PUBLIC REVIEW DRAFT
2025 Urban Water Management Plan

Redwood Valley District
May 2026

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List of Acronyms

AB	Assembly Bill
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
AMR	Automatic Meter Reading
AWE	Alliance for Water Efficiency
AWWA	American Water Works Association
BMOs	Basin Management Objectives
BMP	Best Management Practices
CAP	Customer Assistance Program
CCF	hundred cubic feet
CCR	California Code of Regulations
CDP	Census Designated Place
CFS	cubic feet per second
CII	Commercial, Industrial, and Institutional
CPUC	California Public Utilities Commission
CSD	County Sanitation District
CWC	California Water Code
DDW	Division of Drinking Water
DIMs	Dedicated Irrigation Meters
DMM	Demand Management Measure
DPR	Direct Potable Reuse
DWR	California Department of Water Resources
EO	Executive Order
EPA	Environmental Protection Agency
FCWCD	Flood Control and Water Conservation District
ft	feet
FTE	full-time equivalent
GHG	Green House Gas
GMP	Groundwater Management Plan
GPCD	gallons per capita per day
GPF	gallons per flush
GPMD	gallons per mile of main per day
GPSCD	gallons per service connection per day
GRC	General Rate Case
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IPCC	Intergovernmental Panel on Climate Change
IPR	Indirect Potable Reuse

IRWMP	Integrated Regional Water Management Plan
kWh	kilowatt-hour
kWh/AF	kilowatt-hours per acre-foot
kWh/vol	kilowatt-hours per volume
M&I	Municipal and Industrial
MAWA	Maximum Applied Water Allowance
MCCWL	Making Conservation a California Way of Life
MCL	Maximum Contaminant Levels
MG	million gallons
MGD	million gallons per day
MUMs	Mixed-use Meters
MWELO	Model Water Efficient Landscape Ordinance
NGVD	National Geodetic Vertical Datum
North Marin CWD	North Marin Water District
NPR	Non Potable Reuse
NW	Northwest
P/MAs	Projects and Management Actions
PWS	Public Water System
RCP	Representative Concentration Pathways
RUWMP	Regional Urban Water Management Plan
SB	Senate Bill
SCWA	Sonoma County Water Agency
SGMA	Sustainable Groundwater Management Act
SSWD	Sweetwater Springs Water District
SWRCB	State Water Resources Control Board
TCFD	Task Force on Climate-related Financial Disclosures
U.S.	United States
UWMP	Urban Water Management Plan
UWUO	Urban Water Use Objective
WRF	Water Reclamation Facility
WSCP	Water Shortage Contingency Plan
WWTP	Wastewater Treatment Plant
WY	Water Year

Chapter 1
Introduction and Overview

This chapter discusses the importance and uses of this 2025 Urban Water Management Plan (UWMP or Plan), the relationship of this Plan to the California Water Code (CWC), the relationship of this Plan to other local and regional planning efforts, and how this Plan is organized and developed in general accordance with the California Department of Water Resources' (DWR's) 2025 UWMP Guidebook.[1] Specifically, this chapter contains the following sections:

1.1 Background and Purpose

1.2 Urban Water Management Planning and the California Water Code

1.3 Relationship to Other Planning Efforts

1.4 Plan Organization

1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

1.6 Lay Description

1.1 Background and Purpose

California Water Service (Cal Water) is a public utility regulated by the California Public Utilities Commission (CPUC) that supplies water service to more than 2 million Californians through about 500,000 connections. Cal Water's 24 districts serve over 100 communities, spanning from the Chico District in the north to the Palos Verdes Peninsula in the south. California Water Service Group, Cal Water's parent company, also provides utility service to communities in Washington, New Mexico, Hawaii, and Texas. While water rates are set separately for each of Cal Water's 24 districts, oversight of the water rate setting process and district operations is provided by the CPUC.

This UWMP is a foundational document and source of information about the Redwood Valley District's (also referred to herein as the "District") historical and projected water demands, water supplies, supply reliability and potential vulnerabilities, water shortage contingency planning, and demand management programs. Among other things, it is used as:

- A long-range planning document by Cal Water for water supply and system planning; and

[1] The 2025 UWMP Guidebook is available at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans

- A source for data on population, housing, water demands, water supplies, and capital improvement projects used in:
    - Regional water resource management plans prepared by wholesale water suppliers and other regional planning authorities (as applicable),
    - General Plans prepared by cities and counties, and
    - Statewide and broad regional water resource plans prepared by DWR, the State Water Resources Control Board (SWRCB), or other state agencies.

The Redwood Valley District's last UWMP was completed in 2021, referred to herein as the "2020 UWMP." This Plan is an update to the 2020 UWMP and carries forward information from that plan that remains current and relevant, and provides additional information as required by subsequent amendments to the UWMP Act (CWC §10610 – 10657). Although this Plan is an update to the 2020 UWMP, it was developed to be a self-contained, stand-alone document and does not require readers to reference information contained in previous UWMP updates.

1.2 Urban Water Management Planning and the California Water Code

The UWMP Act requires urban water suppliers to prepare a UWMP every five years and to submit this plan to DWR, the California State Library, and any city or county within which the supplier provides water supplies. All urban water suppliers, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) annually are required to prepare a UWMP (CWC §10617). For the purposes of the Plan, the terms "customer" and "connections" are used interchangeably.

The UWMP Act was enacted in 1983. Over the years it has been amended in response to water resource challenges and planning imperatives confronting California. A significant amendment was made in 2009 as a result of the governor's call for a statewide 20 percent reduction in urban water use by 2020, referred to as "20x2020," the Water Conservation Act of 2009, and "Senate Bill (SB) X7-7." This amendment required urban retail water suppliers to establish water use targets for 2015 and 2020 that would result in statewide water savings of 20 percent by 2020. Beginning in 2016, urban retail water suppliers were required to comply with the water conservation requirements in SB X7-7 in order to be eligible for state water grants or loans. Chapter 5 of this plan contains the data and calculations used to determine compliance with these requirements.

In 2016, Governor Brown signed Executive Order (EO) B-37-16 Making Conservation a California Way of Life (MCCWL) regulation and subsequently SB 606 and Assembly Bill (AB) 1668 were passed in 2018. A substantial revision to the UWMP Act was made through SB 606 and AB 1668. These changes include, among other things: (1) additional requirements for Water Shortage Contingency Plans (WSCPs) (CWC §10640), (2) requirements for urban water suppliers to conduct a drought risk assessments part of their future UWMPs to assess water supply reliability for a period of drought lasting five consecutive water years (WYs; CWC §10635(b)), and (3) conduct annual water supply and demand assessments to determine its water supply reliability for the current year and one dry year (CWC §10632(a)). These elements are included in Chapter 7 and Chapter 8 of this Plan. Additionally, SB 606 and AB 1688 set new requirements for urban water agencies to continue to increase water efficiency beyond SB X7-7. Beginning in 2024, agencies were required to report an annual Urban Water Use Objective (UWUO) to DWR as part of their Annual Water Use Reports.

The UWMP Act contains numerous other requirements that a UWMP must satisfy. **Appendix A** to this Plan lists each of these requirements and where in the Plan they are addressed.

1.3 Relationship to Other Planning Efforts

This Plan provides information specific to water management and planning by the Redwood Valley District. However, water management does not happen in isolation; there are other planning processes that integrate with the UWMP to accomplish urban planning. Some of these relevant planning documents include relevant city and county General Plans, Water Master Plans, Recycled Water Master Plans, Integrated Resource Plans, Integrated Regional Water Management Plans, Groundwater Management Plans, Groundwater Sustainability Plans (GSPs), and others.

This Plan is informed by and helps to inform these other planning efforts. In particular, this Plan utilizes information contained in city and county General Plans and local and regional water resource plans to the extent data from these plans are applicable and available.

1.4 Plan Organization

The organization of this Plan follows the same sequence as outlined in the 2025 UWMP Guidebook.[2]

Chapter 1 - Introduction and Overview

Chapter 2 - Plan Preparation

Chapter 3 - System Description

Chapter 4 - Water Use Characterization

Chapter 5 - SB X7-7 Baseline and Targets

[2]ibid

Chapter 6 - Water Supply Characterization

Chapter 7 - Water Supply Reliability Assessment

Chapter 8 - Water Shortage Contingency Planning

Chapter 9 - Demand Management Measures

Chapter 10 - Plan Adoption, Submittal, and Implementation

In addition to these ten chapters, this Plan includes a number of appendices providing supporting documentation and supplemental information. Pursuant to CWC §10644(a)(2), this Plan utilizes the standardized forms, tables, and displays developed by DWR for the reporting of water use and supply information required by the UWMP Act. This Plan also includes additional tables, figures, and maps to augment the set developed by DWR, as appropriate. The table headers indicate if the table is part of DWR's standardized set of submittal tables.

1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

Although not required by the UWMP Act, in the 2025 UWMP Guidebook,[3] DWR recommends that all suppliers that are participating in, or may participate in, receiving water from a proposed project that is considered a "covered action" under the Delta Plan—such as a (1) multiyear water transfer; (2) conveyance facility; or (3) new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta)—provide information in their UWMP to demonstrate consistency with the Delta Plan policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code of Regulations, Title 23, Section 5003).

The Redwood Valley District derives its water supply from a combination of groundwater, purchased water from the Sweetwater Springs Water District (SSWD), and untreated local surface water purchased from the Yolo County Flood Control and Water Conservation District (Yolo County FCWCD), and therefore the District does not receive water or plan to receive water from a "covered action" under the Delta Plan. As such, this requirement is not applicable.

[3] ibid

1.6 Lay Description

☑ ***CWC § 10630.5***

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This 2025 UWMP is prepared for the Cal Water Redwood Valley District, which serves drinking water to a population of approximately 3,583. Because the District serves less than 3,000 connections and less than 3,000 AF of water per year, the District does not meet the definition of an urban water supplier under CWC§10632. Although the District does not meet the definition of an urban water supplier, Cal Water has elected to submit a UWMP for each district under its jurisdiction.

This UWMP serves as a foundational planning document and includes descriptions of historical and projected water demands, and water supplies, and the resulting reliability during a set of defined water supply conditions over a 20-year planning horizon. This document also describes the actions the District is taking to promote water conservation, both by the District itself and by its customers (referred to as "demand management measures"), and includes a plan to address potential water supply shortages such as drought or other impacts to supply availability (the "Water Shortage Contingency Plan", included as **Appendix F**). This UWMP is updated every five years in accordance with state requirements under the UWMP Act and Amendments (Division 6 Part 2.6 of the CWC §10610 – 10656). Past plans developed for the District are available on DWR's Water Use Efficiency Data Portal website: https://wuedata.water.ca.gov/.

This document includes 10 chapters, which are summarized below pursuant to the requirements of the CWC §10630.5.

Chapter 1- Introduction and Overview

This chapter presents the background and purpose of the UWMP, identifies the Plan organization, and provides this lay description overview of the document. For agencies that rely on water from the Delta, this section also discusses and demonstrates consistency with the Delta Plan by the Delta Stewardship Council. The Redwood Valley District, however, does not receive water from a "covered action" under the Delta Plan, and this discussion is not applicable.

Chapter 2 - Plan Preparation

This chapter discusses key structural aspects related to the preparation of the UWMP, and describes the coordination and outreach conducted as part of the preparation of the Plan, including coordination with local agencies and other community organizations (i.e., Marin

County, Sonoma County, and Lake County), relevant Groundwater Sustainability Agencies (GSAs), and the public.

Chapter 3 - System Description

This chapter provides a description of the Redwood Valley District's water system and the service area, including information related to the climate, population, and demographics. The District operates six physically distinct public water systems (PWSs): Coast Springs Public Water System (PWS), Armstrong Valley PWS, Noel Heights PWS, Rancho Del Paradiso PWS, Hawkins PWS, and Lucerne PWS. The six PWSs are located within Marin, Sonoma, and Lake Counties. The District serves a population of approximately 3,583 and has a climate characterized by warm dry summers and wet cool winters. The majority of the 34.7 inches of average annual precipitation falls between October and May. Single-family residential is the primary land use in the District. All water customers are considered urban (i.e., non-agricultural water users).

Chapter 4 - Water Use Characterization

This chapter provides a description and quantifies the Redwood Valley District's current and projected demands through the year 2050. The District provides drinking water (also referred to as "potable water") to customers. Water demands refer not only to the water used by customers, but also includes the water used as part of the system's maintenance and operation, as well as unavoidable losses inherent in the operation of a water distribution system. Water demand within the District was 383 acre-feet per year (AFY) in 2025.

Water demands within the District vary by PWS as each PWS has its own discrete service area with its own land use patterns, customer base, and demand characteristics. However, since each PWS functions as a discrete and geographically separated system, the District is evaluated at an aggregate level for the purposes of the Plan, with District-wide totals representing the sum of individual PWS demand projections rather than transferrable or shared demand.

Taking into account historical water use, expected population increase and other growth, climatic variability, and other assumptions, water demand within the District is projected to decrease to 333 AFY in 2050, a change of 14 percent compared to 2025. In dry year periods, water demands are expected to be somewhat higher, potentially up to 349 AFY by 2050 during an extended five-year drought.

Chapter 5 - SB X7-7 Baseline and Targets

In this chapter, the Redwood Valley District demonstrates compliance with its per capita water use target for the year 2020. The Water Conservation Act of 2009 (Senate Bill X7-7) was enacted in November 2009 and requires the state of California to achieve a 20 percent reduction in urban per capita water use by December 31, 2020. In order to achieve this, each urban retail water supplier was required to establish water use targets for 2015 and 2020 using methodologies established by DWR. The District was in compliance with its 2020 water use target of 157 gallons per capita per day (GPCD), having reduced its water use in 2020 to 104 GPCD. The District continues to meet its 2020 Target in 2025.

Chapter 6 - Water Supply Characterization

This chapter presents an analysis of the Redwood Valley District's water supplies, as well as an estimate of water-related energy-consumption. The intent of this chapter is to present a comprehensive overview of the District's water supplies, estimate the volume of available supplies over the UWMP planning horizon, and assess the sufficiency of the District's supplies to meet projected demands under "normal" hydrologic conditions.

The source of water supply for the District is a combination of groundwater and purchased water. Each PWS within the District relies on its own distinct and dedicated water source. These supplies are not physically interconnected and therefore cannot be mixed, shared, or reallocated amongst the individual PWSs; however, given that each PWS is internally whole (i.e., supplies and demand are balanced within each discrete system and not dependent on inter-system transfers), the District is evaluated at an aggregate level for the purposes of the Plan. The specific source of supply for each PWS is as follows:

- The source of supply for the Lucerne PWS is untreated local surface water purchased from the Yolo County Flood Control and Water Conservation District (FCWCD) and treated at Cal Water's water treatment plant.
- The source of supply for the Rancho del Paradiso PWS is purchased water from the Sweetwater Springs Water District.
- The source of supply for the Armstrong Valley PWS is groundwater pumped from the Lower Russian River Valley Basin (DWR Basin No. 3-004.02).
- The source of supply for the Noel Heights PWS is groundwater pumped from the Lower Russian River Valley Basin (DWR Basin No. 3-004.02).
- The source of supply for the Coast Springs PWS is groundwater pumped from the Sand Point Area Basin (DWR Basin No. 2-027).
- The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin (DWR Basin No. 1-055.01).

All basins underlying the District except for the Santa Rosa Plain Subbasin were prioritized by DWR as "very low priority". The Santa Rosa Plain Subbasin was prioritized by DWR as "medium priority". None of the basins are adjudicated or considered by DWR to be critically overdrafted. Pursuant to the Sustainable Groundwater Management Act (SGMA) the Santa Rosa Plain Groundwater Sustainability Agency (GSA) submitted a GSP to DWR in January 2022 which was approved by DWR in January 2023. The Hawkins PWS portion of the District falls within the jurisdiction of the Santa Rosa Plain GSA.

Due to Cal Water's system improvement projects and pipeline replacements within its service area, the groundwater and purchased water supplies are expected to be sufficient to support the District's projected water demand through 2050.

Calculating and reporting of water system energy intensity is also required for the 2025 UWMPs. Energy intensity is defined as the net energy used for water treatment, pumping, conveyance, and distribution for all water entering the distribution system, and does not include the energy used to treat wastewater. The energy intensity for the District is estimated to be 1,354 kilowatt hours per acre-foot of water (kWh/AF).

Chapter 7 - Water Supply Reliability Assessment

This chapter assesses the reliability of the Redwood Valley District's water supplies, with a specific focus on potential constraints such as groundwater supply availability, water quality, and climate change. The intent of this chapter is to identify any potential constraints that could affect the reliability of the District's supply (such as drought conditions) to support the District's planning efforts to ensure that its customers are well served. Water service reliability is assessed during normal, single dry-year, and multiple dry-year hydrologic conditions. The District's purchased water and groundwater supplies are expected to be sufficient to meet demands in all hydrologic conditions, including an extended five-year drought period and considering the impacts of climate change.

