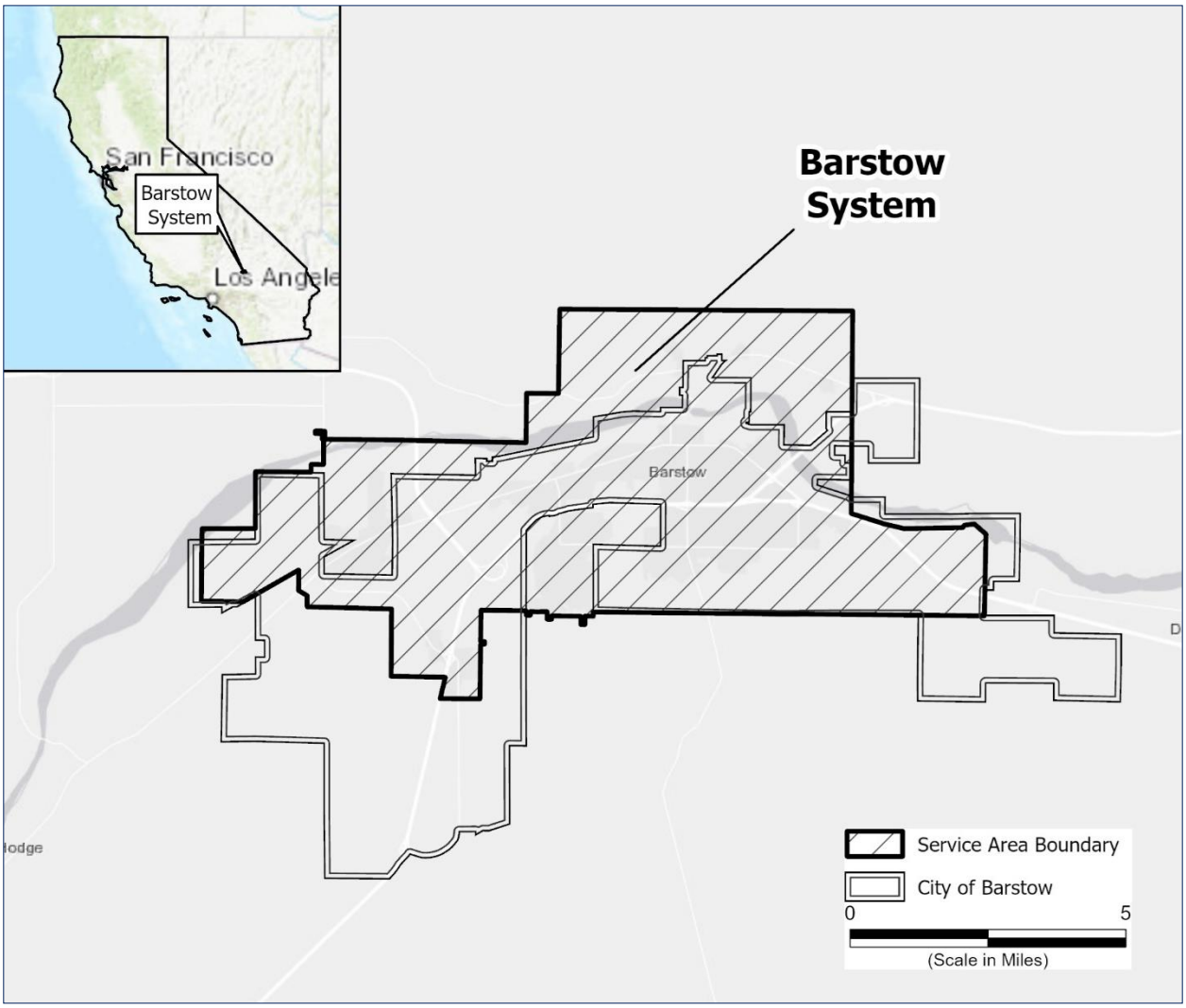


TABLE 10-2: CUSTOMER WATER SERVICE CONNECTIONS

Customer Class	2020	2021	2022	2023	2024	2025
Single Family	7,893	7,899	7,771	7,840	7,807	7,852
Multifamily	458	470	478	476	480	500
Commercial/Institutional	637	632	664	658	648	638
Industrial	9	9	8	9	8	8
Landscape	38	42	43	46	48	50
Hydrant/Construction	39	38	-	-	-	8
Fire Protection	155	158	154	161	159	162

10.2.1 Service Area Climate

GSWC Barstow experiences a high desert climate typical of the Mojave Desert. Based on modeled data from the Oregon State University Parameter Elevation Regression on Independent Slopes Model (PRISM) Climate Group for 1994 to 2024, the average annual rainfall was approximately 4.8 inches per year. Precipitation is largely seasonal, with 65% of precipitation in the wet season from December through March. Based on data from the California Irrigation Management Information System (CIMIS) from the nearby City of Victorville, the average annual reference evapotranspiration (ETo) is approximately 68 inches per year.

Because the average annual ETo exceeds precipitation by approximately 63 inches, and about 65% of the annual precipitation occurs in the wet season, growing turf or other plantings in this region requires a significant amount of irrigation during the dry season. This irrigation demand contributes to the observed seasonal variation in water demand throughout the service area.

A review of long-term climate data from PRISM (1895 to 2024) shows that temperature has increased at an average rate of 0.3°F per decade. Mean annual temperature for 2020 to 2024 was 2.9°F higher than for 1895 to 1960. Review of long-term climate data also shows that rainfall exhibits considerable variability over time, and periods of consecutive years with below-average rainfall are common. Since 1895, sequences of below-average rainfall lasting three or more years have occurred eleven times, and sequences lasting five or more years have occurred four times.

10.2.1.1 Climate Change

Changing climate can affect both water demands and supplies. For example, extreme and higher temperatures can lead to increases in water use, and more frequent, severe,

prolonged droughts could lead to not only less surface water available but also exacerbate ongoing stressors in groundwater basins.

A discussion of these potential changes is included in *Section 2.5*.

SUB-CHAPTER 10.3 POPULATION, LAND USE, ECONOMY, AND DEMOGRAPHICS

Population and land use projections provide the foundation for estimating future water demand within the service area, as changes in population, housing, and development patterns directly influence water use. Evaluation of the GSWC Barstow's economic, social, and demographic trends further refines demand projections by informing water use characteristics and consumption patterns. Collectively, these factors support the development of reliable long-term demand forecasts for planning purposes.

10.3.1 Current Population and Historical Trends

The historical, current, and projected population estimate for the GSWC Barstow service area is based on forecasts prepared by the Mojave Water Agency (MWA) in partnership with the University of California Riverside Center for Economic Forecasting and Development (UCR/Beacon Economics) as part of the *MWA Population Forecast – 2020 Edition* (2020 MWA Population Forecast).

Historical population data from the 2020 MWA Population Forecast were based on two primary sources: the United States Census Bureau (US Census) decennial census and the California Department of Finance (DOF) annual estimates dating back to 1970. US Census data were used to derive population shares by census block to calculate population for subareas and purveyors within each city or town. For purposes of this UWMP, population estimates from the 2020 MWA Population Forecast were refined to incorporate the latest 2020 US Census data.

Historical and current population estimates for the GSWC Barstow service area are provided in **Table 10-3**. It is estimated that GSWC Barstow's service area population was approximately 36,000 in 2025. **Table 10-4** provides the historical population growth rate for the GSWC Barstow service area. Between 2015 and 2024, population in the GSWC Barstow service area have increased modestly, reflecting low but steady net annual growth rates generally ranging from 0.5% to 2%.

As discussed in Section 10.3.4, the City of Barstow is assumed to be demographically representative of the service area. Median age, household income, and other demographic characteristics continue to provide a basis for water demand forecasting in the service area.

TABLE 10-3: HISTORICAL POPULATION

1990	1995	2000	2005	2010	2015	2020	2025
29,905	29,621	29,337	29,755	30,173	32,938	33,762	35,947

TABLE 10-4: POPULATION GROWTH RATE – 2015 - 2024

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Population	32,938	33,103	33,267	33,432	33,597	33,762	34,003	34,245	34,486	35,217
Growth Rate		0.50%	0.50%	0.49%	0.49%	0.49%	0.71%	0.71%	0.70%	2.07%

10.3.2 Projected Population

Accurate population projections are a critical component of water supply planning as they provide the basis for forecasting future water demand, evaluating system capacity, and supporting long-term water management and infrastructure decisions. In accordance with CWC Section 10631(a), GSWC coordinates with local land use agencies to ensure that population and development projections are consistent with anticipated growth within the service area. Population data presented in *Section 2.6.2,* provide the foundation for these projections and support the development of reliable, system-specific water demand forecasts.

As described in the previous section, the population projections are based on the 2020 MWA Population Forecast and refined to incorporate the latest 2020 US Census data. The population projections were developed using a comprehensive econometric model for the MWA service area, which included population estimates for incorporated cities, subareas, and individual water purveyors. The model incorporated economic indicators such as residential housing stock, home prices, and employment trends. As discussed in Section 10.3.3, the population projections were also refined to incorporate growth anticipated in the *Draft City of Barstow General Plan Update 2048* (Draft General Plan Update). By 2060, population in the GSWC Barstow service area is projected to reach approximately 61,500, which is approximately a 71% increase from 2025. Population projections and annual growth rate for the GSWC Barstow service area are provided in **Table 10-5.**

TABLE 10-5: POPULATION FORECAST AND GROWTH RATE

	2025	2030	2035	2040	2045	2050	2055	2060
GSWC – Barstow System	35,947	37,744	39,542	43,137	46,731	54,209	57,861	61,513
Annual Growth Rate		0.98%	0.93%	1.76%	1.61%	3.01%	1.31%	1.23%

10.3.3 Current and Projected Land Use

GSWC Barstow's service area encompasses approximately 66% of the City of Barstow. While the GSWC Barstow service area boundary and the City of Barstow boundary are not coterminous, the entire GSWC Barstow service area falls within the City of Barstow's planning sphere of influence, and future development will continue to be guided by the adopted General Plan and its subsequent updates.