Further, potential water quality issues are not expected to affect the quality of water served to the District's customers, as water quality is routinely monitored and the District is able to make all appropriate adjustments to its treatment and distribution system to ensure only high-quality drinking water is served.

Chapter 8 - Water Shortage Contingency Planning

This chapter describes the WSCP for the Redwood Valley District. The 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 (e.g., implementing customer water budgets and surcharges, or restricting landscape irrigation to specific days and/or times). Consistent with DWR requirements, the WSCP includes six shortage levels to address shortage conditions ranging from up to 10 percent to greater than 50 percent shortage.

Chapter 9 - Demand Management Measures

This chapter includes descriptions of past and planned conservation programs that Cal Water operates within each demand management measure (DMM) category outlined in the UWMP Act, specifically: (1) water waste prevention ordinances, (2) metering, (3) conservation pricing, (4) public education and outreach, (5) distribution system water loss management, (6) water conservation program coordination and staffing support, and (7) "other" DMMs. Cal Water has developed a suite of conservation programs and policies, which address each DMM category.

Chapter 10 - Plan Adoption, Submittal, and Implementation

This chapter provides information on a public hearing, the adoption process for the UWMP and WSCP, the adopted UWMP and WSCP submittal process, Plan implementation, and the process for amending the adopted UWMP and WSCP. Prior to adopting the Plan, Cal Water held a formal public hearing to present information on its Redwood Valley District UWMP and WSCP on June 3, 2026, 5:30 PM. This UWMP and the corresponding WSCP were submitted to DWR within 30 days of adoption and by the July 1, 2026 deadline.

Chapter 2
Plan Preparation

This chapter discusses the type of Urban Water Management Plan (UWMP or Plan) the California Water Service (Cal Water) Redwood Valley District (also referred to herein as the "District") has prepared and includes information that will apply throughout the Plan. Coordination and outreach during the development of the Plan is also discussed. Specifically, this chapter includes the following sections:

2.1 Public Water Systems

2.2 Regional Planning

2.3 Individual or Regional Planning and Compliance (Regional Alliance)

2.4 Plan Preparation, Standard Units, and Basis for Reporting

2.5 Coordination and Outreach

2.1 Public Water Systems

The Redwood Valley District operates the six Public Water Systems (PWS) listed in **Table 2-1** (i.e., Coast Springs PWS, Armstrong Valley PWS, Noel Heights PWS, Rancho Del Paradiso PWS, Hawkins PWS, and Lucerne PWS). Public Water Systems are the systems that provide drinking water for human consumption and are regulated by the State Water Resources Control Board (SWRCB), Division of Drinking Water. The SWRCB requires that water agencies report water usage and other relevant PWS information via the electronic Annual Reports to the Drinking Water Program (eARDWP). These data are used by the state to determine, among other things, whether an urban retail water supplier has reached the threshold (3,000 or more connections or 3,000 acre-feet [AF] of water supplied) for submitting a UWMP. For the purposes of the Plan, the terms "customer" and "connections" are used interchangeably.

In 2025, the District provided water through 1,899 connections and served 385 AF of water (**Table 2-1**). The District is therefore presently below both thresholds. However, Cal Water has elected to prepare plans for all of its districts regardless of their size because these plans are integral to Cal Water planning initiatives at both the enterprise-level and district-level, as well as important sources of information for broader regional planning efforts

Table 2-1. Public Water Systems (DWR Table 2-1)

Has there been a change in the number of affiliated Public Water Systems since the 2020 UWMP? (OPTIONAL)			No
Public Water System Number	Public Water System Name	Number of Municipal Connections 2025	Volume of Water Supplied 2025
			(AF)
CA4910018	Armstrong Valley	280	73
CA2110007	Coast Springs	250	20
CA4900546	Hawkins	50	11
CA1710005	Lucerne	1,213	270
CA4900785	Noel Heights	47	6
CA4900514	Rancho Del Paradiso	60	5
	Total	1,899	385
Notes:			

2.2 Regional Planning

Regional planning can deliver mutually beneficial solutions to all agencies involved by reducing costs for the individual agency, assessing water resources at the appropriate geographic scale, and allowing for solutions that cross jurisdictional boundaries. Cal Water participates in regional water resources planning initiatives throughout California in the regions in which its 24 water districts are located. Cal Water participated in the 2019 Update of the Bay Area Integrated Regional Water Management Plan (IRWMP), which covers a portion of the Redwood Valley District. Cal Water also monitors and supports the goals of the Westside Sacramento and North Coast IRWMPs, which each cover a portion of the District. Cal Water is also participating in the implementation of the Groundwater Sustainability Plan (GSP) for the one underlying groundwater subbasin (Santa Rosa Plain Subbasin) subject to the Sustainable Groundwater Management Act (SGMA). The Hawkins PWS portion of the District falls within the jurisdiction of the Santa Rosa Plain Groundwater Sustainability Agency (GSA).

2.3 Individual or Regional Planning and Compliance (Regional Alliance)

Urban water suppliers may elect to prepare individual or regional UWMPs. The Redwood Valley District has elected to prepare an individual UWMP covering its six public water systems (see **Table 2-2**).

This Plan has been prepared in general accordance with the format suggested in the California Department of Water Resources' (DWR's) 2025 UWMP Guidebook. Text from the UWMP Act has been included in text boxes at the beginning of relevant chapters of this UWMP. The information presented in the respective UWMP chapters, and the associated text, figures, and charts are collectively intended to fulfill the requirements of that sub-section of the UWMP Act. To the extent practicable, supporting documentation has also been provided in **Appendices A** through **Appendix H**. Other sources for the information contained herein are provided in the references section of the Plan.

Urban retail water suppliers may report on the requirements of the Water Conservation Act of 2009 (Senate Bill [SB] X7-7) individually or as a member of a "Regional Alliance." The District is not a member of a Regional Alliance.

Table 2-2. Plan Identification (DWR Table 2-2)

Select One or Both	Type of Plan		Name of Regional Alliance or RUWMP
☒	**Individual UWMP**		
	☐	Water Supplier is also a member of a SB X7-7 Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		
Notes: (a) The Redwood Valley District is not a member of a Regional Alliance.			

2.4 Plan Preparation, Standard Units, and Basis for Reporting

☑ ***CWC § 10608.12 (t)***

"Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

☑ ***CWC § 10617***

"Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

☑ ***CWC § 10621 (a)***

Each urban water supplier shall update its plan at least once every five years on or before July 1, in years ending in six and one, incorporating updated and new information from the five years preceding each update.

☑ ***CWC § 10621 (f)***

Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.

Per California Water Code CWC §10617, an urban water supplier is a supplier, either publicly or privately owned, providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 AF of water annually. The District is presently below both thresholds. However, Cal Water has elected to prepare plans for all of its districts regardless of their size because these plans are integral to Cal Water planning initiatives at both the enterprise-level and district-level, as well as important sources of information for broader regional planning efforts. Therefore, Cal Water has elected to develop and submit a UWMP for the District to the California Department of Water Resources (DWR) by July 1, 2026. The District is a retail water supplier, as identified in **Table 2-3**. The District is not a wholesale water supplier.

Annual volumes of water reported in this UWMP are measured in AF and are reported on a calendar year basis (**Table 2-3**). Water use and planning data reported in this UWMP use calendar year 2025 as the selected twelve-month reporting period, consistent with the reporting period options provided in the 2025 UWMP Guidebook.

Per the 2025 UWMP Guidebook, the UWMP preparer is requested to complete a checklist of specific UWMP requirements to assist DWR's review of the submitted UWMP. The completed checklist is included in **Appendix A**.

Further, consistent with the 2025 UWMP Guidebook, the terms "water use", "water consumption", and "water demand" are used interchangeably in this UWMP.

Table 2-3. Supplier Identification (DWR Table 2-3)

Type of Supplier (select one or both)	
☐	Supplier is a wholesale supplier
☒	Supplier is a retail supplier
Fiscal or Calendar Year (select one)	
☒	UWMP Tables are in calendar years
☐	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins (mm/dd)	
Units of measure used in UWMP (Select from the drop down list).	
Unit	AF
Notes:	

2.5 Coordination and Outreach

☑ ***CWC § 10620 (d) (3)***

Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

☑ ***CWC § 10631 (a)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

☑ ***CWC § 10642***

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. …

Coordination with other water suppliers, cities, counties, and other community organizations in the region is an important part of preparing a UWMP and Water Shortage Contingency Plan

(WSCP). This section identifies the agencies and organizations Redwood Valley District sought to coordinate with during preparation of this Plan.

2.5.1 Wholesale and Retail Coordination

☑ ***CWC § 10631 (h)***

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

Urban retail water suppliers relying on one or more wholesalers for water supply are required to provide these wholesalers with information regarding projected water supply and demand. As shown in **Table 2-4**, the District purchases water from two wholesale suppliers: Sweetwater Springs Water District and Yolo County Flood Control and Water Conservation District.

Table 2-4. Water Supplier Information Exchange (DWR Table 2-4)

Wholesale Water Supplier Name
Sweetwater Springs Water District
Yolo County Flood Control and Water Conservation District
Notes:

2.5.2 Coordination with and Notice to Other Agencies and the Community

☑ ***CWC § 10620 (d) (3)***

Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

☑ ***CWC § 10642***

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

The District coordinated with cities, counties, and other community organizations during preparation of this UWMP. Cal Water provided notice to these entities and the communities it serves 60 days prior to the public hearing it held on June 3, 2026 to present the draft of the UWMP, address questions, and receive comments. Cities and counties receiving the public hearing notification from the District as required per CWC §10621 (b) are listed in **Table 10-1** in Chapter 10 of this Plan.

Copies of correspondence with other agencies and public notices are provided in **Appendix B** and **Appendix C**, respectively.

Water suppliers are required by the UWMP Act to encourage active involvement of the community within the service area prior to and during the preparation of its UWMP. The UWMP Act also requires water suppliers to make a draft of the UWMP available for public review and to hold a public hearing regarding the findings of the UWMP prior to its adoption. In addition to sending notices to the various agencies listed in **Table 2-4**, the District also notified the public of its intent to adopt its UWMP. The Public Review Draft of the 2025 UWMP was made available on Cal Water's website on MM DD, 2026. Additional information on public participation, including information on noticing, is provided in Chapter 10.

2.5.3 Coordination with Land Use Authorities

☑ ***CWC § 10631 (a)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

Cal Water coordinated with Marin County, Sonoma County, and Lake County staff to review and confirm that appropriate land use assumptions were used to develop the UWMP demand projections. Correspondence with the land use authorities is included in **Appendix B**.

Chapter 3
System Description

☑ ***CWC § 10631 (a)***

A plan shall be adopted in accordance with this chapter that shall do all of the following:

Describe the service area of the supplier, including current and projected population, climate, and other social, economic, and demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available. The description shall include the current and projected land uses within the existing or anticipated service area affecting the supplier's water management planning. Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

This chapter provides a description of the California Water Service (Cal Water) Redwood Valley District (also referred to herein as the "District") water system and service area, including climate, population, demographics, and land uses to help in understanding various elements of water supply and demand. This chapter includes the following sections:

3.1 General Description

3.2 Service Area Boundary Map

3.3 Service Area Climate

3.4 Service Area Population and Demographics

3.5 Land Uses within Service Area

3.1 General Description

The Redwood Valley District is composed of six public water systems (PWSs) located in Marin, Sonoma, and Lake Counties.

The Coast Springs PWS serves a portion of the coastal community of Dillon Beach, located at the southern end of Bodega Bay in northwestern Marin County. The service area consists primarily of single-family residential homes, with a small number of commercial services. Surrounding land uses are predominantly pasture and large-lot single-family residences. Water supplied in the Coast Springs PWS is obtained from local groundwater produced by nine wells.

The Armstrong Valley, Noel Heights, and Rancho del Paradiso PWSs serve rural communities near Guerneville along State Highway 116 in Sonoma County. These areas have historically consisted largely of seasonal vacation homes and supporting commercial uses, although the population has increasingly shifted toward permanent residency. The Rancho del Paradiso PWS receives treated surface water purchased from the Sweetwater Springs Water District. The Armstrong Valley and Noel Heights PWSs supply local groundwater produced from three wells.

The Hawkins PWS is located in the southern portion of the City of Santa Rosa. It serves a subdivision of approximately 50 single-family residential connections and relies on local groundwater produced by two wells.

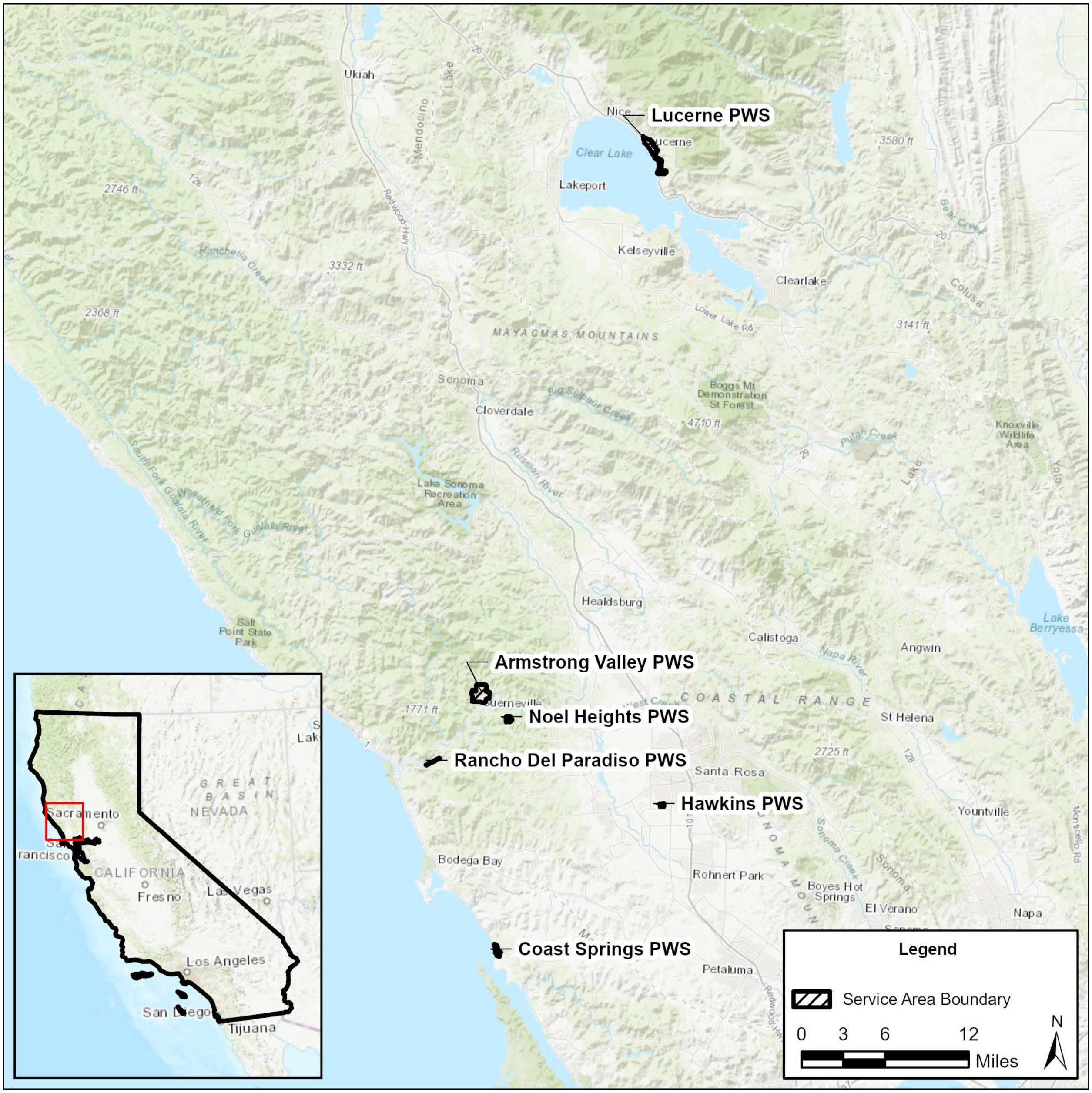
The Lucerne PWS serves the community of Lucerne along State Highway 20 adjacent to Clear Lake in Lake County. Lucerne is the largest of the six PWSs in the District and has a more diverse mix of service connections, including single-family and multi-family residential, commercial, and governmental uses. The Lucerne PWS purchases untreated local surface water from the Yolo County Flood Control and Water Conservation District.

Cal Water, a public water utility regulated by the California Public Utilities Commission, formed the District in 2000 through its acquisition of the Redwood Valley Water Company. In total, the District currently has 14 wells, 26 storage tanks, 12 booster pumps, and 33.38 miles of pipeline delivering approximately 0.34 million gallons of water daily. Residential customers constitute the majority of the District's service connections and account for 66 percent of total water use. Non-residential demands represent about 5.0 percent, while distribution system losses account for the remaining amount.

3.2 Service Area Boundary Map

Figure 3-1 shows the location of the District's six PWSs.

Figure 3-1. District Location and Service Boundaries



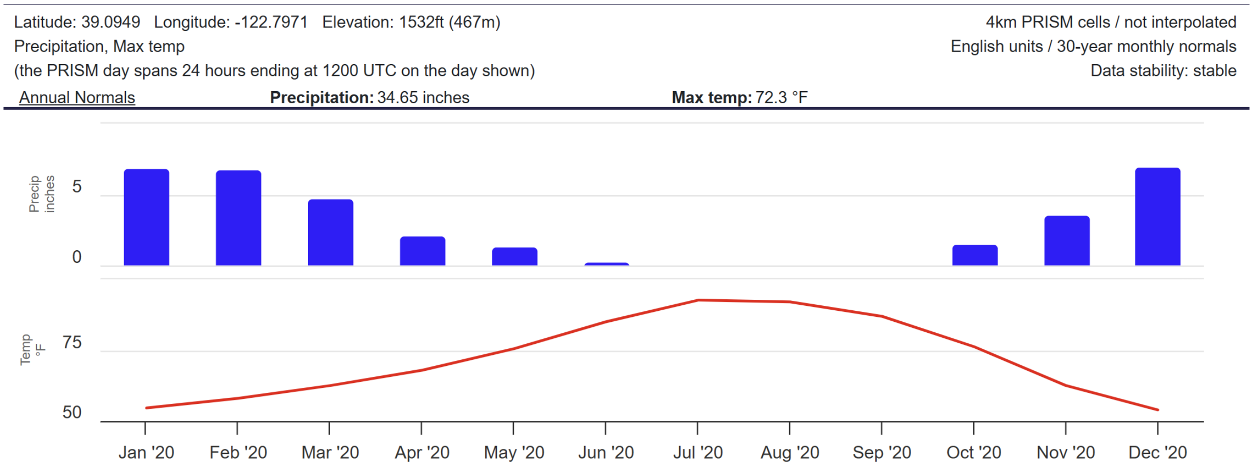
3.3 Service Area Climate

The Redwood Valley District's climate is characterized by warm dry summers and wet cool winters (see **Figure 3-2**).[4] Most rainfall occurs between October and May. Precipitation totals in

[4] Precipitation and temperature data downloaded from: https://prism.oregonstate.edu/explorer/. These data represent a 30-year period from 1991 through 2020. The x-axis reflects the end of the 30-year time series.

the summer months are negligible. On average, the District receives 34.7 inches of rainfall annually. Maximum daily air temperature averages 89 degrees Fahrenheit during the summer months. In the winter, it averages 55 degrees Fahrenheit.

Figure 3-2. 30-Year Normals, Precipitation and Maximum Daily Air Temperature



Based on data from the Oregon State PRISM dataset for 1895–2024, annual rainfall varies considerably from year to year, as is typical across much of California. The standard deviation of annual rainfall is 10.7 inches—about 32 percent of the long-term average. Multi-year periods of below-average rainfall are common: since 1895, there have been eight episodes lasting three or more consecutive years and three episodes lasting five or more years. The most recent episode lasting five or more years started in 1987 and ended in 1991. Despite the high variability, there is no statistically significant long-term trend in average annual rainfall, and the variance of annual rainfall has remained stable.

In contrast, temperatures in the District have been steadily warming. Since 1895, the average daily temperature has increased at a rate of approximately 0.008 degrees Fahrenheit per year. Mean annual temperature for the 2015–2024 period was 2.4 degrees Fahrenheit higher than for the corresponding 10-year period a century earlier. In addition to rising average temperatures, there is evidence the variance in annual temperatures has increased in recent time periods.[5]

3.4 Service Area Population and Demographics

The District estimates that its service area population was 3,583 in 2025.

[5] Because annual temperature exhibits a statistically significant upward trend, it is necessary to apply variance stability tests to the detrended temperature series. This ensures that the test evaluates stability in the variance around the trend, rather than confounding shifts in the mean with changes in variability.

Population estimates are developed using U.S. Census Block population counts from the decennial Census. These counts are converted to average population per single-family and multi-family service, which are then applied to annual service counts for the years between decennial censuses. This approach is similar to the method used in the California Department of Water Resources (DWR) Population Tool, and comparisons between the two methods show that resulting population estimates typically differ by less than one percent.[6]

Current and projected service area populations are shown in **Table 3-1**. The communities served by the District are considered to be near buildout. Apart from the Coast Springs PWS, no additional population growth is projected over the planning horizon. In the Coast Springs PWS, 14 developable single-family residential lots have been identified. For purposes of this plan, it is assumed these lots will be developed between 2031 to 2035.

Table 3-1. Population – Current and Projected (DWR Table 3-1)

Population Served	2025	2030	2035	2040	2045	2050
	3,583	3,583	3,608	3,608	3,608	3,608

Demographics for the Lucerne Census Designated Place (CDP)[7], the largest community served by the District, are summarized in **Table 3-2**. These data are from the U.S. Census American Community Survey 2023 5-Year Estimates. Relative to the rest of California, the Lucerne's population is older and more racially homogeneous. Educational attainment in Lucerne is lower than for the state, as is the median household income.

Lucerne's stock of housing is older than for California overall. Approximately 89 percent of the homes in Lucerne were built before 1990 compared to 72 percent for all of California. Homes built after 1990 are more likely to have plumbing fixtures that are compliant with state and federal water and energy efficiency standards.

[6] California Water Service, 2016. 2015 Urban Water Management Plan: Redwood Valley District, dated June 2016.
[7] While the District provides service to other small rural and coastal communities in its five other PWSs, population data for these areas are limited. Additionally, these communities are at full build out with no additional population growth projected.

Table 3-2. Demographic and Housing Characteristics

Demographics	Lucerne CDP	California
Median Age (years)	40.7	37.6
Racial Makeup (%)		
White	72.3	38.1
Black or African American	5.2	5.4
American Indian and Alaska Native	3.7	1.4
Asian	0.0	16.1
Native Hawaiian	0.3	0.4
Some other race	8.0	18.9
More than two races	10.4	19.8
Hispanic or Latino (of any race) (%)	14.2	40.8
Educational Attainment (%)		
Bachelor's Degree or Higher	7.2	36.5
Primary Language Spoken at Home (%)		
English Only	98.2	82.7
Limited English-Speaking Households	1.8	17.3
Median Household Income ($)	47,460	96,334
Population below Federal Poverty Level (%)	17.5	12.0
Housing	**Lucerne CDP**	**California**
Median Year Built	1972	1976
Year Housing Built (%)		
2010 or Later	0.8	6.9
2000 to 2009	6.1	11.1
1990 to 1999	4.2	10.3
Before 1990	88.8	71.6

3.5 Land Uses within Service Area

Single-family residential development is the predominant land use in the Redwood Valley District. There have been no major developments since the District's formation, and this pattern is not expected to change. In fact, since 2008—the first year for which reliable data are available—the total number of service connections has declined slightly. As noted above, 14 developable single-family lots were identified within the Coast Springs PWS. The water demand projections in Chapter 4 assume that these lots will be developed by 2035. Aside from this limited infill, the demand projections assume no additional growth within the District over the planning horizon.

Chapter 4
Water Use Characterization

This chapter provides a description and quantifies the California Water Service (Cal Water) Redwood Valley District's (also referred to herein as the "District") past, current, and projected water uses through 2050. For the purposes of the Urban Water Management Plan (UWMP or Plan), the terms "water use" and "water demand" are used interchangeably. Water demands within the District vary by Public Water System (PWS) as each PWS has its own discrete service area with its own land use patterns, customer base, and demand characteristics. However, since each PWS functions as a discrete and internally balanced system, the District is evaluated at an aggregate level for the purposes of the Plan, with District-wide totals representing the sum of individual PWS demand projections rather than transferrable or shared demand.

This chapter is divided into the following subsections:

4.1 Non-Potable Versus Potable Water Use

4.2 Past, Current, and Projected Water Uses by Sector

4.3 Distribution System Water Loss

4.4 Climate Change Considerations

4.5 Coordinating Water Use Projections

Appendix D provides additional information and data related to the development of the water demand projections presented in this chapter.

4.1 Non-Potable Versus Potable Water Use

Potable and non-potable water uses are accounted for separately herein. Potable uses are served by the Redwood Valley District's potable water delivery system. Potable water deliveries comply with Title 22 Drinking Water Standards. Non-potable water uses include recycled and untreated raw water deliveries, such as tertiary treated recycled water or surface or groundwater supplies that do not meet potable drinking water standards. Uses of potable versus non-potable water are clearly distinguished in the tables included in this chapter.

4.2 Past, Current, and Projected Water Uses by Sector

☑ ***CWC § 10631 (d) (1)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following:

(A) Single-family residential.

(B) Multifamily.

(C) Commercial.

(D) Industrial.

(E) Institutional and governmental.

(F) Landscape.

(G) Sales to other agencies.

(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.

(I) Agricultural.

(J) Distribution system water loss (d)(2) The water use projections shall be in the same five-year increments described in subdivision (a).

(d)(4)(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(d)(4)(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following: (i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections. (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

Demand within the District's water service area is measured using water meters that are installed at each customer service connection. Demand within the 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**: Three or more dwelling units served by a common water meter.
- **Commercial**: Private enterprise customers other than large industrial customers.
- **Institutional/Governmental**: Institutional and governmental entities such as schools, administrative buildings, and publicly owned parks and landscaping.
- **Industrial**: Large industrial sites and water use.
- **Landscape**: Water meters classified exclusively for outdoor landscape irrigation.
- **Other**: Includes temporary meters, and miscellaneous customers not listed elsewhere.
- **Fire Service**: Water meters used for fire suppression or system maintenance. These meters typically do not have billed consumption.

Water use categories described in California Water Code (CWC) §10631(d)(1)(G) through (I)—listed below—were not included in the District'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.

4.2.1 Past and Current Water Use

☑ ***CWC §10631***

(d)(1) For an urban retail water supplier, quantify, to the extent records are available, past and current water use… based upon information developed pursuant to subdivision (a), identifying the uses among water use sectors…

Table 4-1 and **Figure 4-1** show District water uses from 2021 through 2025 in acre-feet (AF). Total demand in 2025 was 383 AF. Residential customers constitute the majority of the District's service connections and account for 66 percent of total water use. Non-residential demands represent about 5.0 percent, while distribution system losses account for the remaining amount. The District does not currently serve recycled water. Discussion of potential future use of recycled water is provided in Section 6.5.

Per capita water use in the District has declined steadily since 2000. Between 2000 and 2025, water use per person decreased by 52 percent (**Figure 4-2**), falling from 197 gallons per capita per day (GPCD) to 96 GPCD. Total demand over this period decreased by approximately 300 AF—going from approximately 700 AF in 2000 to 383 AF today.

Several factors have contributed to this long-term reduction in per capita water use. Tiered residential pricing was adopted in 2009, strengthening incentives for efficient household water use. Additionally, beginning in 2012, Cal Water tripled conservation program expenditures, expanding customer access to tools and resources that support water-use efficiency. State and federal efficiency standards have significantly reduced water use from toilets, showers, clothes washers, and other plumbing fixtures.

Collectively, these actions have resulted in a sustained reduction in water use across the service area. These trends are expected to continue and are incorporated into the demand projections presented in the next section.

Table 4-1. Demands for Potable and Non-Potable Water - Actual (DWR Table 4-1)

Use Type	Additional Description (as needed)	Historical Water Use					
		Level of Treatment When Delivered (OPTIONAL)	2021	2022	2023	2024	2025
			(AF)	(AF)	(AF)	(AF)	(AF)
Single Family		Potable	238	220	201	229	219
Multi-Family		Potable	31	30	34	35	35
Commercial		Potable	15	12	12	15	16
Institutional		Potable	4	7	7	4	4
Industrial		Potable	0	0	0	0	0
Landscape		Potable	0	0	0	0	0
Other		Potable	0	1	0	0	0
Losses	(a)	Potable	91	96	121	112	109
		Subtotal Potable	378	366	375	395	383
		Subtotal Non-Potable	0	0	0	0	0
		Total	378	366	375	395	383

Notes:
(a) Sum of potable real and apparent losses and authorized unbilled consumption from water loss reports.
(b) The total demands in DWR Table 4-1 may not be equal to the volume supplied in DWR Table 2-1 and total supply in DWR Table 6-8 due to estimations of water loss based on historical state-reported water loss values.

Figure 4-1. Annual Total Water Demand by Sector

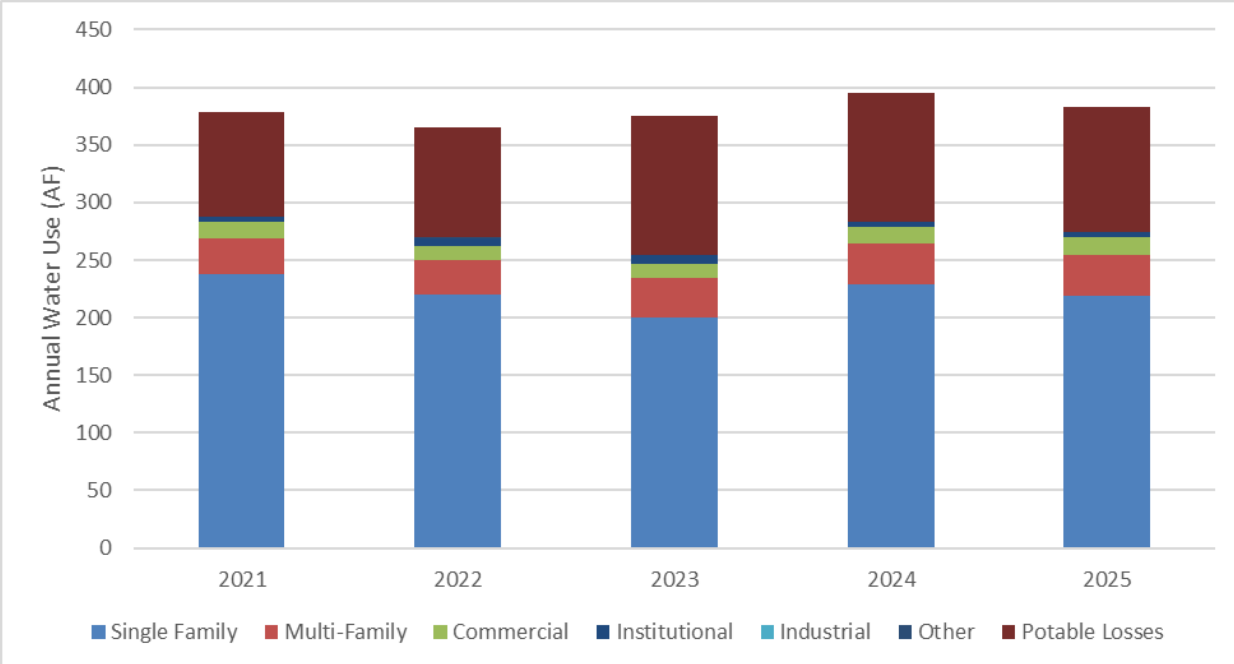
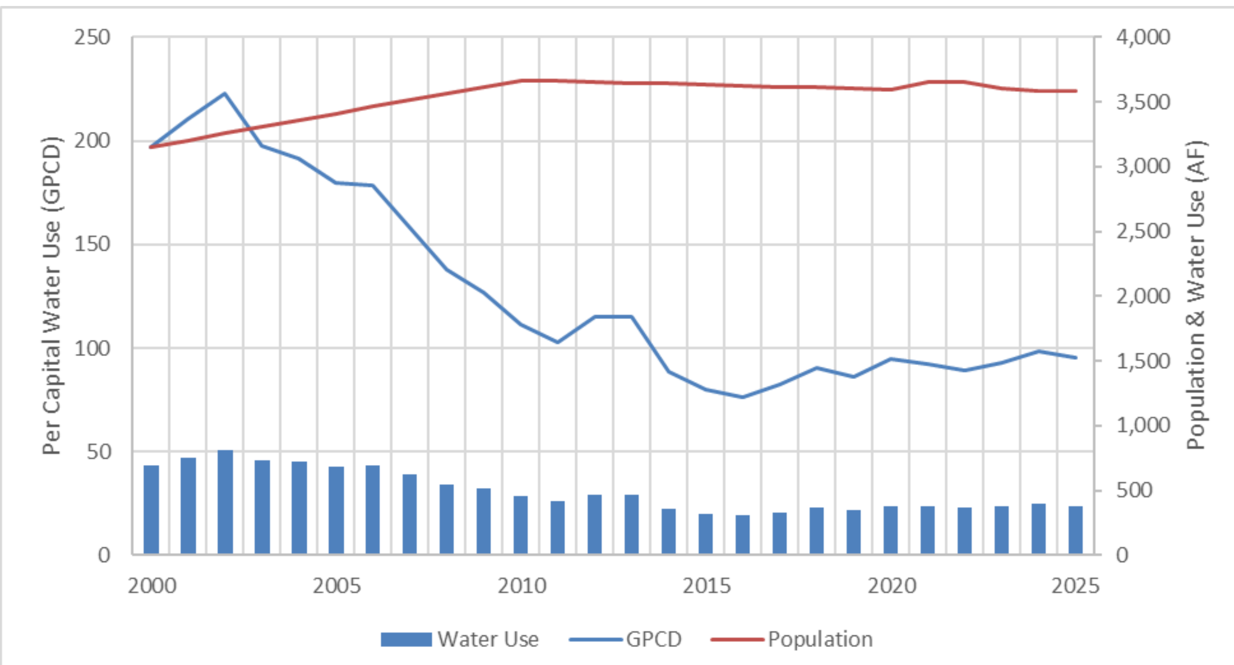


Figure 4-2. Annual Per Capita Water Use



4.2.2 Projected Water Use

Table 4-2 and **Figure 4-3** show projected water uses in five-year increments through 2050. Future water uses are projected by combining forecasts of future water services with forecasts of expected water use per service. As discussed in Chapter 3 the communities served by the District PWSs are considered to be near buildout, and no additional population or service growth, aside from 14 residential services in the Coast Springs PWS, is projected over the planning horizon.