Current land use in the GSWC Barstow service area is primarily zoned for residential uses, with additional areas designated for commercial and industrial development. According to the City of Barstow's *2015–2020 General Plan* (General Plan), the land use patterns that existed in 2015 were not expected to change substantially by 2020 or in the near term thereafter. Residential growth, where anticipated, is expected to consist largely of infill development in neighborhoods already zoned for single-family or multifamily residential uses that are served by GSWC but not yet fully built out. The General Plan also identifies modest growth of commercial and industrial land uses in the southwest portion of the City of Barstow near the Interstate-15/Lenwood Road area. Agriculture remains absent from within the service area, although agricultural uses occur elsewhere in the Lower Mojave River Valley Groundwater Basin.

The City of Barstow is currently preparing *City of Barstow General Plan Update 2048*, which provides a comprehensive update to the City of Barstow's current General Plan. Per the Draft General Plan Update, the Plan Area could potentially result in a growth of 6,608 dwelling units, 18,531 residents, 15,341,198 square feet of non-residential uses, and 10,819 jobs by 2048 compared to 2023. Summary of the future land use plans within the Draft General Plan Update is provided in **Table 10-6.**

The Draft General Plan Update also includes the Barstow International Gateway (BIG) Specific Plan, a large industrial and logistics development proposed by BNSF Railway Company (BNSF). The BIG Specific Plan is a 4,335-acre project that would feature an intermodal rail facility, transload warehouses, and supporting infrastructure to handle freight more efficiently. The BIG Specific Plan would be located partly in incorporated Barstow and partly in an unincorporated portion of San Bernardino County, which the Draft General Plan Update proposes for concurrent annexation to the City of Barstow.

The Draft General Plan Update, BIG Specific Plan, Zoning Amendments, and associated Environmental Impact Report (EIR) are currently in public review. Following the public review, the City of Barstow will proceed toward preparing the Final General Plan Update and EIR, with an eventual adoption decision by the City Council. This would replace the existing General Plan.

To support regional coordination and for long-term planning purposes, this UWMP incorporates growth projections consistent with the Draft General Plan Update and BIG Specific Plan. However, portions of the proposed land use associated with these planning documents are located outside the current certificated service area of GSWC Barstow and, in some cases, outside the existing municipal boundaries of the City of Barstow. Provision of water service to such areas would require, among other actions, annexation to the City and/or expansion of GSWC Barstow's service area, including approval by the California Public Utilities Commission (CPUC).

Accordingly, inclusion of these demands in this UWMP does not represent a commitment or obligation by GSWC to provide water service to these areas. All such service would be subject

to future regulatory approvals, environmental review, and demonstration of adequate water supply, infrastructure, and financial feasibility.

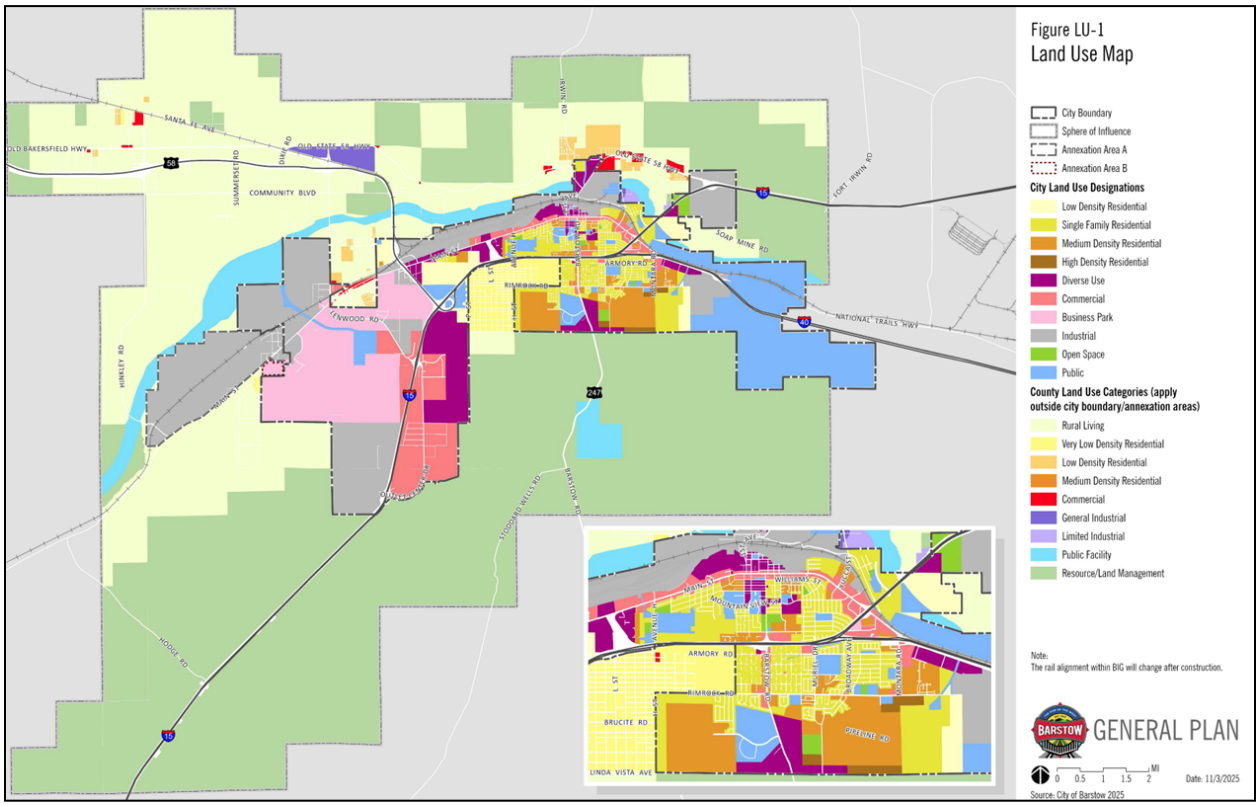
TABLE 10-6: SUMMARY OF LAND USE PLANS IN SERVICE AREA WITH FUTURE RESIDENTIAL UNITS

	Single-family	Multi-family	Non-Residential
Draft General Plan Update	19,738		26,412,790

NOTES: This summary of land use plans is for the entire Draft General Plan Update area, which includes areas outside GSWC Barstow's existing service area.
Source: City of Barstow Proposed General Plan and BIG Project Draft EIR, 2025.

The Draft General Plan Update land use map is provided in **Figure 10-2.**

FIGURE 10-2 CITY OF BARSTOW LAND USE MAP



Source: City of Barstow, 2025. Draft General Plan Update.

10.3.4 Economic Trends & Other Social and Demographic Factors

Demographic characteristics of the GSWC Barstow service area were approximated using data for the City of Barstow. This community has a significant Hispanic population, representing approximately 49% of residents. Median household income is approximately $53,380, which is below the statewide average of approximately $99,000. Owner occupancy rate is around 44%, which is below the California owner occupancy rate of 56% (US Census, 2025).

CHAPTER 10.4 – WATER SUPPLY AND INFRASTRUCTURE CHARACTERIZATION

This chapter describes and quantifies the current and projected water supplies for GSWC Barstow. GSWC Barstow has historically relied upon groundwater supplies as its primary source of supply to meet demands within the service area boundary. GSWC Barstow has also incorporated water supplies derived from MWA water management activities as part of its groundwater development and use actions. All of GSWC Barstow's water supply sources and quantities are described in the following sections.

10.4.1 Groundwater

GSWC Barstow relies entirely on groundwater from the Lower Mojave River Valley Basin. More specifically, GSWC Barstow pumps groundwater from the Centro Subarea, which is a subarea of the Mojave Basin Area as defined in the Mojave Basin Adjudication. Additional information on the Adjudication, Mojave Basin Area, Centro Subarea, and overall groundwater management is provided in *Section 2.3.*

10.4.1.1 GSWC Barstow's Free Production Allowance

The GSWC Barstow service area overlies both the Baja and Centro subareas; however, GSWC only uses supplies derived from the Centro Subarea to serve the GSWC Barstow system. GSWC Barstow's Base Annual Production (BAP) in the Centro Subarea is 14,407 AFY. Its Free Production Allowance (FPA), which is the percentage of the BAP set annually by the Court based on the recommendation of the Mojave Basin Watermaster, is reported under "Golden State Water Company" in annual Mojave Basin Area Watermaster reports. Over the last five years, GSWC's FPA in the Centro Subarea has declined by 9%, as shown in **Table 10-7**. For the 2025-2026 water year, GSWC Barstow's FPA is 56% of its BAP, equivalent to approximately 8,068 AF excluding carryover supplies.

Table 10-7 also shows the groundwater pumped over the past 5 years. Groundwater extractions for the GSWC Barstow service area declined by approximately 9% from 2021 to 2025.

TABLE 10-7: LAST FIVE YEARS OF GSWC BARSTOW'S FPA SUPPLY AND ACTUAL GROUNDWATER PUMPED (AFY)

Year	Percent FPA (a)	GSWC Barstow FPA Supply (a)	GSWC Barstow Groundwater Pumped (b)
2021	65.0%	9,365	6,004
2022	60.0%	8,644	5,604
2023	55.0%	7,924	5,433
2024	56.0%	8,068	5,602
2025	56.0%	8,068	5,442

NOTES:
(a) Values are in water year.
(b) Values are in calendar year.

The current FPA of 56% for GSWC Barstow has been in effect since water year 2024 and aligns with the Production of Safe Yield (PSY) as assessed by the Mojave Basin Watermaster. This ensures that projected water use under normal year, single dry year, and five consecutive dry year conditions remain within sustainable limits. The Centro Subarea continues to experience overdraft, and for planning purposes, the FPA is expected to remain at 56% through 2030, reflecting a stabilized allocation consistent with long-term sustainable production. Accordingly, GSWC Barstow's projected FPA in a normal year, single dry year, and five consecutive dry years through 2030 is set at 56% and is shown in **Table 10-8**.