Baseline forecasts of expected use per service are calibrated to average usage for the previous three years. The baseline forecasts are then adjusted over the forecast period for expected changes in usage associated with:

1. **Passive water savings** that are primarily driven by plumbing codes and appliance standards that affect both the turnover of existing appliances and fixtures and the installation of new ones.
2. **Active water savings** that are driven by the continued implementation of District conservation programs.
3. **Behavioral responses to higher water service** costs that are driven by customer responsiveness to changes in marginal water prices and projected increases in water service costs over the forecast period.
4. **Water loss standards compliance** that is translated into a reduction in expected loss per service connection (see **Table 4-6**).

These adjustments are described in greater detail in the next section.

As shown in **Figure 4-4**, per capita demand is projected to continue declining, though at a more gradual pace than in previous decades, as many of the most accessible conservation opportunities—such as low-efficiency plumbing fixtures—have already been realized.

Table 4-2. Use for Potable and Non-Potable Water – Projected (DWR Table 4-2)

Use Type	Additional Description (as needed)	Projected Water Use					
		Level of Treatment When Delivered (OPTIONAL)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (AF)	2050 (AF)
Single Family		Potable	198	193	188	185	182
Multi-Family		Potable	32	31	30	29	29
Commercial		Potable	13	11	10	9	9
Institutional		Potable	5	4	4	4	3
Industrial		Potable	0	0	0	0	0
Landscape		Potable	0	0	0	0	0
Other		Potable	0	0	0	0	0
Losses	(a)	Potable	109	110	110	110	110
		Subtotal Potable	357	349	342	337	333
		Subtotal Non-Potable	0	0	0	0	0
		Total	357	349	342	337	333

Notes:
(a) Sum of potable real and apparent losses and authorized unbilled consumption. Assumes compliance with state water loss standards by 2028.

Figure 4-3. Projected Annual Water Demand by Sector

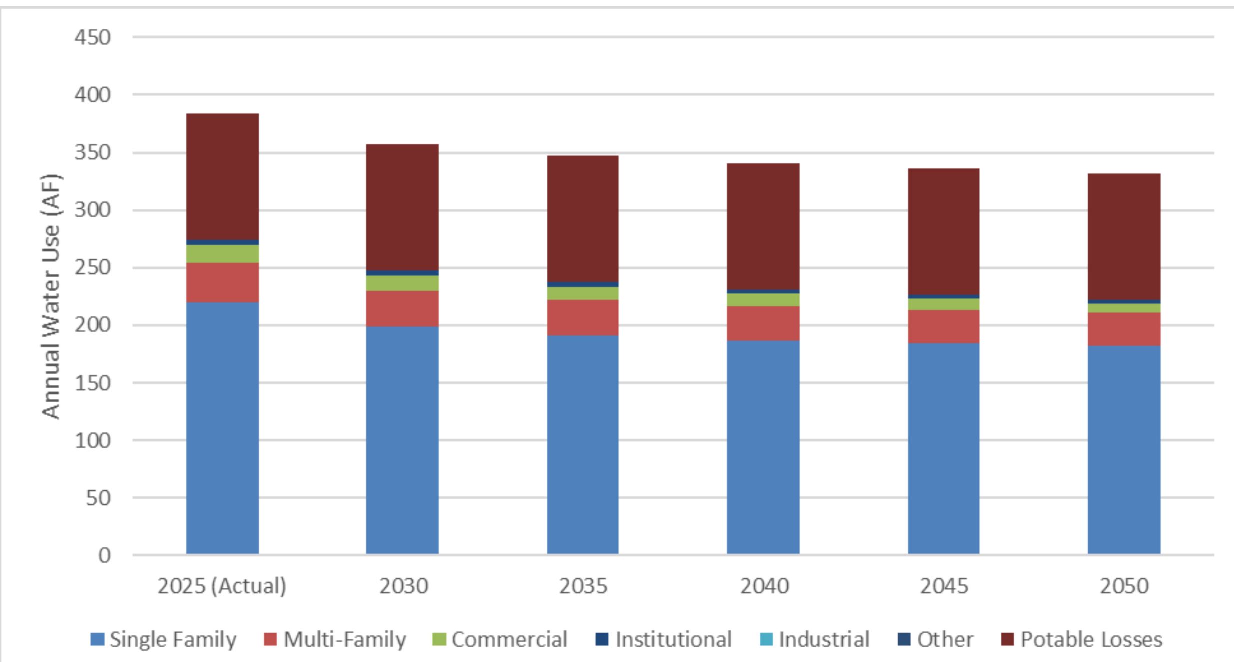
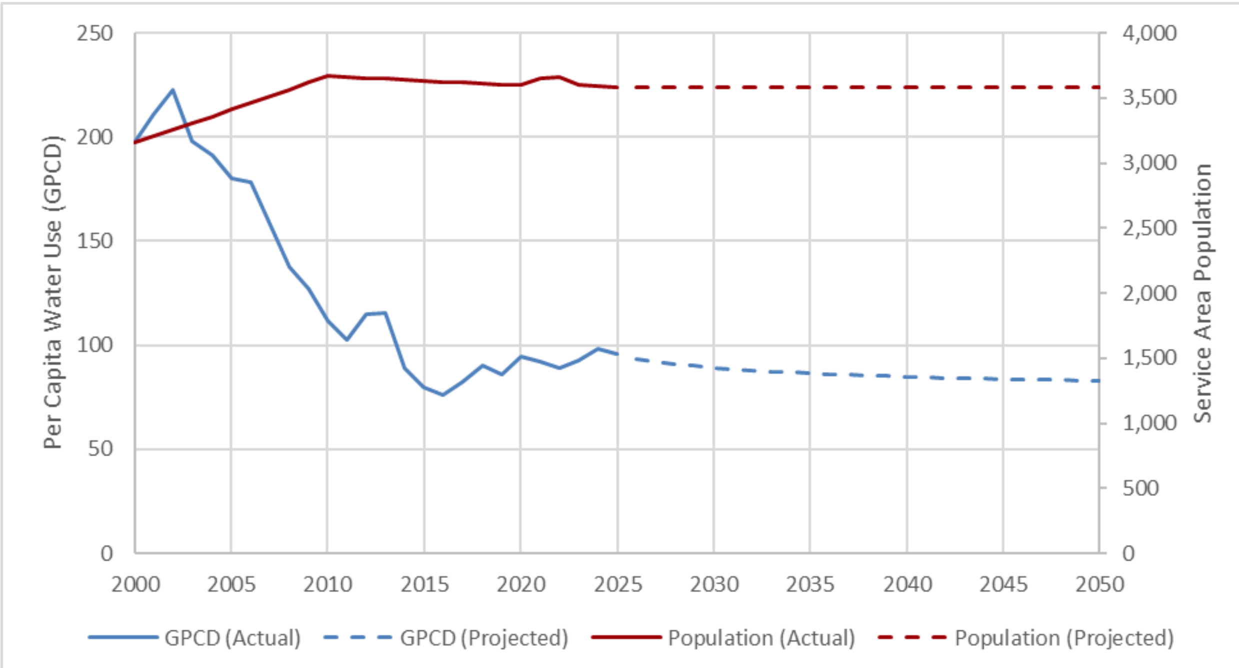


Figure 4-4. Projected Per Capita Water Use



4.2.3 Adjustments to Projected Water Uses

As noted in the previous section, four adjustments were made to projected water usage:

1. **Passive water savings** from plumbing codes and appliance standards.
2. **Active water savings** from implementation of the District's conservation programs.
3. **Behavioral responses to higher water service cost**.
4. **Water loss standards compliance**.

This section describes the data and methods underlying these adjustments as well as their relative magnitudes.

Table 4-3. Use for Potable and Non-Potable Water – Projected (DWR Table 4-3)

Are Future Water Savings Included in Projections?	Yes
If "Yes" to above: State the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Section 4.2.3
Are Lower Income Residential Demands Included in Projections?	Yes
OPTIONAL If the method for accounting Lower Income Residential Demands has been included, provide page number where this accounting can be found.	See notes
Notes: (a) All District residential customers, regardless of income level, are metered and thus the demands of residential customers with lower incomes are fully included in the single- and multi-family water uses shown in DWR Table 4-2.	

(1) Passive Water Savings Adjustment

☑ ***CWC §10631(d)(4)***

(A) Water use projections, where available, shall display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans identified by the urban water supplier, as applicable to the service area.

(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the following:

(i) Provide citations of the various codes, standards, ordinances, or transportation and land use plans utilized in making the projections.

(ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.

The passive water savings adjustments reflect the effects of the following codes and regulations:

- **Assembly Bill (AB) 715 (2007)** requires that any toilet or urinal sold or installed in California on or after January 1, 2014, must not exceed flush ratings of 1.28 gallons per flush (gpf) for toilets and 0.5 gpf for urinals. These standards superseded the earlier 1991 limits of 1.6 and 1.0 gpf, respectively. In response to the Governor's Emergency Drought Response Executive Order B-29-15, the California Energy Commission adopted new urinal standards in April 2015, reducing allowable use to 0.125 gpf—75 percent lower than the AB 715 standard.
- **California Appliance Efficiency Regulations (California Code of Regulations [CCR], Title 20, Sections 1601-1609)** set a two-tier standard for showerheads: a maximum flow rate

of 2.0 gallons per minute (gpm) for models manufactured on or after July 1, 2016, and a maximum flow rate of 1.8 gpm for models manufactured on or after July 1, 2018.

- **Federal appliance water efficiency standards** for residential and commercial clothes washers and dishwashers are established by the U.S. Department of Energy under the Energy Policy and Conservation Act.
- **CALGreen Building Code** requirements apply to new construction and renovations in California. CALGreen includes prescriptive indoor standards limiting water consumption of plumbing fixtures and fittings, as well as an optional performance path requiring a 20 percent reduction in indoor water use relative to a calculated baseline using CALGreen worksheets.
- **Senate Bill (SB) 407 (2009)** mandates that all buildings constructed on or before January 1, 1994, retrofit noncompliant plumbing fixtures to meet current state efficiency standards. The law also requires sellers of single-family homes, effective January 1, 2017, to disclose in writing whether required plumbing fixture replacements have been completed. Similar disclosure requirements for multi-family and commercial properties took effect January 1, 2019. **SB 837 (2011)** reinforced these requirements by adding corresponding disclosure elements to the statutory property transfer disclosure statement.
- **Model Water Efficient Landscape Ordinance (MWELO)** was updated by the California Water Commission in 2015. MWELO (or a locally adopted equivalent) limits water use for new and rehabilitated landscapes. Under MWELO, the maximum applied water allowance (MAWA) is set at 55 percent of reference evapotranspiration for residential landscapes and 45 percent for commercial landscapes, with exceptions for special uses such as sports fields, parks, or landscapes irrigated with recycled water.

Passive water savings adjustments were estimated using the Alliance for Water Efficiency's *Water Conservation Tracking Tool* (AWE Tracking Tool), a quantitative model widely used by water utilities to assess both active and passive water savings.[8]

(2) Active Savings Adjustment

Active savings refer to water savings resulting from the District's implementation of water conservation programs, customer education efforts, and the provision of financial incentives (e.g., rebates). The active savings adjustment assumes continuation of the District's current conservation programs at implementation levels consistent with conservation program funding authorized by the California Public Utilities Commission (CPUC) in Cal Water's most recent General Rate Case.

[8] AWE's Tracking Tool is available at: https://allianceforwaterefficiency.org/resource/water-conservation-tracking-tool/

A description of the District's existing and planned conservation programs, also referred to as Demand Management Measures (DMMs), is provided in Chapter 9. Projected compliance with state urban water conservation regulations is addressed in Chapter 5.

As with passive savings, the cumulative effects of these programs on future water demand were estimated using the AWE Tracking Tool.

(3) Customer Price Response Adjustment

The AWE Tracking Tool was also used to calculate customer price response adjustments. The adjustment assumes a sustained 1.0 percent annual rate of increase above general price inflation in the marginal cost of water service.

The AWE Tracking Tool's default demand elasticities were used to adjust baseline demands over the forecast period in response to the real increases in marginal water service costs. The demand elasticities estimate the expected percentage change in water use given a 1.0 percent inflation-adjusted increase in marginal water cost. For example, an elasticity of -0.1 implies that demand will decrease, on average, by 0.1 percent given a 1.0 percent increase in marginal water cost.

The default elasticities used by the tracking tool are as follows:

- Single-Family: -0.15
- Multi-Family: -0.075
- CII: -0.15
- Irrigation: -0.25

Because higher water service cost encourages conservation program participation, the AWE Tracking Tool's default elasticities are purposely conservative (i.e., small in magnitude) in order to reduce the likelihood of double counting water savings.

(4) Water Loss Standards Compliance

The water loss standards compliance adjustment is based on the difference between average real and apparent water loss, as reported in the District's most recent three water loss reports (see **Table 4-5**), and the corresponding standards. Real and apparent water use per service is reduced by these differences in 2028, the deadline for compliance with the standards, if the average loss rates exceed their standards.

(5) Summary of Demand Adjustments

Table 4-4 and **Figure 4-5** illustrate the effects of the demand adjustments on projected water use. In total, these adjustments reduce projected 2050 water demand by approximately 13 percent relative to the baseline forecast. The majority of this reduction (approximately 85 percent) is attributable to active conservation savings from District programs, with the remaining savings associated with passive conservation.

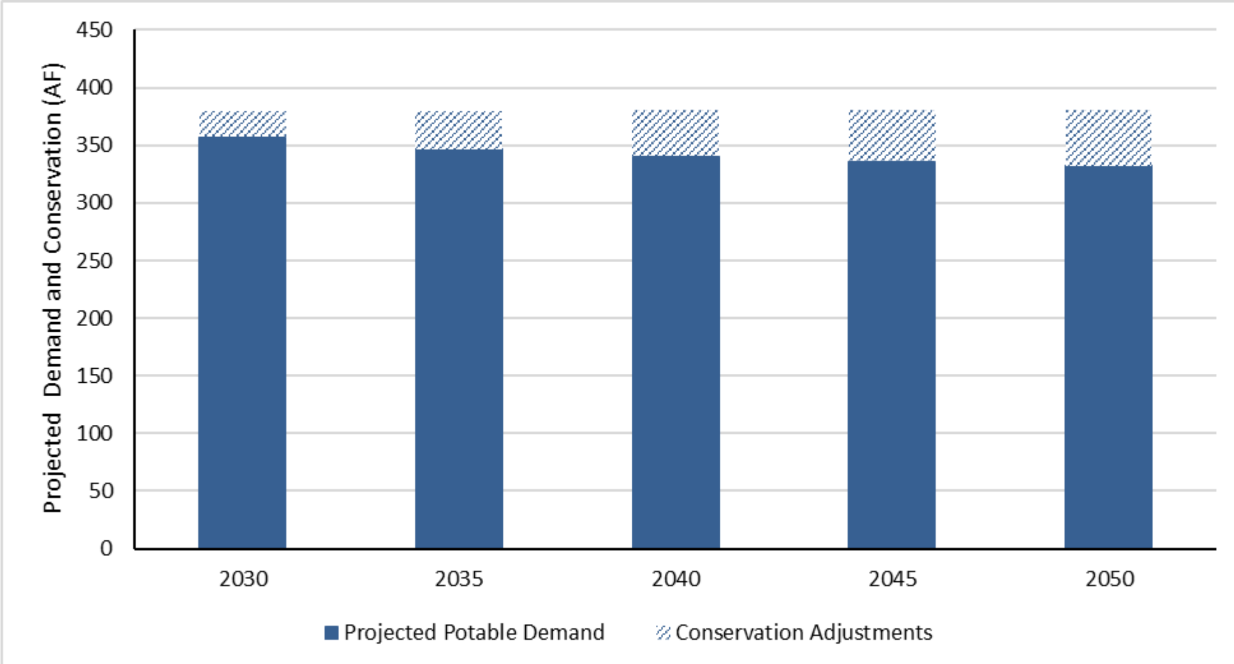
The small negative water service cost adjustments shown in the table reflect the fact that projected increases in household income are expected to more than offset the demand-reducing effects of projected increases in water prices. No adjustment for compliance with water loss standards is included because the State Water Resources Control Board has not established a water loss standard for the District; as a result, the District is deemed compliant with SB 555 water loss reduction requirements by default.