TABLE 10-8: PROJECTED MOJAVE ADJUDICATION FPA FOR GSWC BARSTOW THROUGH 2030 (AFY)

Year Type		Projected GSWC Barstow FPA
Normal		8,068
Single Dry-Year		8,068
Multi-Year Drought	2026 (1st Year)	8,068
	2027 (2nd Year)	8,068
	2028 (3rd Year)	8,068
	2029 (4th Year)	8,068
	2030 (5th Year)	8,068

For planning purposes, this UWMP conservatively assumes that GSWC Barstow's FPA in the Centro Subarea will remain consistent at 56% through 2050 in all hydrologic year types. **Table 10-9** presents GSWC Barstow's projected supply availability under normal year, single dry year, and five consecutive dry years through 2050. This excludes potential carryover supplies.

TABLE 10-9: PROJECTED MOJAVE ADJUDICATION FPA FOR RETAILER THROUGH 2050 (AFY)

Projected FPA		2030	2035	2040	2045	2050
Normal		8,068	8,068	8,068	8,068	8,068
Single Dry-Year		8,068	8,068	8,068	8,068	8,068
Multi-Year Drought	Year 1	8,068	8,068	8,068	8,068	8,068
	Year 2	8,068	8,068	8,068	8,068	8,068
	Year 3	8,068	8,068	8,068	8,068	8,068
	Year 4	8,068	8,068	8,068	8,068	8,068
	Year 5	8,068	8,068	8,068	8,068	8,068

10.4.1.2 Carryover Water Supplies

GSWC Barstow has taken actions to protect its water supplies against hydrological and regulatory variability. Specifically, GSWC Barstow has invested time and effort in storing water assets for future use through the carryover provisions of the Mojave Basin Adjudication. The carryover water supplies are derived from GSWC Barstow's unused FPA in each year. This carryover supply, however, cannot exceed the previous year's FPA. As such, any unused carryover supply is returned to the Centro Subarea to be considered in the Watermaster's annual Mojave Basin Area Watermaster reports. GSWC Barstow's carryover supply in water year 2024-2025 totals 8,068 AF.

10.4.1.3 Replacement and Make-up Water Supplies

GSWC Barstow did not acquire any replacement or make-up water in the Centro Subarea over the past five water years, as shown in **Table 10-10**.

TABLE 10-10: LAST FIVE YEARS OF REPLACEMENT AND MAKE-UP WATER SUPPLIES (AFY)

Year	Water Acquisitions
2021	0
2022	0
2023	0
2024	0
2025	0

As shown in **Table 10-11**, GSWC does not anticipate any replacement water supplies for use through 2030 in normal year, single dry year, and five consecutive dry years.

TABLE 10-11: PROJECTED WATER SUPPLY ACQUISITIONS THROUGH 2030 (AFY)

Year Type		Projected Water Acquisitions
Normal		0
Single Dry-Year		0
Multi-Year Drought	2026 (1st Year)	0
	2027 (2nd Year)	0
	2028 (3rd Year)	0
	2029 (4th Year)	0
	2030 (5th Year)	0

As shown in **Table 10-12**, GSWC does not anticipate any replacement water supplies for use through 2050 in normal year, single dry year, and five consecutive dry years.

TABLE 10-12: PROJECTED WATER SUPPLY ACQUISITIONS THROUGH 2050 (AFY)

Projected Water Acquisitions		2030	2035	2040	2045	2050
Normal		0	0	0	0	0
Single Dry-Year		0	0	0	0	0
Multi-Year Drought	Year 1	0	0	0	0	0
	Year 2	0	0	0	0	0
	Year 3	0	0	0	0	0
	Year 4	0	0	0	0	0
	Year 5	0	0	0	0	0

10.4.2 Groundwater Quality

The groundwater quality conditions in the Lower Mojave River Valley Groundwater Basin are described in detail in *Section 3.2* and are incorporated herein by reference.

The drinking water quality of the GSWC Barstow system must comply with state and federal water quality regulations. All drinking water standards are set by the U.S. Environmental Protection Agency (USEPA) under the authorization of the Federal Safe Drinking Water Act of 1974. In California, the State Water Resources Control Board (SWRCB), Division of Drinking Water can either adopt the USEPA standards or set more stringent standards, which are then codified in Title 22 of the California Code of Regulations (CCR). There are two general types of drinking water standards:

- Primary Maximum Contaminant Levels (MCL) are health protective standards and are established using a very conservative risk-based approach for each constituent that takes into potential health effects, detectability and treatability, and costs of treatment. PWSs may not serve water that exceeds Primary MCLs for any constituent.
- Secondary MCLs are based on the aesthetic qualities of the water such as taste, odor, color, and certain mineral content, and are considered limits for constituents that may affect consumer acceptance of the water.

GSWC Barstow's groundwater system contains active chlorinated wells that treat local groundwater supplies. GSWC Barstow routinely monitors the water that is treated and served to customers to ensure that water delivered to customers meets drinking water standards. The results of this testing are reported to the SWRCB Division of Drinking Water following each test and are summarized annually in Water Quality Reports (also known as "Consumer Confidence Reports"), which are provided to customers on GSWC Barstow's website. **Table 10-13** summarizes the GSWC Barstow Service Area's most recent Consumer Confidence Report.

GSWC's monitoring, management, and treatment of its source water results in high quality drinking water that meets all applicable drinking water standards. GSWC tracks changes in constituent concentrations to proactively address water quality issues before they impact supply reliability. Although there is the potential for some regulated constituents to be present in groundwater, treatment improvements are planned to maintain reliable operation of existing well(s). If needed, GSWC will plan for equivalent replacement of well capacity to ensure continued production reliability. These improvements and potential replacement capacity needs have been incorporated into GSWC Barstow's General Rate Case (GRC) planning and budgeting.

TABLE 10-13: RETAILER POTABLE WATER QUALITY

Primary Standards – Health Based (units)	Primary MCL	PHG (MCLG)	Range of Detection	Average Level	Most Recent Sampling Date
Arsenic (µg/L)	10	0.004	ND - 3.2	2.2	2023
Barium (mg/L)	1	2	ND - 0.14	0.11	2023
Fluoride (mg/L)	2.0	1	0.30 - 0.49	0.37	2023
Nitrate [as N] (mg/L)	10	10	0.75 - 7.8	3.1	2024
Volatile Organic Constituents	**Secondary MCL**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**
Ethylbenzene (µg/L)(a)	300	300	ND - 1.6	ND	2024
Xylenes (mg/L)(a)	1.750	1.8	0.00054 - 0.011	ND	2024
Gross Alpha Activity (pCi/L)	15(c)	0	ND - 11	5.3	2023
Uranium (pCi/L)	20	0.43	1.5 - 8.3	4.4	2024
Secondary Standards – Aesthetic (units)	**Secondary MCL**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**
Chloride (mg/L)	500	n/a	79 - 120	97	2023
Specific Conductance (µS/cm)	1600	n/a	760 - 1000	890	2023
Sulfate (mg/L)	500	n/a	110 - 170	140	2023
Total Dissolved Solids (mg/L)	1000	n/a	460 - 630	540	2023
Turbidity (units)	5	n/a	ND - 0.14	ND	2023
Other Parameters (units)	**Notification Level**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**
Alkalinity (mg/L)	n/a	n/a	130 - 200	160	2023
Calcium (mg/L)	n/a	n/a	70 - 110	86	2023
Hardness [as CaCO3] (mg/L)	n/a	n/a	230 - 340	270	2023
Hardness [as CaCO3] (grains/gal)	n/a	n/a	13 - 20	16	2023
Magnesium (mg/L)	n/a	n/a	12 - 19	15	2023
pH (pH units)	n/a	n/a	7.5 - 7.9	7.7	2023
Potassium (mg/L)	n/a	n/a	2.7 - 3.9	3.2	2023
Sodium (mg/L)	n/a	n/a	66 - 100	80	2023
Unregulated Drinking Water Constituents (units)	**Notification Level**	**PHG (MCLG)**	**Range of Detection**	**Average Level**	**Most Recent Sampling Date**
Perfluorohexanesulfonic Acid (PFHxS) (ng/L) (b)	3	n/a	ND - 5.3	ND	2024
Perfluorohexanoic Acid (PFHxA) (ng/L) (b)	n/a	n/a	ND - 5.4	ND	2024
Perfluorooctanoic acid (PFOA) (ng/L) (b)	5.1	n/a	ND - 5.9	ND	2024
Perfluorooctane Sulfonate (PFOS) (ng/L)(b)	6.5	n/a	ND - 4.3	ND	2024
Perfluoropentanoic acid (PFPeA) (b)	n/a	n/a	ND - 4.9	ND	2024
Lithium	n/a	n/a	ND - 21.9	8.28	2023

10.4.3 Recycled Water Supplies

GSWC Barstow does not currently include recycled water as part of its water supply portfolio, as the GSWC Barstow Regional Wastewater Treatment Facility (WWTF) does not presently treat effluent to meet direct-delivery recycled water standards established under Title 22 of the CCR, and therefore does not provide recycled water supplies to customers within the GSWC Barstow service area. Accordingly, recycled water is not included in GSWC Barstow's long-term water supply portfolio.

TABLE 10-14: LAST FIVE YEARS OF RECYCLED WATER SUPPLIES (AFY)

Year	Recycled Water Supplies
2021	0
2022	0
2023	0
2024	0
2025	0

TABLE 10-15: PROJECTED RECYCLED WATER SUPPLIES 2030 (AFY)

Year Type		Projected Recycled Water Supplies
Normal		0
Single Dry-Year		0
Multi-Year Drought	2026 (1st Year)	0
	2027 (2nd Year)	0
	2028 (3rd Year)	0
	2029 (4th Year)	0
	2030 (5th Year)	0

TABLE 10-16: PROJECTED RECYCLED WATER SUPPLIES THROUGH 2050 (AFY)

Projected Recycled Water Supplies		2030	2035	2040	2045	2050
Normal		0	0	0	0	0
Single Dry-Year		0	0	0	0	0
Multi-Year Drought	Year 1	0	0	0	0	0
	Year 2	0	0	0	0	0
	Year 3	0	0	0	0	0
	Year 4	0	0	0	0	0
	Year 5	0	0	0	0	0

10.4.4 Desalination Opportunities

Desalinated water supplies can come from ocean water, brackish surface water, and brackish groundwater. GSWC does not provide desalinated water for beneficial uses in the GSWC Barstow service area.