Table 4-4. Projected Baseline and Adjusted Potable Water Demand

Water Conservation Type	Projected Potable Water Demand				
	2030	2035	2040	2045	2050
	(AF)	(AF)	(AF)	(AF)	(AF)
Baseline Potable Water Demand	379	382	382	382	382
Demand Adjustments					
Passive Conservation	7	10	11	11	11
Active Conservation	16	24	31	36	42
Water Service Cost (a)	-1	-1	-2	-3	-3
Water Loss Standards Compliance (b)	0	0	0	0	0
Subtotal Adjustments	23	33	40	45	49
Projected Potable Demand	357	349	342	337	333

Notes:
(a) Water cost adjustments incorporate adjustments for increases in both income and price. Negative water service cost adjustments indicate the increase in demand because of increased income is greater than the reduction in demand because of increased price of water.
(b) Compliance with loss standards by 2028 is assumed. No reported adjustment indicates current losses per connection are below the District's standards for real and apparent water loss.

Figure 4-5. Projected Potable Water Demand and Conservation



4.3 Distribution System Water Loss

☑ ***CWC §10631 (3)***

(A) The distribution system water loss shall be quantified for each of the five years preceding the plan update, in accordance with rules adopted pursuant to Section 10608.34.

(B) The distribution system water loss quantification shall be reported in accordance with a worksheet approved or developed by the department through a public process. The water loss quantification worksheet shall be based on the water system balance methodology developed by the American Water Works Association.

(C) In the plan due July 1, 2021, and in each update thereafter, data shall be included to show whether the urban retail water supplier met the distribution loss standards enacted by the board pursuant to Section 10608.34.

4.3.1 Previous Five Years Distribution System Losses

Since 2016, urban retail water suppliers have been required under CWC §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”). **Table 4-5** summarizes the water loss audit reports submitted by the Redwood Valley District to DWR since 2021.

Table 4-5. Water Loss Audit Reporting (DWR Table 4-5)

Public Water System ID # Reported in Table 2-1 R	Reporting Period	Submitted to DWR Water Loss Audit Program (yes/no)
CA4910018	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
	2025	(see notes)
CA2110007	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
	2025	(see notes)
CA4900546	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
	2025	(see notes)
CA1710005	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
	2025	(see notes)
CA4900785	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
	2025	(see notes)
CA4900514	2021	Yes
	2022	Yes
	2023	Yes
	2024	Yes
	2025	(see notes)

Notes:

a) (a) Submitted water loss reports are available at: https://wuedata.water.ca.gov/

(b) 2025 water loss audit reports are not due until January 1, 2027, after the July 2026 UWMP filing deadline.

4.3.2 Progress Toward Meeting the Water Loss Performance Standard

In 2022, the State Water Resources Control Board (SWRCB) adopted new performance standards for urban retail water suppliers that would reduce water loss by nearly 35 percent. 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. This water loss standard is one component of the Making Conservation a California Way of Life (MCCWL) regulation (SWRCB, 2022).

CWC §10631 (3)(c) requires that this UWMP demonstrate whether the distribution loss standards enacted by the SWRCB pursuant to CWC §10608.34 have been met. **Table 4-6** shows that the SWRCB has not established water loss standards for the District's water systems and therefore this requirement does not apply to the District. Although the requirement does not apply, the District is implementing water loss management programs such as installing flow meters and pipeline replacements to track and reduce water loss for the individual systems.

Table 4-6. Progress Towards 2028 Water Loss Standards (DWR Table 4-6)

Public Water System ID #	Did the Water Board Calculate a Water Loss Standard for this Public Water System? (y/n) If no, Supplier will not complete this row.	Real Water Loss					Apparent Water Loss				
		State Water Board Standard		Most Recent AWWA Water Loss Audit			State Water Board Standard		Most Recent AWWA Water Loss Audit		
		2028 Real Water Loss Standard (a)	Units for Real Water Loss (b)	Number of Services	Volume of Real Loss (c) (AF)	Real Water Loss Per Unit per Day	2028 Apparent Water Loss Standard (a)	Units for Apparent Water Loss (b)	Number of Services	Volume of Apparent Loss (c) (AF)	Apparent Water Loss Per Unit per Day
CA4910018	No		GPSCD	286	10	30.2		GPSCD	286	1	4.2
CA2110007	No		GPSCD	252	3	9.1		GPSCD	252	0	1.4
CA4900546	No		GPSCD	51	2	33.2		GPSCD	51	0	3.8
CA1710005	No		GPMD	8.62	88	9,071.5		GPSCD	1,326	5	3.4
CA4900785	No		GPSCD	47	1	20.3		GPSCD	47	0	2.4
CA4900514	No		GPSCD	60	1	7.5		GPSCD	60	0	1.6

Notes:
(a) Provided by State Water Resources Control Board (SWRCB).
(b) GPSCD = Gallons per service connection per day.
(c) GPMD = Gallons per Mile of Main Per Day.
(d) Result from most recent validated AWWA water loss report.

4.4 Climate Change Considerations

It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied, while accounting for impacts from climate change.

☑ ***CWC §10635(b)***

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment …(and) shall include each of the following …

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

As discussed in Section 3.3, the Redwood Valley District's climate has been warming. Changing climate can affect water demands, as extreme and higher temperatures can lead to increases in water use. At the same time, adaptive behavior by water users, such as replacing existing landscape with more drought-tolerant landscape material, may partially offset these effects. Pursuant to the CWC requirements and the 2025 UWMP Guidebook, this Plan incorporates climate change considerations into the water demand projections provided in this section.

For many years, Cal Water has focused on identifying and assessing climate-related risks and opportunities. Cal Water's initial evaluations in 2016 and 2020 formed the foundation for the Climate Change Risk Assessment and Adaptation Framework (Climate Assessment) which was completed in 2021. This Climate Assessment considered climate-related risks and opportunities over three distinct time horizons:

- The early-century horizon (2020-2049) includes near-term vulnerabilities and adaptation measures to consider for implementation.
- The mid-century horizon (2035-2064) covers longer-term investments, such as new facilities constructed after the lifespan of the current infrastructure.
- The late-century horizon (2070-2099) evaluates long-term adaptation pathways.

Climate projections for each time horizon were averaged to account for natural climate variability across shorter periods. Cal Water also followed guidance from the Task Force on Climate-related Financial Disclosures (TCFD) and the Intergovernmental Panel on Climate Change (IPCC) to leverage Representative Concentration Pathways (RCPs) for a range of possible climate futures. RCPs show trajectories of atmospheric Green House Gas (GHG) concentrations for different timeframes and emission levels. Based on the findings from our foundational work and the associated literature review, the following RCPs were selected for risk analysis:

- RCP 4.5 is an intermediate scenario that assumes an estimated global temperature rise between 2.0 degrees Celsius and 3.0 degrees Celsius from pre-industrial levels by 2100, with anthropogenic GHG emissions peaking in 2040.
- RCP 8.5 is a high-emissions scenario that assumes temperature increases of at least 4.0 degrees Celsius from pre-industrial levels by 2100, with anthropogenic GHG emissions continuing to rise over the next century.

Although RCP 2.6 is the lower bound of the RCP scenarios adopted by the IPCC, Cal Water selected RCP 4.5, since Cal Water believes it to be a more realistic potential lower bound, because achieving RCP 2.6 requires significant actions at a global scale. The California Fourth Climate Assessment also identified RCP 4.5 and RCP 8.5, which are consistent with planning models that stage agencies use.

The Climate Assessment also identifies and prioritizes climate-driven risks to future water supply availability and critical operations and assets, projects and assesses supply of and demand for water, and identifies primary risks to Cal Water's operations.

The Climate Assessment provides actionable insights and a reliable framework for future planning. Using this framework, Cal Water intends to continue implementing programs that capitalize on these adaptation strategies.

The Executive Summaries from the 2016 and 2020 foundational work, and the Climate Assessment, can be found in **Appendix E**.

4.4.1 Characteristic Five-Year Water Use

☑ ***CWC § 10635(b)(3)***

(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following…

(3) A comparison of the total water supply sources available to the water supplier with ***the total projected water use for the drought period.*** (Emphasis added).

In accordance with CWC §10635(b)(3), UWMPs must provide a five-year Drought Risk Assessment (see Section 7.5). As a first step, DWR suggests that water suppliers estimate their unconstrained water demand for the next five years (2026-2030). Unconstrained water demand is water use in the absence of drought water use restrictions. These numbers can then be adjusted to estimate the five-years' cumulative drought effects. The Drought Risk Assessment presented in Section 7.5 incorporates adjustments to unconstrained water demand in accordance with the District's Water Shortage Contingency Plan (WSCP).

As part of the sales forecasting process for General Rate Cases before the CPUC, Cal Water conducts econometric modeling to evaluate the sensitivity of water sales to variations in weather conditions. These models were used to simulate differences in projected water use under normal weather conditions and under multiple dry-year scenarios. For this analysis, historical weather data from the dry periods of 1929–1934, 1987–1991, and 2013–2016 were applied.

The results indicate that the District's annual water use under a multiple dry-year scenario would increase by approximately five percent relative to normal conditions. This increase reflects the sensitivity of District demands to climate variability, particularly in spring and autumn transitional irrigation periods.

Projected unconstrained demands for 2026-2030 for normal and multi-dry-year scenarios are provided in **Table 4-7**.

Table 4-7. Characteristic Five-Year Water Use for Normal and Multi-Year Dry Scenarios

Water Year Type	2026	2027	2028	2029	2030
	(AF)	(AF)	(AF)	(AF)	(AF)
Normal	374	370	365	361	357
Multi-Year Dry	393	388	383	379	374

4.5 Coordinating Water Use Projections

☑ ***CWC §10631***

(h) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision.

The Redwood Valley District purchases water from two different sources to supply two of the six PWSs it serves. These sources are the Sweetwater Springs Water District and the Yolo County Flood Control and Water Conservation District. These entities were provided with the District's 2026-2050 water demand projections as part of the preparation of the UWMP.

Chapter 5
SB X7-7 Baseline and Targets

Senate Bill (SB) X7-7 mandated a 20 percent 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 California Water Code (CWC) does not set an end date for reporting progress in meeting the 2020 Target, this section of the Urban Water Management Plan (UWMP or Plan) demonstrates the California Water Service (Cal Water) Redwood Valley District's (also referred to herein as the "District") compliance with SB X7-7 in 2020.

This chapter has the following sections:

5.1 Nexus to State Water Board Urban Water Use Objectives

5.2 Nexus to State Water Board Urban Water Use Objectives

5.1 Demonstration of Compliance with the 2020 Target in 2020

☑ ***CWC §10608.40***

Urban water retail suppliers shall report to the department on their progress in meeting their urban water use targets as part of their urban water management plans submitted pursuant to Section 10631.

☑ ***CWC §10608.12***

(af) "Urban retail water supplier" means a water supplier, either publicly or privately owned, that directly provides potable municipal water to more than 3,000 end users or that supplies more than 3,000 acre-feet of potable water annually at retail for municipal purposes.

The Redwood Valley District achieved its 2020 Target in 2020. The data used to calculate the 2020 Target and demonstrate compliance are documented in the District's 2020 UWMP. **Table 5-1** below summarizes the District's 2020 Target and actual 2020 gallons per capita per day (GPCD), confirming that it met the SB X7-7 compliance requirements.

Table 5-1. SB X7-7 2020 Target Progress (DWR Table 5-1)

☐	**Check the box if the Supplier was not an Urban Water Supplier during or before the 2020 UWMP reporting cycle. Proceed to the next table.**					
					Only for suppliers that did not meet the Target in 2020	
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?	Actual 2025 GPCD (From SB X7-7 Compliance Form)	Did Supplier meet the 2020 Target in 2025?
No	Individual Target	157	104	Yes		N/A

5.2 Nexus to State Water Board Urban Water Use Objectives

☑ ***CWC § 10609.20***

(a) Each urban retail water supplier shall calculate its urban water use objective no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use conditions for the previous calendar or fiscal year.

☑ ***CWC § 10609.22***

(a) An urban retail water supplier shall calculate its actual urban water use no later than January 1, 2024, and by January 1 every year thereafter.

(b) The calculation shall be based on the urban retail water supplier's water use for the previous calendar or fiscal year.

☑ ***CWC § 10609.24***

(a) An urban retail water supplier shall submit a report to the department no later than January 1, 2024, and by January 1 every year thereafter. The report shall include all of the following:

(1) The urban water use objective calculated pursuant to Section 10609.20 along with relevant supporting data.

(2) The actual urban water use calculated pursuant to Section 10609.22 along with relevant supporting data.

(3) Documentation of the implementation of the performance measures for CII water use.

(4) A description of the progress made towards meeting the urban water use objective.

(5) The validated water loss audit report conducted pursuant to Section 10608.34.

(b) The department shall post the reports and information on its internet website.

(c) The board may issue an information order or conservation order to, or impose civil liability on, an entity or individual for failure to submit a report required by this section.

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

The UWUO is a water budget–based framework that is specific to each urban retail water supplier. It consists of the following components: (1) a residential indoor water use standard; (2) a residential outdoor water budget; (3) a CII landscape outdoor water use standard for landscapes served by dedicated irrigation meters; (4) a water loss standard; (5) allowable variances; and (6) a potable reuse bonus. Beginning in 2027, suppliers must annually assess whether the sum of their regulated water uses—residential indoor and outdoor use, dedicated irrigation meter use, and distribution system water loss—is at or below their UWUO.

The state standards underlying the residential indoor, residential outdoor, and CII outdoor components of the UWUO will become increasingly stringent over time. As a result, compliance is expected to require continued reductions in water use beyond those achieved under the SB X7-7 framework.[9] Urban retail water suppliers are required to report annually to the State Water Resources Control Board on water use relative to their UWUOs. The District submits UWUO compliance data through the Department of Water Resources' Water Use Efficiency Data portal.[10]

Although projections of UWUO compliance are not required as part of an Urban Water Management Plan, they provide useful insight into the magnitude and timing of future conservation needs. For this reason, Cal Water has evaluated how projected regulated water use in the District compares to anticipated UWUO requirements over the planning horizon, with findings expressed as relative changes to baseline demand needed for compliance.

The assessment of future UWUO compliance for the District is predicated on levels of conservation that are currently authorized by the California Public Utilities Commission (CPUC), together with anticipated passive conservation savings. These passive savings include continued turnover of plumbing fixtures and appliances subject to state and federal efficiency standards and customer behavioral responses to conservation-oriented rate structures. The baseline demand projections described in Chapter 4 reflect these authorized active conservation programs and anticipated passive savings.

Under this baseline demand scenario, regulated water use in the Redwood Valley District is projected to remain below the applicable UWUO requirements through 2050. Similarly, distribution system water loss rates are projected to remain below their applicable standards through 2050.

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[9] Under the MCCWL regulation, the SB X7-7 target serves as a backstop on the UWUO. If a supplier's UWUO exceeds its SB X7-7 target, its UWUO becomes its SB X7-7 target.

[10] DWR's Water Use Efficiency Data Portal: https://wuedata.water.ca.gov/uwuo_plans

Chapter 6
Water Supply Characterization

☑ ***CWC § 10631 (b)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).

This chapter provides a description of the California Water Service (Cal Water) Redwood Valley District's (also referred to herein as the "District") current water supplies, including a discussion of the underlying groundwater basins and their management, purchased water, and potential supply sources, such as surface water, stormwater, and recycled water, and an assessment of the energy intensity used to operate the District treatment and distribution system. Each Public Water System (PWS) within the District relies on its own distinct and geographically separated water source. These supplies are not physically interconnected and therefore cannot be mixed, shared, or reallocated amongst the individual PWSs; however, given that each PWS is internally whole (i.e., supplies and demand are balanced within each discrete system and not dependent on inter-system transfers), the District is evaluated at an aggregate level for the purposes of the Plan.

This chapter includes the following sections:

6.1 Purchased Water

6.2 Groundwater

6.3 Surface Water

6.4 Stormwater

6.5 Wastewater and Recycled Water

6.6 Desalinated Water Opportunities

6.7 Water Exchanges and Transfers

6.8 Future Water Projects

6.9 Summary of Existing and Planned Sources of Water

6.10 Special Conditions

6.11 Energy Intensity

6.1 Purchased Water

☑ ***CWC § 10631 (h)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (f). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (f).

As described above, each of the six PWSs in the Redwood Valley District rely on a distinct and dedicated water source that cannot be mixed, shared, or reallocated. The Rancho Del Paradiso PWS relies solely on purchased water from the Sweetwater Springs Water District (SSWD) to meet demands. The Lucerne PWS relies solely on untreated local surface water purchased from the Yolo County Flood Control and Water Conservation District (Yolo County FCWCD) to meet demands. These purchased supplies are discussed below.

6.1.1 Sweetwater Springs Water District

Cal Water began purchasing treated water from SSWD to serve the Rancho del Paradiso PWS in 2005. Cal Water has historically (2006-2025) purchased between 4.3 and 7.2 acre-feet per year (AFY) from SSWD; this water constitutes the sole supply for the Rancho del Paradiso PWS.

The SSWD supplies the Rancho del Paradiso PWS through an interconnection at the southern end of its service area. The water supplied by SSWD is groundwater pumped from two wells that are located within the Lower Russian River Valley Basin (discussed further below) but are considered to be under the influence of the Russian River and are governed by water rights license 13971. The total licensed amount is 1,137 AFY with a maximum pumping rate of 2.0 cubic feet per second (cfs). The SSWD's total volume pumped in 2020 was 717 acre-feet (AF).[11]

Growth in the Rancho del Paradiso PWS service area is expected to be minimal with only little to no increase in services. As such, total demands of the Rancho del Paradiso PWS are not expected to increase significantly over time (see SSWD projected supply to meet demands for the Ranch del Paradiso PWS in **Table 6-10**).

[11] Sweetwater Springs Water District, 2021. 2020 Urban Water Management Plan Update, dated June 2021.

6.1.2 Yolo County Flood Control and Water Conservation District

Cal Water purchases untreated local surface water from the Yolo County FCWCD and treats it at Cal Water's treatment plant to serve the Lucerne PWS. This water is pumped from Clear Lake and is treated at the Lucerne Water Treatment Plant before entering the Lucerne PWS distribution system. Purchased untreated local surface water from Yolo County FCWCD is the sole source of supply for the Lucerne PWS. Total demands on this source from 2016-2025 averaged approximately 254 AFY and are expected to decrease to approximately 236 AFY by 2050 (see Yolo County FCWCD projected supply to meet demands for the Lucerne PWS in **Table 6-10**). This projected decrease in demand is due to a combination of effects including: reduction in non-revenue water due to Senate Bill 555, ongoing implementation of more stringent plumbing code requirements, and the implementation of Cal Water's conservation programs.

Although Clear Lake is located in Lake County, Yolo County FCWCD holds the water rights to excess flows leaving the lake through Cache Creek. Clear Lake Dam flows are regulated by the Gopcevic Decree of 1920 and the Solano Decree of 1978 (revised in 1995).[12]

Clear Lake levels are measured in units of feet Rumsey, named for Captain DeWitt Rumsey, an important historical figure in the area. Zero feet Rumsey is the natural low lake level under which there are no releases to Cache Creek and is equivalent to 1318.256 feet (1929 National Geodetic Vertical Datum [NGVD]). Before construction of Clear Lake Dam, the level of Clear Lake was controlled by the Grigsby Riffle, which is a rock sill located at the junction of Cache Creek and Seigler Creeks. Clear Lake is now considered full when it reaches 7.56 feet Rumsey. Yolo County FCWCD has rights to all the water stored in Clear Lake between zero and 7.56 feet Rumsey.[13]

Winter lake levels are controlled by the schedule outlined in the Gopcevic Decree, which is designed to prevent flooding by allowing releases from the dam as storage increases due to winter storms. The schedule defines specific dates and corresponding maximum lake levels. If these levels are exceeded, then the water must be released by the Dam.

The Solano Decree defines the amount of water available to Yolo County FCWCD. If Clear Lake is at 7.56 feet Rumsey on May 1, then 150,000 AF can be released over the summer months. If winter rain fails to fill the Lake to a level of 3.22 feet Rumsey by May 1, no releases are available to Yolo County FCWCD. The Solano Decree also outlines a schedule of lake levels with corresponding dates that is designed to maintain storage at safe levels and ensure that the Lake

[12] Yolo County Flood Control and Water Conservation District, 2023. Website: "The Three Decrees". Accessed From: https://ycfcwcd.org/the-three-decrees/.

[13] Yolo County Flood Control and Water Conservation District, 2023. Website: "The Importance of the Grigsby Riffle and the Rumsey Gauge". Accessed From: https://ycfcwcd.org/the-importance-of-the-grigsby-riffly-and-the-rumsey-gauge/.

stays above zero Rumsey. Yolo County FCWCD prioritizes its Municipal and Industrial (M&I) customers, and in case of drought, will attempt to supply M&I users without reduction.[14]

The 1912 court decision that granted Yolo County FCWCD rights to water in Clear Lake recognized that communities already existing along Clear Lake had prescriptive rights to a certain quantity of water. These prescriptive rights are still available to these communities at no cost. The Lucerne PWS portion of the prescriptive rights is subtracted from the total withdrawals from Clear Lake and Cal Water only pays for water used above this amount. The schedule of prescriptive rights usage for the Lucerne PWS is outlined in **Table 6-1**.

Table 6-1. Lucerne PWS Monthly Prescriptive Credit

Month	Lucerne PWS Credit (Cubic Feet)	Lucerne PWS Credit (Acre-Feet)
October	175,800	4.05
November	80,500	1.85
December	73,200	1.68
January	49,000	1.12
February	41,000	0.94
March	62,000	1.42
April	85,000	1.95
May	97,000	2.23
June	211,000	4.84
July	286,000	6.57
August	392,000	9.00
September	271,000	6.27
TOTAL	1,823,500	41.92

[14] Yolo County Flood Control and Water Conservation District, 2021. Agricultural Water Management Plan 2020, dated March 2021. Accessed From: https://wuedata.water.ca.gov/awmp_plans?year=2020.

6.2 Groundwater

☑ ***CWC § 10631***

(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

(4) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information:

(A) The current version of any groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720), any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management for basins underlying the urban water supplier's service area.

(B) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. For a basin that has not been adjudicated, information as to whether the department has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to coordinate with groundwater sustainability agencies or groundwater management agencies listed in subdivision (c) of Section 10723 to maintain or achieve sustainable groundwater conditions in accordance with a groundwater sustainability plan or alternative adopted pursuant to Part 2.74 (commencing with Section 10720).

(C) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

As described above, each of the six PWSs in the Redwood Valley District rely on a distinct and dedicated water source that cannot be mixed, shared, or reallocated. Groundwater is the sole source of supply for four of the six PWSs that comprise the District (Coast Springs PWS, Armstrong Valley PWS, Noel Heights PWS, and the Hawkins PWS). Groundwater pumped by the District comes from three different underlying groundwater basins. This section includes information regarding the underlying basins' description, groundwater management, and Cal Water's coordination with the relevant Groundwater Sustainability Agencies (GSAs), followed by a discussion of historical pumping and supply sufficiency, which is further supported by Section 7.1.1.

6.2.1 Basin Description and Status

As shown on **Figure 6-1** and **Figure 6-2**, the four PWSs in the District that use groundwater overlie the following groundwater basins:

- The Coast Springs PWS overlies and pumps groundwater from the Sand Point Area Basin (California Department of Water Resources [DWR] Basin No. 2-027);
- The Armstrong Valley PWS and Noel Heights PWS overlie and pump groundwater from the Lower Russian River Valley Basin (DWR Basin No. 1-060); and
- The Hawkins PWS overlies and pumps groundwater from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin (DWR Basin No. 1-055.01).

The basin descriptions below are derived from the DWR Bulletin 118, which is incorporated into this Urban Water Management Plan (UWMP) by reference.[15] All of the basins from which the PWSs in the District pump groundwater are not adjudicated and are not in a condition of critical overdraft.[16]

[15] Current Bulletin 118 information is available on DWR's website: https://water.ca.gov/programs/groundwater-management/bulletin-118

[16] DWR, 2020. Sustainable Groundwater Management Act 2019 Basin Prioritization, dated May 2020.

Figure 6-1. Groundwater Basins Underlying the Redwood Valley District – North

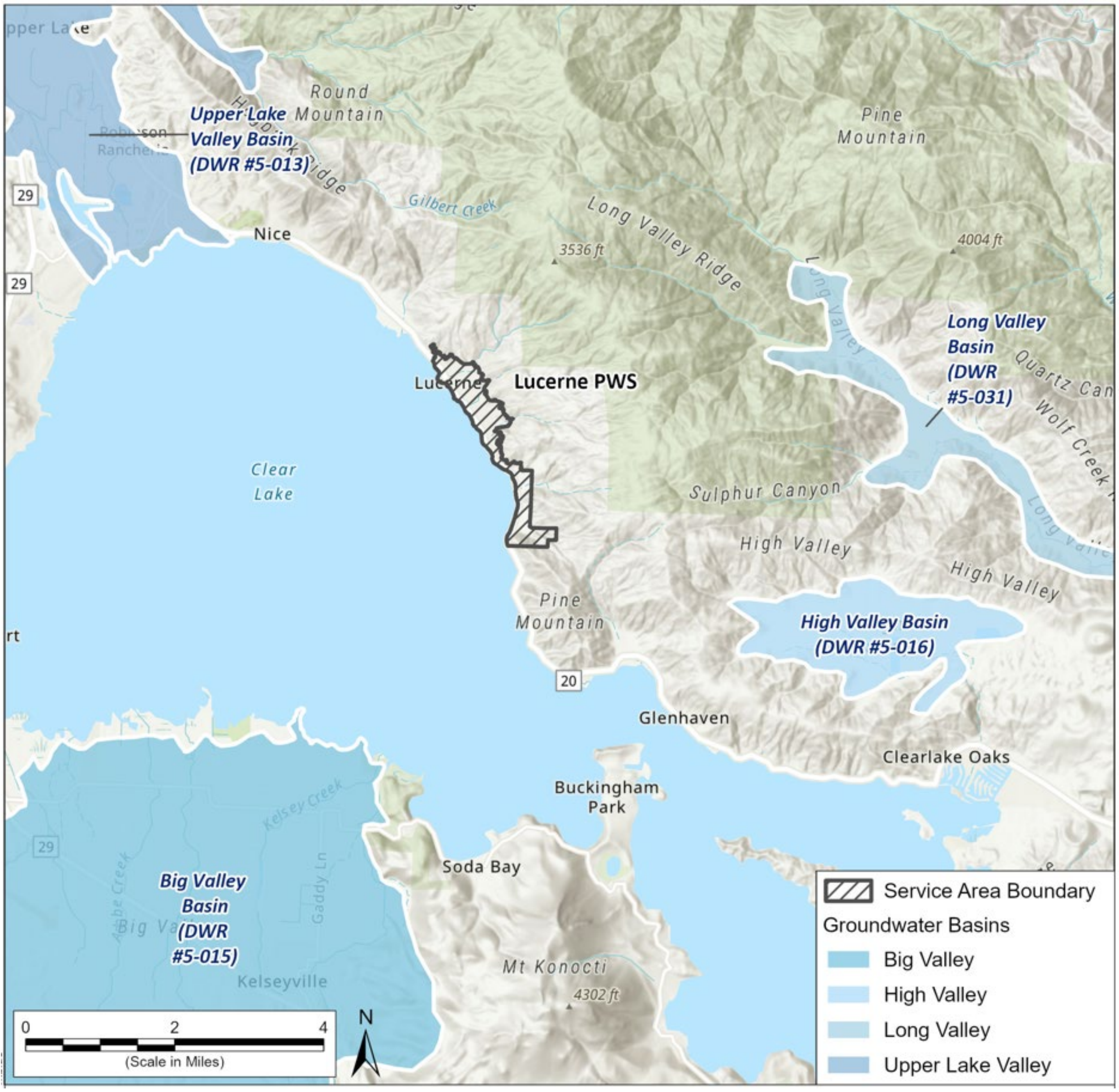
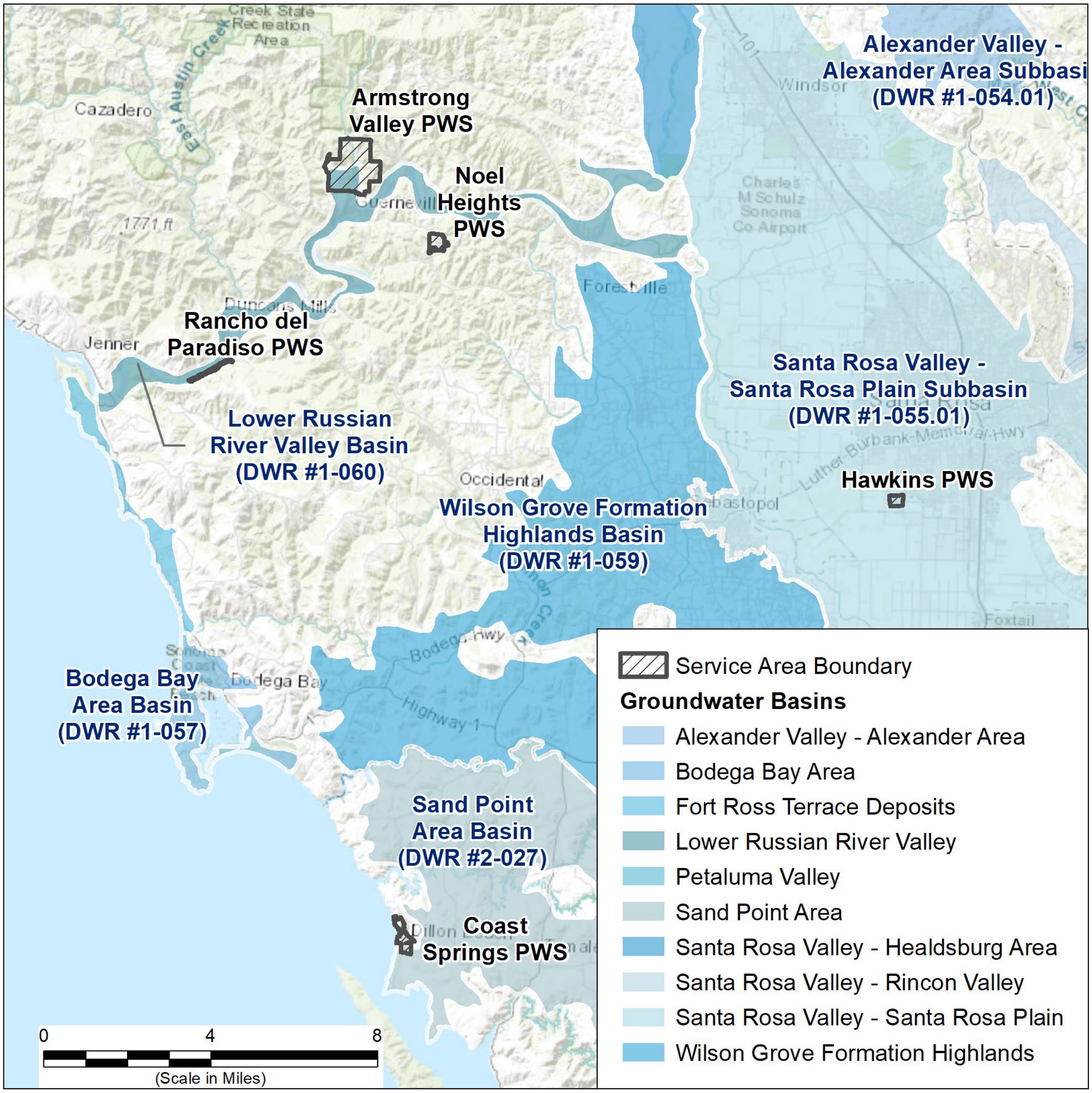


Figure 6-2. Groundwater Basins Underlying the Redwood Valley District – South



Sand Point Area Basin

Groundwater pumped from the Sand Point Area Basin and surrounding hill areas is the sole source of water for the Coast Springs PWS. Originally defined by DWR as a small (1,407 acre) coastal basin bounded to the west, south, and southwest by Tomales Bay, and bounded to the north and east by the contact between alluvial deposits and the surrounding bedrock, the Sand Point Area Basin's extent was modified in 2016 to include the Marin County portion of the Wilson

Grove Formation Highlands Basin (DWR Basin No. 1-59) and now has a total area of approximately 22,340 acres.[17, 18] The Coast Springs PWS is located near the town of Dillon Beach, in the original portion of the Sand Point Area Basin. The Sand Point Area Basin is not adjudicated, and in its recent evaluation of California groundwater basins, DWR determined that the Basin is not in a condition of critical overdraft.[19]

The Sand Point Area Basin is designated as a "very low" priority basin under DWR's 2019 Basin Prioritization.[20] Under this prioritization process, basins are ranked on eight components, and if a basin is assigned less than 14 total points, it is defined as "low" priority. The factors driving this designation in the Sand Point Area Basin include population (1 out of 5 possible points), public supply well density (4 out of 5 possible points), production well density (2 out of 5 possible points), irrigated acreage (1 out of 5 possible points), and groundwater reliance (1.5 out of 5 possible points). A total of 9.5 points were assigned to the Basin, which would classify the basin as "low" priority. However, if a basin has groundwater use less than 2,000 AFY and no documented impacts, as is the case with the Sand Point Area Basin, the basin is automatically assigned a "very low" priority.