10.4.5 Water Transfers and Exchanges

In addition to groundwater production, GSWC Barstow continues to explore opportunities to purchase and manage water supplies through transfers, exchanges, and groundwater banking programs. Transfers, exchanges, and groundwater banking provide important opportunities to enhance the long-term reliability of supplies available to meet customer demands. GSWC Barstow participates in local transfer and exchange programs within the MWA service area to augment its groundwater supplies. GSWC Barstow has executed several permanent transfers of groundwater BAP rights from other parties within the Centro Subarea, thereby increasing its baseline groundwater production rights.

10.4.6 Supply Summary

GSWC Barstow relies entirely on local groundwater from the Centro Subarea to meet customer demands. **Table 10-17** summarizes the total volume of groundwater used by GSWC Barstow from the Centro Subarea over the past five years, produced in accordance with its BAP and FPA.

Future water supplies are anticipated to continue to consist of groundwater. GSWC Barstow's total water supply projections are shown in **Table 10-18** for the next five years (i.e., 2026 – 2030), and in **Table 10-19** in five-year increments through 2050, in normal year, single dry year, and five consecutive dry years.

TABLE 10-17: GSWC BARSTOW'S MANAGED GROUNDWATER PUMPING 2021-2025 (AFY)

Year	Groundwater Pumping
2021	6,004
2022	5,604
2023	5,433
2024	5,602
2025	5,442

TABLE 10-18: GSWC BARSTOW'S PROJECTED MANAGED GROUNDWATER SUPPLY 2026 – 2030 (AFY)

Year Type		Managed Groundwater Pumping
Normal		8,068
Single Dry-Year		8,068
Multi-Year Drought	2026 (1st Year)	8,068
	2027 (2nd Year)	8,068
	2028 (3rd Year)	8,068
	2029 (4th Year)	8,068
	2030 (5th Year)	8,068

TABLE 10-19: GSWC BARSTOW'S PROJECTED MANAGED GROUNDWATER SUPPLY THROUGH 2050 (AFY)

Managed Groundwater Pumping		2030	2035	2040	2045	2050
Normal		8,068	8,068	8,068	8,068	8,068
Single Dry-Year		8,068	8,068	8,068	8,068	8,068
Multi-Year Drought	Year 1	8,068	8,068	8,068	8,068	8,068
	Year 2	8,068	8,068	8,068	8,068	8,068
	Year 3	8,068	8,068	8,068	8,068	8,068
	Year 4	8,068	8,068	8,068	8,068	8,068
	Year 5	8,068	8,068	8,068	8,068	8,068

10.4.7 Delivery System Details

GSWC Barstow solely relies on groundwater from the Centro Subarea to meet service area demands. The GSWC Barstow operates 15 active wells with a combined capacity of 15,010 gpm. An additional well is currently inactive but planned to come back online following implementation of iron treatment. Water is treated with sodium hypochlorite at the wellheads and pumped directly into the delivery system, which consists of 12 storage tanks and 182 miles of distribution pipelines. GSWC Barstow's entire system is potable.

GSWC Barstow does not have imported water connections or emergency interconnections. This configuration means that purchased water is not directly available; however, imported water from the Mojave Water Agency is used to recharge local groundwater supplies.

Approximately 64% of the wastewater generated within the service area is collected by approximately 113 miles of gravity sewers owned by the City of Barstow and conveyed to the Barstow Regional WWTF, which is owned and operated by the City. The remaining wastewater is treated by private septic systems. The Barstow Regional WWTF provides primary and secondary treatment but does not currently provide the tertiary treatment required to meet recycled water standards established under Title 22 of the CCR. Treated effluent is disposed of in percolation ponds.

CHAPTER 10.5 – WATER USE CHARACTERIZATION

Understanding water use characteristics is essential to enable the GSWC Barstow to reliably and cost-effectively manage its water supplies to continue to meet customer needs. This chapter characterizes the GSWC Barstow's retail customer water needs – current and forecast over the next few decades. Characteristics such as how water uses vary among different land use classifications, throughout the year, and under differing hydrologic conditions, all help with that understanding.

A thorough characterization and analysis provide a realistic prediction of future water use based upon GSWC Barstow's past and current water use, in addition to considerations of anticipated growth, new regulations, changing climate conditions and trends in customer water use behaviors. A thorough analysis examines each water use sector for a variety of factors, then aggregates the information into a comprehensive projection of customer water use that becomes the foundation for integration with the GSWC Barstow water supplies (see *Section 10.4*) to assess long-term water system reliability (see *Section 10.7*).

This section is organized as follows:

- Current Customer Water Use
- Compliance with 2020 Urban Water Use Target and SBx7-7
- Forecasting Customer Use
- Forecasting Water Use for DRA and Annual Assessment
- Projecting Disadvantaged Community Water Use

10.5.1 Current Customer Water Use

This subsection presents data on GSWC Barstow's residential and non-residential customers from 2021 through 2025 and summarizes the distribution system losses over the same period. Customer water use trends provided basis for the UWMP's water use forecast through 2050.

10.5.1.1 Customer Water Use: 2021-2025

Potable uses are served by GSWC Barstow's potable water delivery system. Potable water deliveries comply with Title 22 Drinking Water Standards. Non-potable water uses may include recycled and untreated raw water deliveries, such as tertiary treated recycled water, remediated groundwater, or untreated surface or groundwater supplies that do not meet potable drinking water standards. However, there are currently no non-potable uses within GSWC Barstow service area.

Demand within GSWC Barstow's water service area is measured using water meters that are installed at each customer account. Records of current and historical water use at each account are maintained by GSWC. Demand within GSWC Barstow's service area is tracked and reported for the following sectors:

- **Single Family Residential**: Attached or detached dwelling units that are individually metered.
- **Multi-Family Residential**: Two or more dwelling units served by a common water meter.
- **Commercial/Institutional**: Includes commercial and institutional customers. If irrigation water use at these sites is separately metered, it is included in the landscape sector.
- **Industrial**: Includes industrial customers. If irrigation water use at these sites is separately metered, it is included in the landscape sector.
- **Landscape**: Water meters used exclusively for outdoor uses associated with multiple family residential customers (i.e., homeowner associations [HOAs]) and other irrigation sites.

Water use categories described in CWC §10631(d)(1)(G) through (I), listed below, were not included in GSWC Barstow's water demand calculations because they do not apply to the system:

- Sales to other agencies;
- Sales for agricultural irrigation; and
- Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

GSWC Barstow's total water demand consists of only potable water demands within its service area.

GSWC Barstow's past and current potable water use by customer class are presented by sector in **Table 10-20**. Residential customers accounted for approximately 60% of metered demand between 2021 and 2025. The other major use category is commercial/institutional,

which accounted for approximately 38% of metered demand between 2021 and 2025. Together, the residential and commercial/institutional usage sectors comprised roughly 97% of demands between 2021 and 2025. These values exclude distribution system losses, described in the next subsection.

TABLE 10-20: POTABLE CUSTOMER USE 2021 – 2025 (VALUES IN ACRE-FEET)

Sector	2021	2022	2023	2024	2025
Single-Family Residential	1,969	1,879	1,756	1,844	1,799
Multi-Family Residential	894	1,023	974	925	854
Commercial Institutional	1,830	1,748	1,653	1,777	1,778
Industrial	167	44	48	48	43
Landscape Irrigation	64	51	59	56	65
Total Metered Deliveries	4,924	4,745	4,490	4,650	4,539
NOTES: Values exclude distribution system losses.					

10.5.1.2 Existing Distribution System Losses

Total demand includes water consumed by metered accounts, authorized but unbilled uses, and system water losses. These losses are categorized as either apparent or real losses. Real losses represent physical losses from the distribution system, such as seepage, leaks, and spills. Apparent losses reflect non-physical losses, including meter inaccuracies, data handling errors, and unauthorized consumption.

Since 2016, urban retail water suppliers have been required under CWC Section 10608.34 and CCR §638.1 et seq to quantify distribution system water losses using the American Water Works Association (AWWA) Free Water Audit Software (referred to as "water loss audit reports"). The distribution system water losses for the GSWC Barstow system for the past five years are shown in **Table 10-21**.

In 2022, the SWRCB adopted new performance standards for urban retail water suppliers that would reduce water loss by nearly 35%. Effective starting in 2023, the SWRCB provided a volumetric standard to each urban retail water supplier that sets cost-effective levels of achievable water loss given each water system's characteristics and budgets. Suppliers will be required to start meeting individual volumetric loss standards over a three-year period beginning January 2028.

CWC Section 10631(3)(c) requires that this UWMP demonstrate whether the distribution loss standards enacted by the SWRCB pursuant to CWC Section 10608.34 have been met. **Table 10-22** demonstrates GSWC Barstow's progress towards meeting the 2028 water loss standard. Apparent water losses are currently compliant with the 2028 standard, though real

water losses currently exceed the 2028 standard. GSWC Barstow has been making steady progress reducing system loss and expects to be compliant with the standards by the 2028 deadline.

TABLE 10-21: DISTRIBUTION SYSTEM LOSS, 2021 - 2025

2021	2022	2023	2024	2025
1,112	880	964	966	903
			Average 2024/2025 =	935

TABLE 10-22: DISTRIBUTION SYSTEM LOSS, 2021 - 2025

PWS ID	SWRCB Standard? (y/n)	Real Water Loss					Apparent Water Loss				
		SWRCB Standard		Most Recent AWWA Water Loss Audit			SWRCB Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard	Real Water Loss Units	Number of Connections	AWWA Audit (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard	Apparent Water Loss Units	Number of Connections	AWWA Audit (AF)	Apparent Water Loss Per Unit per Day
CA1910004	Yes	56.30	GPSCD	9,150	787	76.8	10.80	GPSCD	9,150	91	8.9
NOTES: GPSCD = Gallons per Service Connection per Day											

10.5.2 Compliance with UWUO and SBx7-7

SB X7-7, mandated a 20% reduction in urban per-capita water use across California by 2020. To achieve this goal, SB X7-7 required each retail supplier to establish an urban water use target (2020 Target), contributing to the State's collective efforts. Because the CWC does not set an end date for reporting progress in meeting the 2020 Target, this section demonstrates GSWC Barstow's compliance with SB X7-7 in 2020.

GSWC Barstow achieved its 2020 Target in 2020. The data used to calculate GSWC Barstow's 2020 Target and demonstrate compliance are documented in GSWC Barstow's 2020 UWMP. **Table 10-23** below summarizes GSWC Barstow's 2020 Target and actual 2020 gallons per capita per day (GPCD), confirming that GSWC Barstow met the SB X7-7 compliance requirements.

TABLE 10-23: DEMONSTRATION OF COMPLIANCE WITH GPCD TARGET

Was Supplier part of a merger or consolidation since 2020?	Regional Alliance Target or Individual Target?	2020 Target	Actual 2020 GPCD	Did Supplier Achieve Targeted Reduction for 2020?
No	Individual Target	236	159	Yes

In July 2024, California adopted the Making Conservation a California Way of Life (MCCWL) regulation, implementing Senate Bill (SB) 606 and Assembly Bill (AB) 1668 to support long-term conservation and drought resilience. The regulation establishes annual Urban Water Use Objectives (UWUO) for urban water suppliers and introduces Performance Measures for commercial, institutional, and industrial (CII) water users.

The UWUO is a water-budget-based framework tailored to each supplier. It consists of the following components:

- Residential indoor water use standard,
- Residential outdoor water budget,
- CII landscape outdoor water use standard (for landscapes with dedicated irrigation meters),
- Water loss standard,
- Variance, and
- Potable reuse bonus.

Beginning in 2027, suppliers must annually assess whether the sum of their regulated water uses (i.e., residential indoor and outdoor, dedicated irrigation meter use, and water loss) is at or below their UWUO. The state standards for residential indoor and outdoor water use and for CII outdoor use will become increasingly stringent over time, potentially requiring additional conservation efforts to achieve compliance.

The MCCWL regulation uses the 2020 Target as a backstop for the supplier's UWUO. If the supplier's UWUO is greater than its 2020 Target-based water use, after adjusting for excluded demands, its UWUO is adjusted down to its 2020 Target-based adjusted water use.

Urban retail water suppliers must report annually to the state on their water use relative to their UWUOs. GSWC Barstow's UWUO submissions are available through DWR's Water Use Efficiency Data Portal.

Because compliance with the UWUO requirements falls under the authority of the SWRCB, UWUO compliance projections are not required as part of an UWMP per the 2025 UWMP Guidebook. Therefore, UWUO projections are not included herein.

10.5.3 Forecasting Customer Use

This section provides an overview of projected water demands within the GSWC Barstow service area, which include retail customer demands and water losses. Projected water demands are estimated as a sum of (1) future uses from existing customers – *Section 10.5.3.1*; and (2) future uses from new customers – *Section 10.5.3.2*. These demand projections are developed as part of the RWUMP process. Detailed forecast methodologies are described in *Section 4.1 of Chapter 4.* This section also includes a description of anticipated water use efficiency pursuant to CWC Section 10610.4(c).

10.5.3.1 Existing Customer Future Use

Current potable water use and gpcd for existing customers are based on 2025 production and population data, as described in *Section 4.1 of Chapter 4*. For planning purposes, it is assumed that existing customers, including both residential and non-residential users, will maintain a constant demand of 139 gpcd, resulting in a total annual potable water use of 5,352 AFY, throughout the planning horizon.

10.5.3.2 New Customer Future Use

The methodology for forecasting new customer water use is described in *Section 4.1 of Regional Chapter 4.* For each Retailer, the forecast includes the following components:

- Total Residential Use
- Indoor Residential Use
- Outdoor Residential Use
- Total Non-Residential Use

As described in *Section 10.3.3*, the projected water demands presented herein incorporate anticipated growth in the City of Barstow Draft General Plan Update and BIG Specific Plan. While these planning documents are currently under public review and subject to final approval, they are considered in this UWMP for long-term planning purposes. **Table 10-24** presents the resulting customer water use forecast incorporating growth associated with these planning documents. It is anticipated that GSWC Barstow service area demands will be 7,959 AF by 2050, approximately 46% greater than 2025 demands.

It should be noted that portions of the proposed land use associated with Draft General Plan Update and BIG Specific Plan are located outside the current certificated service area of GSWC Barstow. Provision of water service to such areas would require, among other actions, expansion of GSWC Barstow's service area, including approval by the CPUC. Accordingly, inclusion of these demands in this UWMP does not represent a commitment or obligation by GSWC to provide water service to these areas. All such service would be subject to future

regulatory approvals, environmental review, and demonstration of adequate water supply, infrastructure, and financial feasibility.

The Draft General Plan Update and BIG Specific Plan do not specify the timing of when this additional demand will come online; therefore, considering that these plans are still under review, this UWMP assumes a stepwise increase in demand, with the majority of the new demand occurring in the later years.

TABLE 10-24: FORECAST TOTAL FUTURE WATER USE (VALUES IN ACRE-FEET PER YEAR)

2025	2030	2035	2040	2045	2050
5,442	5,568	5,820	6,323	7,078	7,959

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

Because the GSWC Barstow service area is located in the high desert climate of the Mojave area with low rainfall and extreme temperatures, no adjustments are made to the forecasts presented in **Table 10-25** in single dry year and five consecutive dry years.

10.5.3.4 Climate Change Considerations

Changing climate can affect water demands, as extreme and higher temperatures can lead to increases in water use. However, as previously described, the GSWC Barstow service area is already has low rainfall and extreme temperatures. Therefore, adjustments for the near-term planning horizon are not warranted.

10.5.4 Forecasting Water Use for DRA and Annual Assessment

The California Legislature established requirements for UWMPs to help suppliers assess and prepare for drought conditions, including the DRA and the Annual Water Supply and Demand Assessment (Annual Assessment). These requirements were initially established under AB 1668 and SB 606 in response to the prolonged droughts experienced in California and anticipated hydrologic variability due to climate change.

The DRA evaluates water supply reliability over a consecutive five-year period, examining water supplies, water uses, and resulting water supply reliability under a reasonable prediction of five consecutive dry years. This provides a forward-looking perspective on how the system could perform during prolonged drought conditions. The Annual Assessment uses

a similar approach but focuses on actual or anticipated conditions for the upcoming water year rather than hypothetical five-year dry conditions. The Annual Assessment is described in further detail in *Section 10.6.2* and is used to guide operational decision-making and short-term planning.

The forecasted water demand for the GSWC Barstow service area in drought conditions for the next five years is provided in **Table 10-25.**

TABLE 10-25: FORECAST DRA WATER USE FOR 2026 THROUGH 2030 (ACRE-FEET PER YEAR)

2026	2027	2028	2029	2030
5,467	5,492	5,518	5,543	5,568

10.5.5 Projecting Disadvantaged Community Water Use

Pursuant to CWC Section 10631.1, retail suppliers are required to include the projected water use for lower income households in 2025 UWMPs. Per California Health and Safety Code Section 50079.5, a lower income household has an income below 80% of area median income, adjusted for family size. The annual median income in the City of Barstow is $53,380, which is below the statewide average of approximately $99,000 (see *Section 10.3.4*) (US Census, 2025). Additionally, the entire City of Barstow is recognized by the state as a Disadvantaged Community.[2] Because of this designation, the forecast water use presented in **Table 10-24** is fully inclusive of disadvantaged community use.

[2] Source: DWR 2019-2023 Disadvantaged Community and Economically Distressed Area Mapping Tools, available at: https://gis.water.ca.gov/app/dacs/

CHAPTER 10.6 – WATER CONSERVATION AND SHORTAGE RESPONSE

10.6.1 Demand Management Measures

Pursuant to CWC Section 10631(e), this section provides a discussion of GSWC Barstow's current and planned water demand management measures (DMMs) which are designed to strengthen water resiliency and support statewide conservation goals. Specifically, these DMMs will support GSWC Barstow in complying with MCCWL requirements, including achieving its UWUO, and in advancing long-term water conservation.

GSWC Barstow centrally administers its conservation programs. GSWC has implemented water waste prevention ordinances, maintains metering to accurately measure consumption, and uses conservation pricing to encourage efficient water use. Public education and outreach efforts promote customer awareness of water-saving practices, while programs to assess and manage distribution system losses help reduce real water loss. Dedicated staffing and program coordination support the planning, implementation, and monitoring of these conservation efforts.

In addition, GSWC Barstow participates in regional conservation initiatives. The Retailer is a member of the Alliance for Water Awareness and Conservation (AWAC), a coalition of more than 20 water agencies within the MWA service area that focuses on achieving water conservation targets, including GPCD goals, and promoting public education on water efficiency.

10.6.1.1 Foundational Demand Management Measures

For purposes of this chapter, GSWC Barstow's DMMs are grouped in accordance with the DMM categories in the CWC Section 10631(e).

i. Water Waste Prevention Ordinances

GSWC Barstow has adopted water waste prevention measures to reduce unnecessary or inefficient water use within its service area. These measures are intended to discourage water waste, improve overall water use efficiency, and support compliance with statewide conservation requirements.

As an investor-owned public utility, GSWC does not have rule-making authority. However, it supports member agencies and local cities in efforts to adopt ordinances that will reduce water waste. For GSWC, this provision is implemented through CPUC-approved rules, including Rule No. 14.1 (Water Conservation and Reduction Plan), Rule 20 (Water Conservation), and Rule 11 (Discontinuance and Restoration of Service).