Lower Russian River Valley Basin

Groundwater pumped from the 6,600-acre Lower Russian River Valley Basin and surrounding areas is the sole source of supply for the Armstrong Valley PWS and the Noel Heights PWS. In addition, as discussed above, the water purchased for the Rancho del Paradiso PWS from SSWD also comes from groundwater wells located in the Lower Russian River Valley Basin. As previously stated, these PWSs are not connected.

The Lower Russian River Valley Basin is a narrow, meandering river canyon located along the Russian River in west-central Sonoma County and is defined by the areal extent of alluvial and river-channel deposits that are bounded by bedrock of the Franciscan Complex. The Lower Russian River Valley Basin's eastern extent is approximately 2.5 miles east of Mirabell Heights and extends west and southwest for approximately 23 miles until it exits into the Pacific Ocean near Jenner. The canyon ranges in width from about 0.1 to 0.5 miles and has an average width of 0.25 miles. Mark West Creek discharges into the lower Russian River near Mirabell Heights. Other significant tributaries to the lower Russian River include: Green Valley near Rio Dell, Fife Creek

[17] DWR, 2020. Sustainable Groundwater Management Act 2019 Basin Prioritization, dated May 2020. Accessed From: https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization.

[18] DWR, 2018. Sand Point Area: Basin Boundaries Description, dated 2018. Accessed From: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/2_027_SandPointArea.pdf.

[19] DWR, 2019. Sustainable Groundwater Management Act 2018 Basin Prioritization, State of California, dated January 2019.

[20] DWR, 2020. Sustainable Groundwater Management Act 2019 Basin Prioritization, dated May 2020.

and Pocket Canyon near Guerneville, Dutch Bill Creek near Monte Rio, Austin Creek near St. Joseph Camp, and Willow and Sheephouse Creeks east of the Russian River mouth near Jenner.

The Lower Russian River Valley Basin is designated as a “very low” priority basin under DWR’s 2019 Basin Prioritization because of groundwater use less than 2,000 AFY.[21] Under this prioritization process, basins are ranked on eight components, and if a basin is assigned more than 14 total points, it is defined as “medium priority.” The main factors driving this designation in the Lower Russian River Valley Basin include population density (2 out of 5 possible points), population growth (3 out of 5 possible points), public supply well density (5 out of 5 possible points), production well density (4 out of 5 possible points), irrigated acreage (2 out of 5 possible points), and groundwater reliance (3 out of 5 possible points). A total of 19 points were assigned to the Basin. However, if a basin has groundwater use less than 2,000 AFY and no documented impacts, as is the case with the Lower Russian River Valley Basin, the basin is automatically assigned a “very low” priority.

Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin

The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin as its sole source of supply. The Santa Rosa Valley occupies a northwest-trending structural depression in the southern part of the Coast Ranges of northern California. This valley separates the Mendocino Range on the west from the Mayacamas and Sonoma Mountains on the east. The Santa Rosa Plain Subbasin has an area of approximately 81,280 acres and extends from just south of Healdsburg in the north to Cotati in the south. The Santa Rosa Plain Subbasin is bounded on the northwest by the Russian River plain and the Healdsburg Subbasin; on the west by the Mendocino Range; on the south by a series of low hills that form a drainage divide; and on the east by the Sonoma Mountains south of Santa Rosa and the Mayacamas Mountains north of Santa Rosa; the Rincon Valley Subbasin is situated east of the City of Santa Rosa and is separated from the Santa Rosa Plain Subbasin by a narrow constriction formed in the rocks of the Sonoma Volcanics.

The Santa Rosa Plain Subbasin is designated as a “medium” priority basin under DWR’s 2018 Phase 2 Basin Prioritization. Under this prioritization process, basins are ranked on eight components, and if a basin is assigned more than 14 but less than 22 total points, it is defined as “medium priority.” The main factors driving this designation in the Santa Rosa Plain Subbasin include population density (3 out of 5 possible points), population growth (3 out of 5 possible points), public supply well density (5 out of 5 possible points), production well density (5 out of 5 possible points), irrigated acreage (2 out of 5 possible points), and groundwater reliance (3 out of 5 possible points). A total of 21 points were assigned to the Santa Rosa Plain Subbasin.

[21] DWR, 2020. Sustainable Groundwater Management Act 2019 Basin Prioritization, dated May 2020.

Additional details on the Santa Rosa Plain Subbasin are given in DWR's Groundwater Bulletin 118, as well as in the key documents listed below related to groundwater management of the Santa Rosa Plain Subbasin, which are incorporated into this UWMP by reference:

- The Santa Rosa Plain Watershed Groundwater Management Plan (GMP) includes detailed information on the subbasin's hydrogeology, groundwater conditions, existing management, modeling, and monitoring efforts, and basin management objectives, and is available on the Santa Rosa Plan GSA website:
  http://santarosaplaingroundwater.org/wp-content/uploads/SRP_GMP_12-14.pdf

- The Santa Rosa Plain Subbasin Groundwater Sustainability Plan (GSP), that includes current groundwater conditions, hydrogeologic conceptual model, water budget, local sustainable management criteria, and projects and management actions (P/MAs) for reaching sustainability in the Santa Rosa Plain Subbasin by 2042, is available on the DWR Sustainable Groundwater Management Act (SGMA) Portal website:
  https://sgma.water.ca.gov/portal/gsp/preview/136

- The Bay Area Integrated Regional Water Management Plan (IRWMP), including a detailed description of the region's hydrogeology, groundwater conditions, and groundwater monitoring practices, is available on the Bay Area IRWMP website:
  http://bayareairwmp.org/irwm-plans/.

- The Westside Sacramento Integrated Regional Water Management Plan (IRWMP), including detailed description of the Solano Subbasin hydrogeology, groundwater conditions, and groundwater monitoring practices, is available on the Westside Sacramento IRWMP website:
  https://westsideirwm.com/irwm-plan/.

- The North Coast Integrated Regional Water Management Plan (IRWMP), including a detailed description of the region's hydrogeology, groundwater conditions, and groundwater monitoring practices, is available on the Bay Area IRWMP website:
  https://northcoastresourcepartnership.org/north-coast-integrated-regional-planning/.

6.2.2 Non-SGMA Groundwater Management

The Sand Point Area Basin and the Lower Russian River Valley Basin are both relatively small basins with limited groundwater uses. As such, these basins have not historically been managed under any formal groundwater management plan.

Prior to the passage of SGMA, water agencies in the Santa Rosa Plain Subbasin cooperated in water supply and groundwater management efforts. In 2014, the Santa Rosa Plain Basin Advisory Panel completed development of the Santa Rosa Plain Watershed GMP for an area that included the DWR-defined Santa Rosa Plain Subbasin and its contributing watershed. The purpose of the Santa Rosa Plan Watershed GMP was to “proactively coordinate public and private groundwater management efforts and leverage funding opportunities to maintain a sustainable, locally-managed, high-quality groundwater resource for current and future users, while sustaining natural groundwater and surface water functions.”[22]

Chapter 1 of the Santa Rosa Plain Watershed GMP describes the seven overall GMP components which include: (1) stakeholder involvement, (2) monitoring program & modeling, (3) groundwater protection, (4) increase conservation and efficiency, (5) increase groundwater recharge, (6) increase water reuse, and (7) integrated groundwater management. A total of 18 Basin Management Objectives (BMOs) were identified along with actions to meet them. The Santa Rosa Plain Watershed GMP provides a comprehensive overview of the Santa Rosa Plain Subbasin and provided a framework for the management of groundwater resources in the Santa Rosa Valley and acts as a guidance document for future groundwater projects. The Santa Rosa Plain Subbasin GSP (discussed below) supersedes the 2014 GMP as the groundwater management plan for the Hawkins PWS portion of the Santa Rosa Plain Subbasin.

There are three IRWMPs which each cover a portion of the District: the Bay Area, Westside Sacramento, and North Coast IRWMPs. The Bay Area IRWMP includes the Coast Springs PWS, the Westside Sacramento IRWMP includes the Lucerne PWS, and the North Coast IRWMP includes the other PWSs in the Redwood Valley District. Cal Water monitors and supports the goals of each IRWMP.

The most recent update to the Bay Area IRWMP, which covers Sonoma County and therefore the Hawkins PWS, was adopted in October 2019. The regional goals stated in the IRWMP include: (1) promote environmental, economic and social sustainability, (2) improve water supply reliability and quality, (3) protect and improve watershed health and function and Bay water quality, (4) improve regional flood management, and (5) create, protect, enhance, and maintain environmental resources and habitats.[23]

The most recent Westside Sacramento IRWMP was adopted in 2019. The 13 regional goals stated in the IRWMP include: (1) acknowledge and respect the cultural values and resources of the

[22] Santa Rosa Plain Basin Advisory Panel, 2014. Santa Rosa Plain Watershed Groundwater Management Plan, dated December 2014. Accessed From: http://santarosaplaingroundwater.org/wp-content/uploads/SRP_GMP_12-14.pdf.

[23] Bay Area Integrated Regional Water Management Program Coordination Committee, 2019. San Francisco Bay Area Integrated Regional Water Management Plan, dated October 2019. Accessed From: http://bayareairwmp.org/irwm-plans/.

Westside Sacramento Region (Region), (2) improve education and awareness throughout the Region about water, watershed functions, and ecosystems and the need for sustainable resource management to protect community health and well-being, (3) improve the collective understanding of watershed characteristics and functions (natural and human-induced) within the Region as needed to respond effectively to evolving water resources management challenges and opportunities (e.g., climate change), (4) improve the form and function of degraded natural channels, (5) improve water-related public health across the Region and emphasize improvements for populations most in need, (6) preserve and enhance water-related recreational opportunities, (7) preserve, improve, and manage water quality to meet designated beneficial uses for all water bodies within the Region, (8) promote reasonable use of water and watershed resources, (9) protect and enhance habitat and biological diversity of native and migratory species, (10) provide reliable water supplies of suitable quality for multiple beneficial uses (e.g., urban, agriculture, environmental, and recreation) within the Region, (11) reduce the risks of disruptive natural and human-caused disturbances affecting the Region's water resources, including flooding, fire, and significant institutional interruptions that reduce resources management services, (12) support improved regional water management through governance throughout the Region that uses science and collaboration to make fair and equitable decisions and investments, and (13) support sustainable economic activities consistent with local and state government planning efforts within the Region.[24]

The most recent update to the North Coast IRWMP was adopted in January 2020. The regional goals stated in the IRWMP include: (1) intraregional cooperation and adaptive management, (2) economic vitality, (3) ecosystem conservation and enhancement, (4) beneficial uses of water, (5) climate action and energy independence, and (6) public safety.[25]

6.2.3 SGMA Groundwater Management

In 2014, the California State Legislature enacted SGMA with subsequent amendments in 2015. Among other things, SGMA requires the formation of Groundwater Sustainability Agencies (GSAs) and the development and implementation of GSPs for groundwater basins that are designated by DWR as medium or high priority. As a medium priority, non-adjudicated basin, the Santa Rosa Plain Subbasin is subject to the requirements of SGMA.[26]

Following the passage of SGMA, the Santa Rosa Plain GSA was formed to assume responsibility for sustainable groundwater management of the Santa Rosa Plain Subbasin. The GSA submitted

[24] Regional Water Management Group, 2019. Westside Sacramento Integrated Regional Water Management Plan Update, dated January 2019. Accessed From: https://westsideirwm.com/irwm-plan/.
[25] North Coast Resource Partnership, 2020. North Coast Resource Partnership Plan, dated January 2020. Accessed From: https://northcoastresourcepartnership.org/north-coast-integrated-regional-planning/.
[26] The Sand Point Area Basin and the Lower Russian River Valley Basin are not subject to SGMA.

the Santa Rosa Plain GSP to DWR ahead of the 31 January 2022 deadline, and the GSP was approved by DWR on 26 January 2023.

As defined under SGMA, sustainable yield means "the maximum quantity of water, calculated over a base period representative of long-term conditions in a basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing undesirable results."[27] Based on development and application of a numerical groundwater flow model for the Santa Rosa Plain Subbasin (Santa Rosa Plain Hydrologic Model), the sustainable yield of the Santa Rosa Plain Subbasin is estimated to be approximately 23,900 AFY. The Basin-level estimate was supplemented by local water budget information presented in the GSP, but the local sustainable yield was not formally allocated in the GSP.[28]

Several P/MAs to support achievement of the Santa Rosa Plain Subbasin's sustainability goal under SGMA are proposed by the GSA and documented in the GSP. The Group 1 Water-Use Efficiency and Alternate Water Source Projects in the GSP that may include the District are briefly summarized below; however, it should be noted that this summary is not exhaustive.

- Per the GSP, the GSA may implement voluntary water-use efficiency and conservation programs within the urban water-use sector. These programs may include small-scale turf removal, rainwater harvesting, and stormwater capture/reuse, as well as conservation rebate programs for high-efficiency appliances and fixtures, landscape water budgets, landscape and irrigation design, and irrigation scheduling. It is assumed that existing water-use efficiency by municipal groundwater users will continue through the Sonoma-Marin Saving Water Partnership.

As reported in the Santa Rosa Plain Subbasin's Annual Report for Water Year (WY) 2024, the GSA has made progress towards implementing P/MAs since the release of their GSP in 2022. For example, in 2024, the GSA, the GSA consultant team and partners developed a water use efficiency assessment and work plan for implementing a water use efficiency pilot program in WY 2025. The water use efficiency assessment includes a comprehensive review of groundwater use within the subbasin and includes all parcels in the Santa Rosa Plain GSA to support better understanding of agricultural, rural residential, and non-residential (commercial, industrial, and institutional) demands. Additional details regarding implementation of P/MAs for the Santa Rosa Plain Subbasin are included in the Annual Report for WY 2024.[29]

[27] California Water Code (CWC) §10721(w)
[28] Santa Rosa Plain Groundwater Sustainability Agency, 2021. Groundwater Sustainability Plan: Santa Rosa Plain Groundwater Subbasin, dated December 2021. Accessed From: https://sgma.water.ca.gov/portal/gsp/preview/136.
[29] Santa Rosa Plain Groundwater Sustainability Agency, 2025. Santa Rosa Plain Subbasin Annual Report, Water Year 2024, dated March 2025. Accessed From: https://sgma.water.ca.gov/portal/gspar/preview/394.

6.2.4 Cal Water Coordination with Groundwater Sustainability Agencies

Cal Water's groundwater basin management philosophy is to engage collaboratively with all stakeholders in the basins where it operates, prioritizing the long-term sustainability of groundwater resources and ensuring that both burdens and benefits are distributed on an equitable basis. Cal Water recognizes and deeply supports the goals, objectives, and intended outcomes of SGMA. Moreover, Cal Water recognizes the numerous challenges of implementing the legislation along a variety of technical, legal, political, and financial/economic dimensions, particularly when the geographical diversity of the Cal Water's service territory is considered. Nonetheless, Cal Water intends to continue to take an active role in the local and state-wide management of groundwater resources by fully supporting and participating in the principal edicts of SGMA. A number of specific steps that Cal Water has taken with respect to this position and role include (among others):

- Coordination and public comment with public agencies and DWR, to ensure that Cal Water's presence, rights and interests, customer financial concerns, as well as historical and current resource management concerns are honored/incorporated within the GSA and GSP formulation process(es);
- Coordination with applicable local and regulatory agencies to ensure that Cal Water is at full participation, while also meeting the requirements and expectations set forth by SGMA;
- Enhanced use of digital/electronic groundwater monitoring equipment and other new technology aimed at measuring withdrawal rates, pumping water levels, and key water quality parameters within the context of day-to-day operations;
- Participation in the development and implementation of GSPs and formulation of groundwater models being constructed in basins where Cal Water has an operating presence;
- Participation in individual and/or joint projects aimed at mitigating seawater intrusion and other "undesirable results" where appropriate;
- Inclusion of sound groundwater management principles and data in all applicable technical reports, studies, facility master plans, and UWMPs (including this 2025 update), particularly as these undertakings relate or pertain to water resource adequacy and reliability;
- Ensure reliable water service for historically underserved and/or vulnerable communities within Cal Water's service areas; and,
- Inclusion of sensible groundwater management principles and data in all general rate case (GRC) filings and grant applications to ensure that resource management objectives remain visible and central to Cal Water's long-term planning/budgeting efforts.