CPUC's methodology for water utilities to implement Rule No. 14.1 is documented in Standard Practice U-40-W, "Instructions for Water Conservation, Rationing, and Service Connection Moratoria." Rule 14.1 sets forth water use violation fines, charges for removal of flow restrictors, and the period during which mandatory conservation and rationing measures will be in effect. Water conservation restrictions include:

- Use of potable water for more than minimal landscaping
- Use through a broken or defective water meter
- Use of potable water which results in flooding or runoff in gutters or streets
- Use of potable water for washing private cars or commercial aircrafts, cars, buses, boats, or trailers, except at a fixed location where water is properly maintained to avoid wasteful use
- Use of potable water for washing buildings, structures, driveways, street cleaning or other hard-surfaced areas
- Use of potable water to irrigate turf, lawns, gardens, or ornamental landscaping
- Use of potable water for construction purposes
- Use of potable water for filling or refilling of swimming pools

Rule No. 20 (approved by the CPUC in 2015) discourages wasteful use of water and promotes use of water saving devices. The stated purpose of the rule is to "ensure that water resources available to the utility are put to a reasonable beneficial use and that the benefits of the utility's water supply and service extend to the largest number of persons." Together, Rules 11, 14.1 and 20 prohibit negligent or wasteful use of water, create a process for mandatory conservation and rationing, and promote the use of water-saving devices.

These water waste prevention measures apply on an ongoing basis and may be expanded or enforced more stringently during declared water shortage conditions, as described in the WSCP (*Section 10.6.2*).

ii. Metering

CWC §527(a) requires meters to be installed on all customer services by 2025. Metering provides the basis for accurately measuring water use, billing customers, and tracking water demand by customer class. GSWC Barstow meters all customer connections within its service area and bills by volume monthly. GSWC follows the requirements of CPUC General Order

103-A which prescribes minimum water system design, and operation and maintenance (O&M) standards for water utilities including specifications for meter calibration, testing, and replacement activities.

iii. Conservation Pricing

All metered customers, including customers served by GSWC Barstow, are charged volumetrically for water service. Starting on 1 September 2009, GSWC implemented a tiered conservation pricing rate structure for residential customers as approved by the CPUC for its Region III Rate Making Area that includes the GSWC Barstow. The current rate structure for residential customers includes a fixed service charge and volumetric escalating pricing tiers, based on customer usage. In contrast, non-residential customers are charged a fixed service charge and a constant volumetric rate.

The implementation of this tiered pricing policy is the result of GSWC's collaboration with CPUC to implement conservation tiered rates for residential customers of investor-owned utilities. Tiered rates are consistent with the CPUC's 2010 Water Action Plan.

GSWC is scheduled to submit a GRC filing with the CPUC in July 2026 that includes proposed rates over the next three years based on volumetric charges for customers in the Region III Rate Making Area that includes GSWC Barstow. If approved, this rate decision will allow GSWC to adjust volumetric revenues and maintain a conservation-oriented rate structure that encourages efficient water use today and in the future.

The GRC process is thorough and generally lasts 18 months with oversight from CPUC's Public Advocates Office, a division of the CPUC that scrutinizes the filing on behalf of customers. The utilities' customers have an opportunity to participate in the GRC process by attending Public Participation Hearings and/or testifying in a public proceeding before an Administrative Law Judge.

iv. Public Education and Outreach

Public education and outreach programs in the GSWC Barstow service area consist of information distributed via a variety of public information systems, school education programs, and community workshops.

Public Information Systems

GSWC provides water conservation information to customers in the GSWC Barstow service area through a variety of public information systems. These systems are intended to provide customers with access to information regarding water conservation practices, available programs, and applicable water use requirements.

Per the 2023 GRC, GSWC is allowed to spend up to $34,500 annually on conservation outreach and $37,500 annually on conservation promotional items for the 2025-2027 rate cycle for the entire Region III Rate Making Area, which includes GSWC Barstow. Outreach efforts in the GSWC Barstow service area include providing free conservation literature and brochures in the customer service area office, water conservation advertisements in local publications, and participation in conservation events, as applicable.

Customers may also access rebates and other conservation information on GSWC's website (gswater.com), which provides information on conservation programs and links to regional resources.

GSWC customer outreach efforts include online platforms such as its website and social media. Conservation messaging is provided periodically throughout the year, including during the spring and early summer months, when customers may be preparing for increased seasonal water use. Information shared with customers includes available rebate programs and general water conservation tips.

GSWC reviews customer outreach activities within the scope of programs and budgets approved by the CPUC. Public information measures include direct mail, participation in community events, website-based information, and media advertisements to promote water conservation messaging and available conservation programs. This category is capped, per the previous 2023 GRC decision.

School Education Programs

GSWC conducted school conservation education programs for an estimated 15,525 students within its entire customer base. The GSWC school education program reaches over 5,000 students in Region III elementary schools each year. GSWC sponsors the WaterWise school education program in elementary schools with a CPUC-approved budget of $96,000 annually from 2025-2027.

Community Workshops

GSWC will sponsor community workshops to help educate both in-person and on-line customers in a hands-on environment about achieving water use efficiencies in their landscapes and homes. The curriculum will include landscape planning, efficient irrigation concepts, and proper turf reduction or removal.

v. Programs to Assess and Manage Distribution System Real Loss

As discussed in *Section 10.5.1.2*, suppliers will be required to start meeting individual volumetric loss standards over a three-year period beginning January 2028. GSWC Barstow conducts annual distribution system audits using AWWA M36 Standard Water Audit methodology. The approach consists of a component analysis of metered water sources,

metered water demands, quantification of water losses (apparent and real), and calculation of non-revenue water as a percentage of total system flows.

Results of GSWC Barstow's most recent water loss audit report are included in **Table 10-22**. Apparent water losses are currently compliant with the 2028 standard, though real water losses currently exceed the 2028 standard. GSWC Barstow has been making steady progress reducing system loss and expects to be compliant with the standards by the 2028 deadline.

GSWC maintains an active Water Loss Control Program, and the Operations Engineering Department monitors GSWC Barstow distribution system water losses by reviewing the annual water loss audit reports. When the Operations Engineer determines that a leak detection survey is needed, GSWC will contract with a qualified leak detection company to perform the survey using the most current leak detection technology. GSWC also maintains a comprehensive work order management system that documents leak locations and repair history, which provides a solid foundation for future water loss control actions.

vi. Water Conservation Program Coordination and Staffing Support

GSWC maintains a Water Use Efficiency Department with a companywide Water Use Efficiency Manager and a Senior Water Use Efficiency Specialist who collectively develop and manage programs for all the GSWC systems, including GSWC Barstow. GSWC utilizes several consultants and contractors to support program development and implementation on an as-needed basis.

vii. Other Demand Management Measures

GSWC implements other DMM programs in the GSWC Barstow service area that are consistent with the structures approved by the CPUC. Per GSWC's 2023 GRC for the 2025 – 2027 rate cycle, program offerings in the GSWC Barstow service area through 2027 include:

- **GSWC Residential Programs**. These programs include: 1) free indoor/outdoor water-use surveys to help customers understand water use and receive suggestions to use water more efficiently, and 2) indoor water conservation kits that include a high efficiency showerhead, a kitchen aerator, a bath aerator, and leak test tablets and instructions.
- **GSWC Residential Rebates**. In partnership with the California Water Efficiency Partnership (CalWEP), these rebates include: 1) Flume water flow monitoring devices that attach to water meters and provide single-family customers almost real time data on their water use and detect leaks, and 2) Rachio weather-based irrigation smart controllers. Additionally, GSWC offers rebates for: premium high efficiency toilets, high-efficiency clothes washers, weather-based irrigation controllers, soil

moisture sensors, rotating sprinkler nozzles, flow monitoring devices, drip irrigation, and rain barrels.

- **GSWC Commercial/Institutional and Large Landscape Programs**. GSWC offers a wide range of rebates for CII and large landscapes, including: free CII indoor and outdoor water use surveys, multi-family indoor conservation kits, premium high efficiency toilets, high-efficiency flush-valve toilets, high efficiency urinals, weather-based irrigation controllers, and efficient nozzles and rotors.

10.6.1.2 Planned DMM Activities

The DMMs described above have contributed to GSWC Barstow's compliance with its 2020 Target. GSWC Barstow's conservation programs are subject to review and approval by the CPUC through a GRC, which typically occurs every three years. Through the GRC process, conservation programs and associated funding levels are evaluated and approved by the CPUC, and any modifications to program scope, implementation, or budgets are subject to CPUC review and authorization. The CPUC approved GSWC's 2023 GRC in January 2025 for the 2025 – 2027 rate cycle, and GSWC anticipates filing its 2026 GRC with the CPUC in July 2026 for the 2028 – 2031 rate cycle. These programs will continue to support GSWC Barstow in complying with MCCWL requirements, including achieving its UWUO, and in advancing long-term water conservation.

10.6.2 Water Shortage Contingency Plan

The Water Shortage Contingency Plan (WSCP) serves as a standalone document to be engaged in the case of a water shortage event, such as a drought or supply interruption, and defines specific policies and actions that will be implemented at various shortage level scenarios. The primary objective of the WSCP is to ensure that GSWC Barstow has in place the necessary resources and management responses needed to protect health and human safety, minimize economic disruption, and preserve environmental and community assets during water supply shortages and interruptions.

10.6.2.1 Overview of Water Shortage Contingency Plan

GSWC Barstow's WSCP is included in **Appendix X**. The WSCP addresses the requirements in CWC Section 10632 of the UWMPA. The WSCP consists of the following required elements:

- Introduction to the WSCP
- An analysis of water supply reliability
- Procedures for conducting an annual water supply and demand assessment
- Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50% shortages and greater than 50% shortage

- Shortage response actions that align with the defined shortage levels
- Communication protocols and procedures
- Customer compliance, enforcement, appeal, and exemption procedures
- A description of legal authorities
- A description of financial consequences
- Monitoring and reporting requirements
- Reevaluation and improvement procedures
- Special water feature distinction
- Plan adoption, submittal, and availability

10.6.2.2 Summary of Water Shortage Response Strategy

GSWC is an investor-owned public utility that is subject to CPUC jurisdiction. CWC Section 357 requires that suppliers subject to regulation by the CPUC secure their approval before imposing water consumption regulations and restrictions required by water supply shortage emergencies. Implementation of the actions is dependent upon approval of the CPUC. Prior to declaration of mandatory rationing, a utility may request the addition of a Schedule 14.1 – Staged Mandatory Water Rationing tariff, via a Tier 2 advice letter with full justification. The utility may not add the Schedule 14.1 until it has been authorized to do so by the CPUC as delegated to the Division of Water and Audits or other staff authorized by the CPUC.

CPUC Rule 14.1 "Water Conservation and Rationing Plan" (Rule 14.1) has specific criteria that must be integrated with the WSCP implementation procedures. Rule 14.1 requires each GSWC service area to "elect to activate voluntary conservation" or prepare a Schedule 14.1 to implement Staged Mandatory Water Conservation and Rationing. Schedule 14.1 may only be prepared as a direct response to an acute water shortage situation, and it requires CPUC deliberation and approval. Rule 14.1 has 16 voluntary conservation criteria in place that may be exercised by each GSWC system without CPUC approval should GSWC elect to do so. Alternatively, in order for GSWC to engage in mandatory water rationing, GSWC must prepare a Schedule 14.1 and submit a Tier 2 Advice Letter, with full justification for the water rationing action. Additionally, GSWC must prepare a Schedule 14.1 and submit a Tier 2 Advice Letter and receive CPUC approval to move from one water shortage stage to another and implement many of the shortage response actions associated with each water shortage stage and conduct a public hearing.

Activation Overview

Several steps must first occur before GSWC can impose measures to reduce customer water demands. Steps are taken in the context that each water shortage condition triggering stages of action is different and unique. The WSCP information below represents the

proposed response for GSWC Southwest and can be updated as needed. The typical steps for activating GSWC water shortage response are as follows:

Step 1: GSWC determines water shortage conditions exist for GSWC Southwest based on the results of the AWSDA, supply shortfalls, state cutbacks, or emergency conditions.

Step 2: GSWC requests CPUC approval of Rule 14.1 to establish three (3) broad categories of conservation policy as follows:

- Rule 14.1 A. Conservation-Non-Essential or Unauthorized Water Use – Voluntary – GSWC authorized to implement without additional CPUC advice.
- Rule 14.1 A. Conservation-Non-Essential or Unauthorized Water Use – Mandatory but without fines or surcharge tariff – GSWC required to file Tier 1 Advice Letter requesting authorization to institute a Schedule 14.1 Stage.
- Rule 14.1 B. Staged Mandatory Rationing of Water Usage – Includes authorization of fines and surcharge tariff. GSWC required to file Tier 2 Advice Letter requesting authorization to institute a Schedule 14.1 Stage.

Step 3: GSWC receives CPUC approval of Schedule 14.1 and begins implementation of the response actions based on water shortage conditions and need. GSWC will request approval of Schedule 14.1 as deemed necessary to meet actual shortage condition or water use reduction targets.

Step 4: GSWC would deactivate Schedule 14.1 in effect if water shortage conditions or need no longer exist by filing a Tier 1 Advice Letter.

10.6.2.3 Water Shortage Contingency Plan Levels

The WSCP requires water suppliers to adopt six water shortage stages, which correspond to progressively severe water shortage conditions (up to 10%, 20%, 30%, 40%, 50%, and greater than 50% shortage) as compared to the normal reliability condition. These water shortage stages have been standardized to allow for a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions. GSWC Barstow's six standard WSCP levels are summarized in **Table 10-26.**

TABLE 10-26 CROSS-REFERENCE FOR STANDARD VS SUPPLIER SHORTAGE LEVELS

☒	Supplier uses the Standard six levels of water shortage.		
Standard Shortage Levels	Percent Shortage Range	GSWC Barstow's Shortage Levels	Percent Shortage Range
1	Up to 10%	1	Up to 10%
2	Up to 20%	2	Up to 20%
3	Up to 30%	3	Up to 30%
4	Up to 40%	4	Up to 40%
5	Up to 50%	5	Up to 50%
6	>50%	6	>50%

The WSCP is required to identify locally appropriate shortage response actions that align with the defined water shortage stages and include demand reduction actions, supply augmentation actions, system operational changes, and mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions. For each response action the WSCP is to provide an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

Supply Augmentation Actions

GSWC Barstow may mitigate potential shortfalls with both supply augmentation actions. If available, GSWC Barstow will access stored groundwater assets through the carryover provisions of the Mojave Basin Adjudication, derived from GSWC Barstow's unused FPA in each year. Additionally, GSWC Barstow may acquire replacement or make-up water in the Centro Subarea.

Demand Reduction Actions

In addition, GSWC Barstow may also mitigate supply shortfalls with demand reduction actions. GSWC has grouped the actions to be taken during a water shortage condition into the six water shortage stages in **Table 10-26**, providing flexibility to address water shortages up to and in excess of the 50% shortage level condition. The following is an overview of the staged response GSWC could follow during a given water shortage condition including sequential water shortage stages (1-6) based on shortage severity, relative supply conditions for each water shortage stage, necessity of Schedule 14.1 policy activation, and percent shortage reduction levels. The water shortage stages would be implemented based on specific conditions and need to meet water service and system revenue requirements. A water shortage declaration would be made by resolution of the American States Water Company Board, delegating to GSWC officers the authority to make decisions regarding the need to activate Schedule 14.1 or change water shortage stages. Alternatively, an authorized

government official or state agency may issue water use reduction mandates, which would be implemented by a resolution of the Board to activate an appropriate water shortage stage. The actions to be undertaken during each water shortage stage cannot be implemented until necessary Board and CPUC approvals have been executed. The following six water shortage stages list the shortage response actions:

Stage 1 (0 to 10% shortage) – Stage 1 is a "Water Alert" where voluntary conservation is encouraged. GSWC explains the drought situation to the public and governmental bodies relying on GSWC water. GSWC explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by GSWC during this stage include:

- Implement Voluntary Water Conservation Measures authorized under Rule 14.1;
- Establish a voluntary demand reduction target for each water system;
- Inform public of water shortage conditions or demand reduction targets through some or all of the following: distribution of literature, public meetings, website updates, bill inserts, digital media, conservation messages printed in local newspapers, and educational programs in schools;
- Initiate a Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency;
- Identify the year to be used for establishing the customer baseline water use; and
- Recommend voluntary customer outdoor irrigation between the hours of 7 PM and 8 AM per the following schedule. If a city, county, or other public agency adopts restrictions on the number of days or hours of the day that customers may irrigate, GSWC, at its discretion, may adopt and enforce those restrictions.

Addresses Ending In:	Watering Days
Even Numbers (0, 2, 4, 6, 8)	Sunday, Wednesday, Friday
Odd Numbers (1, 3, 5, 7, 9)	Tuesday, Thursday, Saturday

Stage 2 (10 to 20% shortage) – Stage 2 is a "Moderate Shortage" and will be implemented if the Stage 1 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 2 will include all actions undertaken in Stage 1. GSWC will require mandatory conservation under this stage. The activities performed by GSWC during this stage include:

- Implement all measures in Stage 1;
- Restrict outdoor irrigation to between the hours of 7 PM and 8 AM per the following schedule. If a city, county, or other public agency adopts restrictions on the number of

days or hours of the day that customers may irrigate, GSWC, at its discretion, may adopt and enforce those restrictions;

Addresses Ending In:	Watering Days
Even Numbers (0, 2, 4, 6, 8)	Sunday and Wednesday
Odd Numbers (1, 3, 5, 7, 9)	Tuesday and Saturday

- Calculate customer conservation allocation based upon the year identified in Stage 1, less 20%;
- For residential customers no allocation will be set less than eight hundred cubic feet (CCF) per monthly billing period or 16 CCF per bi-monthly billing period, unless directed otherwise by an authorized government agency;
- Water usage in excess of customer baseline may be charged at regular rate plus a drought emergency surcharge of up to $2.50 per CCF; and
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1, C.3.

Stage 3 (20– 30% shortage) – Stage 3 is a "Severe Shortage" that will be implemented if the Stage 2 restrictions are deemed insufficient to achieve reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 3 will include all actions undertaken in Stage 2. GSWC will require mandatory conservation under this stage. The activities performed by GSWC during this stage include:

- Implement all measures in Stage 2;
- Calculate customer conservation allocation based upon the year identified in Stage 1, less 30%;
- For residential customers no allocation will be set less than eight CCF per monthly billing period or 16 CCF per bi-monthly billing period, unless directed otherwise by an authorized government agency;
- Water usage in excess of customer baseline may be charged at regular rate plus a drought emergency surcharge of up to $5 per CCF; and
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule 14.1 C.3.

Stage 4 (30 - 40% shortage) – Stage 4 is a "Critical Shortage" that will be implemented if the Stage 3 restrictions are deemed insufficient to achieve reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 4 will include all actions undertaken in Stage 3. GSWC will require mandatory conservation under this stage. The activities performed by GSWC during this stage include:

- Implement all measures in Stage 3;

- Calculate customer conservation allocation based upon the year identified in Stage 1, less 40%;
- For residential customers no allocation will be set less than eight CCF per monthly billing period or 16 CCF per bi-monthly billing period, unless directed otherwise by an authorized government agency;
- Water usage in excess of customer baseline may be charged at regular rate plus a drought emergency surcharge of up to $7.50 per CCF; and
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1 C.3.

Stage 5 (40 - 50% shortage) – Stage is a "Shortage Crisis" that will be implemented if the Stage 4 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 5 will include all actions undertaken in Stage 4. The activities performed by GSWC during this stage include:

- Implement all measures in Stage 4;
- Calculate customer conservation allocation based upon the year identified in Stage 1, less 50%;
- For residential customer no allocation will be set less than eight CCF per monthly billing period or 16 CCF per bi-monthly billing period, unless directed otherwise by an authorized government agency;
- Water usage in excess of customer baseline to be charged at regular rate plus a drought emergency surcharge of up to $10 per CCF; and
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1 C.3.

Stage 6 (50 % or greater shortage) – Stage 6 is an "Emergency Shortage" condition that will be implemented if the Stage 5 restrictions are deemed insufficient to achieve necessary demand reductions due to water supply shortages or to achieve identified water usage goals established by an authorized government agency or official. Stage 6 will include all actions undertaken in Stage 5. GSWC will require mandatory conservation under this stage. The activities performed by GSWC during this stage include:

- Implement all measures in Stage 5;
- Calculate customer conservation allocation based upon the year identified in Stage 1, less 55%;
- For residential customers no allocation will be set less than eight CCF per monthly billing period or 16 CCF per bi-monthly billing period, unless directed otherwise by an authorized government agency;

- Water usage in excess of customer baseline to be charged at regular rate plus a drought emergency surcharge of up to $15 per CCF; and
- Installation of a flow restrictor for repeated violation of water use restrictions under Rule No. 14.1 C.3.

GSWC may update current water shortage condition response measures based on CPUC approvals and direction, state policy directives, emergency conditions, or to improve customer response.

CHAPTER 10.7 – WATER SYSTEM RELIABILITY AND DROUGHT RISK ASSESSMENT

10.7.1 Five Year Drought Risk Assessment

The DRA requires a methodical assessment of water supplies and water uses under an assumed drought period that lasts five consecutive years. The DRA is intended to inform the DMMs and water supply projects and programs to be included in the UWMP. GSWC Barstow has prepared an evaluation of its water supplies and demands to meet customer needs during this period. The utility ensures that it does not use more water than necessary in any given year and continues to encourage customers to use water efficiently.

GSWC Barstow is supplied entirely by local groundwater pumped from the Centro Subarea, which historically has been sufficient to meet retail customer demands. **Table 10-27** summarizes GSWC Barstow's five-year DRA for 2026 through 2030, integrating system supplies as described in *Section 10.4* and reflecting unconstrained water demand as described in *Section 10.5*. For planning purposes, the projected groundwater supplies are assumed equal to GSWC Barstow's service area demand, not the projected total available supply identified in *Section 10.4.1.1*, since GSWC Barstow does not use more water than necessary in any given year. Projections indicate that groundwater supplies will remain reliable throughout the simulated five-year drought analyzed in this DRA.

TABLE 10-27: FIVE YEAR DROUGHT RISK ASSESSMENT (AFY)

	2026	2027	2028	2029	2030
Supply	5,467	5,492	5,518	5,543	5,568
Demand	5,467	5,492	5,518	5,543	5,568
Difference	0	0	0	0	0

10.7.2 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 25 years to provide a guiding document for future land use and water supply planning through the next UWMP cycle.

The GSWC Barstow long term service reliability reflects the recommended 25-year planning horizon anticipating a normal, single dry, and five consecutive dry years through 2050.

10.7.2.1 Normal and Single Dry Conditions 2030 – 2050

Table 10-28 compares the projected supply and demand over the 25-year planning horizon under normal conditions, and **Table 10-29** compares the projected supply and demand under single dry year conditions in five-year increments through 2050. As described in *Section 10.5.3.3*, GSWC Barstow's projected service area demands are not adjusted for dry year conditions since the service area is located in a high desert climate with low rainfall and extreme temperatures. Additionally, the projected groundwater supplies are assumed equal to GSWC Barstow's service area demand, not the projected total available supply identified in *Section 10.4.1.1*, since GSWC Barstow does not use more water than necessary in any given year. There are no anticipated shortfalls in both normal and single years.

TABLE 10-28: NORMAL YEAR WATER SUPPLY AND DEMAND THROUGH 2050 (AFY)

Normal Year	2030	2035	2040	2045	2050
Supply	5,568	5,820	6,323	7,078	7,959
Demand	5,568	5,820	6,323	7,078	7,959
Difference	0	0	0	0	0

TABLE 10-29: SINGLE DRY YEAR WATER SUPPLY AND DEMAND THROUGH 2050 (AFY)

Single Dry Year	2030	2035	2040	2045	2050
Supply	5,568	5,820	6,323	7,078	7,959
Demand	*5,568*	*5,820*	*6,323*	*7,078*	*7,959*
Difference	0	0	0	0	0

10.7.2.2 Five Consecutive Dry Years 2030 – 2050

A five-consecutive year drought represents the driest five-year period in the historical record. **Table 10-30** compares the projected supply and demand under five year consecutive years of drought for the 25-year planning horizon. As described in *Section 10.5.3.3*, GSWC Barstow's projected service area demands are not adjusted for five consecutive dry year conditions since the service area is located in a high desert climate with low rainfall and extreme temperatures. Additionally, the projected groundwater supplies are assumed equal to GSWC Barstow's service area demand, not the projected total available supply identified in *Section 10.4.1.1*, since GSWC Barstow does not use more water than necessary in any given year. There are no anticipated shortfalls in five consecutive dry year conditions.

TABLE 10-30: FIVE CONSECUTIVE DRY YEARS WATER SUPPLY AND DEMAND THROUGH 2050 (AFY)

		2030	2035	2040	2045	2050
Year 1	Supply	5,568	5,820	6,323	7,078	7,959
	Demand	*5,568*	*5,820*	*6,323*	*7,078*	*7,959*
	Difference	0	0	0	0	0
Year 2	Supply	5,618	5,920	6,474	7,255	8,136
	Demand	5,618	5,920	6,474	7,255	8,136
	Difference	0	0	0	0	0
Year 3	Supply	5,669	6,021	6,625	7,431	8,312
	Demand	5,669	6,021	6,625	7,431	8,312
	Difference	0	0	0	0	0
Year 4	Supply	5,719	6,122	6,776	7,607	8,488
	Demand	5,719	6,122	6,776	7,607	8,488
	Difference	0	0	0	0	0
Year 5	Supply	5,769	6,222	6,927	7,783	8,664
	Demand	5,769	6,222	6,927	7,783	8,664
	Difference	0	0	0	0	0

10.7.3 Annual Reliability Assessment

This section describes GSWC's procedural methodology for developing its Annual Water Supply and Demand Assessment (Annual Assessment) for GSWC Barstow. The Annual Assessment examines GSWC Barstow's water reliability for the current year and one additional dry year to determine what, if any, water shortages stages may be triggered during the required period. For purposes of this UWMP, the "current" water use conditions as

described in *Section 10.5* are compared to the availability of the GSWC Barstow's existing water supplies as described in *Section 10.4.* The Annual Assessment is conducted for a normal and single-dry year.

10.7.3.1 Normal Year Supply and Current Water Use

In a normal year, GSWC Barstow assumes groundwater supplies are fully available under typical hydrologic and regulatory conditions. Demand reflects current unconstrained use within the service area. **Table 10-31** presents normal-year water supply and demand conditions for the GSWC Barstow service area, under which no shortages are anticipated.

TABLE 10-31: NORMAL YEAR WATER SUPPLY AND DEMAND (AFY)

Normal Year	Current
Supply	8,068
Demand	5,442
Difference	2,626
NOTES: Supply represents GSWC Barstow's groundwater available in a normal year based on current FPA, as summarized in **Table 10-8**, excluding carryover water supplies. Demand represents actual current water use for calendar year 2025, as summarized in **Table 10-20**.	

10.7.3.2 Single Dry Year Supply and Dry-Year Current Demand

In a single dry year, GSWC Barstow assumes the groundwater supply available is 56% of the BPA, as explained in *Section 10.5*. Demand reflects current unconstrained use within the service area. No adjustments are made to the single dry year forecasts because the GSWC Barstow service area already experiences low rainfall and extreme temperatures. **Table 10-32** presents single dry year water supply and demand conditions for the GSWC Barstow service area, under which no shortages are anticipated.

TABLE 10-32: SINGLE DRY YEAR WATER SUPPLY AND DEMAND (AFY)

Single Dry Year	Current
Supply	8,068
Demand	5,442
Difference	2,626
NOTES: Supply represents GSWC Barstow's groundwater available in a single dry year based on current FPA, as summarized in **Table 10-8**, excluding carryover water supplies. Demand represents actual current water use for calendar year 2025, as summarized in **Table 10-20**.	

10.7.4 Water Supply Reliability Summary

As the analysis presented in this chapter demonstrates that GSWC Barstow has reliable supplies to meet its retail customer demands in normal, single dry years, and five consecutive dry year conditions through 2050.

CHAPTER 10.8 – ENERGY INTENSITY ANALYSIS

Pursuant to CWC Section 10631.2(a), urban water suppliers are required to report the energy required to supply water to GSWC Barstow. This energy intensity reporting enables water suppliers and the State to better understand the relationship between water use and energy consumption.

GSWC Barstow has chosen the "Total Utility Approach" to measure energy intensity. This methodology accounts for all energy consumed to operate the system, including pumping from local groundwater sources, treatment, and distribution to retail customers. Because GSWC Barstow's system is entirely supplied by local groundwater, the majority of energy consumption is attributed to groundwater pumping.

Total energy consumed by GSWC Barstow during calendar year 2025 based on reported utility bills is 4,566,291 kilowatt hours (kWh) for retail potable water deliveries. **Table 10-33** shows the energy consumed for each AF of water entering the distribution system in GSWC Barstow, including energy associated with extracting and diverting, placing into storage, treating, conveying, and distributing drinking water, but not including energy associated with the treatment of wastewater. Based on this, the energy intensity is estimated to be 2,480 kilowatt hours per million gallons (kWh/MG), or 839 kilowatt hours per acre-foot (kWh/AF).

TABLE 10-33: ENERGY INTENSITY – TOTAL UTILITY APPROACH FOR MONTH YEAR THROUGH MONTH YEAR

Sum of All Water Management Processes	
Volume of Water Entering Process (acre-feet)	5,442
Energy Consumed (kWh)	4,566,291
Energy Intensity (kWh/MG)	2,575
NOTES: Metered energy data during calendar year 2025 based on reported utility bills.	

CHAPTER 10.9 – SUMMARY

GSWC Barstow's service area demands are primarily comprised of residential and commercial/institutional uses. Service area demands are anticipated to increase by approximately 40% under the Draft General Plan Update, driven by growth in dwelling units, population, non-residential uses, and employment through 2048. GSWC Barstow will continue to rely solely on groundwater from the adjudicated Centro Subarea of the Lower Mojave Valley Groundwater Basin to meet future service area demands.

Water service reliability for GSWC Barstow was evaluated under normal, single dry-year, and multiple dry-year hydrologic conditions. Based on this analysis, GSWC Barstow expects available groundwater supplies to be sufficient to meet projected demands under all hydrologic conditions, including a five-year drought, while accounting for the potential effects of climate change. In addition, water quality is not expected to constrain supply reliability, as it is routinely monitored and managed to ensure compliance with drinking water standards.