6.2.5 Historical Pumping and Supply Sufficiency

Cal Water holds certain water rights to groundwater it has pumped and used as an overlying owner and appropriator. Cal Water's water rights have been dedicated to public use, and Cal Water is required by the California Public Utilities Commission (CPUC) to provide water to all customers within its designated service area under reasonable rules and regulations. State policy supports and protects municipal and domestic uses (California Water Code §§106-"highest use," 106.5- "protected to the fullest extent for existing and future needs"), which courts have recognized as warranting significant consideration in balancing water rights. Consistent with this, SGMA preserved existing rights and priorities without modification (CWC §10720.5). Therefore, the projected groundwater supply volumes presented herein are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

As described in Section 2.1, the District is made up six separate PWSs, four of which rely on groundwater as their sole source of supply. Groundwater used by the District is extracted from the three basins that underlie these four PWSs, as described in Section 6.2. The District currently owns and operates a total of 14 wells located throughout the PWS service areas: nine in the Coast Springs PWS, two in the Armstrong Valley PWS, one in the Noel Heights PWS, and two in the Hawkins PWS. The District wells are located within the service area boundaries shown on **Figure 6-2**.

The District also operates 26 storage tanks and more than 32 miles of pipeline which are distributed amongst the PWSs, enabling the local groundwater wells to pump to storage during non-peak demand periods and provide peak day demand.

The PWSs in the District have sufficient production capacity to supply all of their service areas' current annual average day and maximum day demands; however, it should be noted during the summer and fall between 2020 and 2023, Cal Water trucked water into the Coast Springs PWS to supplement supply and to meet peak day demands. The greatest annual supply of trucked water was 1.14 acre-feet (AF). The greatest monthly supply of trucked water in October 2021 totaled 0.37 AF. The elevated peak demands were driven by seasonal population increases associated with vacation use and were further compounded by dry-year conditions. Those conditions were temporary, not representative of typical year-round demand patterns, and have not been experienced before 2020 or since 2023 in the Coast Springs PWS. Due to recent system improvement projects and pipeline replacements that have eliminated the need for the use of trucked water in peak periods in the most recent years, Cal Water does not anticipate requiring trucked water in the future to meet demands.

Table 6-2 lists the amount of groundwater pumped by Cal Water over the past five years in the four PWSs served solely by groundwater. Due to successful conservation efforts and response to the historic drought spanning water years 2012-2015, District groundwater pumping volumes were approximately 9.1 percent lower from 2016 through 2025 (i.e., averaging 104 AFY) in comparison to the previous ten years (i.e., averaging 114 AFY from 2006 through 2015); see **Figure 6-3**). See Section 7.1.1 for a discussion of groundwater supply reliability delineated by PWS.

Figure 6-3. Redwood Valley District Historical Pumping (1980 – 2025)

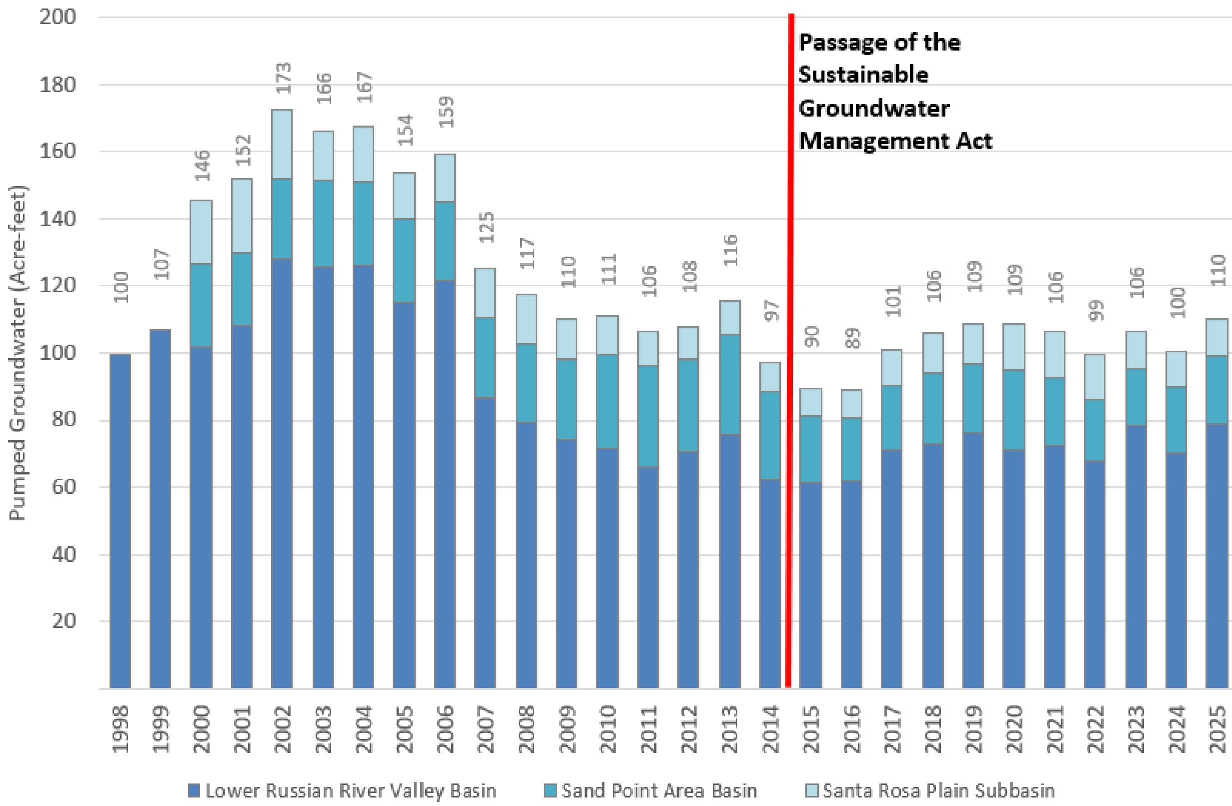


Table 6-2. Groundwater Volume Pumped (DWR Table 6-1)

☐	Check the box if the Supplier does not pump groundwater.							
☐	Check the box if all or part of the groundwater below is desalinated. (OPTIONAL)							
Groundwater Type	**Water Type (OPTIONAL)**	**Location or Basin Name**	2021 (AF)	2022 (AF)	2023 (AF)	2024 (AF)	2025 (AF)
Alluvial Basin	Potable	Lower Russian River Valley Basin	72	68	78	70	79
Alluvial Basin	Potable	Sand Point Area Basin	21	19	17	19	20
Alluvial Basin	Potable	Santa Rosa Plain Subbasin	13	13	11	11	11
		TOTAL	106	99	106	100	110

Notes:

(a) The underlying basins are not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

(b) The Armstrong Valley PWS and Noel Heights PWS pump groundwater from the Lower Russian River Valley Basin. The Coast Springs PWS pumps groundwater from the Sand Point Area Basin. The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin.

6.3 Surface Water

Cal Water does not currently impound or divert surface water as a means to meet demands in the Redwood Valley District. Cal Water purchases untreated local surface water from Yolo County FCWCD, as described above in Section 6.1.2.

6.4 Stormwater

There are no plans to divert stormwater for beneficial uses in the Redwood Valley District.

6.5 Wastewater and Recycled Water

☑ ***CWC § 10633***

The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

The recycling of wastewater offers several benefits to Cal Water and its customers. One of these benefits is to help maintain a sustainable groundwater water supply either through direct recharge, or by reducing potable supply needs by utilizing recycled water for appropriate uses (e.g., landscape irrigation) now being served by potable water. Cal Water is evaluating the feasibility of specific recycled water projects that could be implemented and will incorporate these findings in future water supply planning. The potential amount of recycled water that can be produced is proportional to the amount of wastewater that is locally generated and is discussed in the following sections.

6.5.1 Recycled Water Coordination

The District relies on and coordinates with the City of Santa Rosa, Lake County Sanitation District, North Marin Water District, and Russian River County Sanitation District for relevant wastewater collection, treatment, and discharge. There are no current plans identified by these entities to bring recycled water into the District area for retail customers; however, a small portion of backwash water from the Lucerne Water Treatment Plant is used to irrigate Cal Water's property.

6.5.2 Wastewater Collection, Treatment, and Disposal

☑ ***CWC § 10633 (a)***

A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

☑ ***CWC § 10633 (b)***

A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

A summary of the wastewater collection, treatment, and disposal for the District is shown in **Table 6-3** and **Table 6-4**, including estimates of the volume of wastewater collected from District customers in 2025. Wastewater service is available to all of the Hawkins PWS, most of the Lucerne PWS, about 50 percent of the Armstrong Valley PWS customers, and a portion of the Coast Springs PWS.

Wastewater generated within the Hawkins PWS is treated by the City of Santa Rosa. The City of Santa Rosa operates the sewer system, as well as the Laguna Wastewater Treatment Plant (WWTP) and the Santa Rosa Laguna Subregional Water Reclamation Facility (WRF). The Laguna WWTP and WRF provide tertiary treatment and have an average dry weather flow of 14.4 million gallons per day (MGD). During dry and normal years, 100 percent of tertiary-treated water is used for either producing renewable energy at The Geysers steam fields or urban and agricultural irrigation.[30]

The Northwest Regional Waste Disposal Facility (Northwest System) provides wastewater service to the Lucerne PWS and several surrounding communities. The wastewater collection agency is the Lake County Sanitation District. The Northwest System is old and in need of several infrastructure improvements. Because it is located adjacent to Clear Lake, it is susceptible to seasonal inflow and infiltration, which leads to overuse of lift stations and frequent spills.[31] A Master Plan including an aggressive infrastructure improvement plan was completed in 2005 and the Northwest System is moving to address these issues. The most recent Sanitary Sewer Management Plan for the Northwest Wastewater Collection System was completed in 2022.[32]

Wastewater generated within the Armstrong Valley PWS is treated by the Russian River County Sanitation District (CSD) at the Guerneville Treatment Plant, which is operated by Sonoma County Water Agency (SCWA). The Guerneville Treatment Plant provides tertiary treatment and has an average dry weather flow of 0.7 MGD. Some water from the Guerneville treatment plant is used for irrigation of adjacent forestland and the Northwood Golf Course. The aging Guerneville treatment plant is susceptible to frequent spills.[33]

In the Coast Springs PWS service area, the Oceana Marin subdivision and part of the old Dillon Beach community have wastewater service provided by the Oceana Marin Wastewater System. The remaining properties use septic systems for disposal of wastewater. The wastewater system consists of a pressurized subsurface irrigation disposal system that was constructed by the North

[30] City of Santa Rosa, 2024. City of Santa Rosa Water Annual Report 2024, dated February 2025. Accessed From: https://www.srcity.org/DocumentCenter/View/45860/2024-Regional-Water-Reuse-System-Annual-Report-PDF.
[31] Lake County. Website: "Northwest Regional Wastewater System." Accessed From: https://www.lakecountyca.gov/983/Northwest-Regional-Wastewater-System
[32] Lake County Special District Administration, 2022. Sanitary System Management Plan, dated December 2022. Accessed From: https://www.lakecountyca.gov/DocumentCenter/View/6432/01-NW-Sanitary-Sewer-Management-Plan---Dec-2022?bidId=.
[33] Sonoma County Water Agency. Website: "Russian River County Sanitation District." Accessed From: https://www.sonomawater.org/rrcsd.

Marin Water District in 1981. The wastewater is treated in an aerated treatment pond before entering the disposal system.[34]

Estimates of the District wastewater quantity in 2025 are shown in **Table 6-3**. These values were calculated by annualizing 90 percent of January water use in each of the four PWSs that have treated wastewater services: Hawkins, Lucerne, Armstrong, and Coast Springs. All Hawkins system wastewater is treated by the City of Santa Rosa. It is assumed that 75 percent of wastewater from the Lucerne PWS, 25 percent of wastewater from the Coast Springs PWS, and 50 percent of the wastewater from the Armstrong Valley PWS is treated.

Currently, as shown in **Table 6-4**, no wastewater is recycled for direct reuse within the District service area. The implementation of recycled water systems for reuse in the District is not planned at this time and will likely only be considered if conditions related to District supply change significantly in the future. As such, as shown in **Table 6-5**, there is no projected recycled water supply for the District through the year 2050.

[34] North Marin Water District, 2016. 2015 Master Plan Update: Final Report For the Oceana Marin Wastewater System, dated January 2016. Accessed From: https://nmwd.com/wp-content/uploads/2020/10/4046-Oceana-Marin-2015-Master-Update-Final.pdf.

Table 6-3. Wastewater Collected Within Service Area in 2025 (DWR Table 6-2)

☐	Check the box if there is no wastewater collection system.			
	Percentage of 2025 service area covered by wastewater collection system (OPTIONAL)			
	Percentage of 2025 service area population covered by wastewater collection system (OPTIONAL)			
Wastewater Collection			Recipient of Collected Wastewater	
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? (OPTIONAL)	Volume of Wastewater Collected from UWMP Service Area 2025 (AF)	Name of Wastewater Treatment Plant (WWTP) and Place ID Number	Is WWTP Located Within UWMP Area?
City of Santa Rosa	Estimated	6	Santa Rosa Laguna Subregional Water Reclamation Facility, Place ID 255703	No
Lake County Sanitation District	Estimated	161	NW Regional Waste Disp Fac, Place ID 244785	No
North Marin Water District	Estimated	4	Oceana Marin (North Marin CWD), Place ID 245775	No
Russian River County Sanitation District	Estimated	33	SCWA Russian River CSD, Place ID 256061	No
Total Wastewater Collected from Service Area in 2025:		204		

Notes:

(a) The Hawkins PWS is served by the City of Santa Rosa; portions of the Lucerne PWS are served by the Lake County Sanitation District; portions of the Coast Springs PWS are served by the North Marin Water District; and portions of the Armstrong Valley PWS are served by the Russian River Sanitation District.

Table 6-4. Wastewater and Discharge Within Service Area in 2025 (DWR Table 6-3)

☒	Check box if no wastewater is treated or disposed of within the UWMP service area.													
Wastewater Treatment Plant Name and Place ID Number	Does This Plant Treat Wastewater Generated Outside the UWMP Service Area?	2025 Volume of Wastewater Received from UWMP Service Area (AF)	Total 2025 Volume of Water Treated (AF)	2025 Outcomes of Treated Wastewater										
				Water Recycled Within UWMP Service Area		Water Recycled Outside of UWMP Service Area		Effluent Discharge that is not a Permitted Recycled Water Use		Required Discharge for Instream Flow		Delivered to Another Entity for Additional Treatment		
				Treatment Level	Volume (AF)	Treatment Level	Volume (AF)	Treatment Level	Volume (AF)	Treatment Level	Volume (AF)	Treatment Level	Volume (AF)	Name of other entity
Total														

Notes:

6.5.3 Recycled Water System and Recycled Water Beneficial Uses

☑ ***CWC § 10633 (c-g)***

(c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

(f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

Currently, as shown in **Table 6-5** and **Table 6-6**, the District does not have any specific current or projected projects for the beneficial use of recycled water but are assessing the feasibility of such projects.

However, in the Hawkins PWS, wastewater is collected by the City of Santa Rosa's wastewater system and delivered to the Santa Rosa Laguna Subregional WRF for recycling. The Subregional System produces tertiary-treated recycled for The Geysers electric power facility, landscaping, industrial processes, and fire suppression systems.[35]

In the Lucerne PWS, a large portion of the wastewater from the Lake County Sanitation District's Northwest System is also reused and is sent to The Geysers.[36] The Lake County Sanitation District also has constructed wetlands where recycled wastewater is used for ecological restoration.

While none of the above projects involve direct reuse within the District boundaries or directly impact District supplies, Cal Water will actively investigate recycled water opportunities in the Redwood Valley District. However, given the limited demand within the District, there is currently no actual or projected recycled water supply for the District through the year 2050.

[35] City of Santa Rosa, 2024. City of Santa Rosa Water Annual Report 2024, dated February 2025. Accessed From: https://www.srcity.org/DocumentCenter/View/45860/2024-Regional-Water-Reuse-System-Annual-Report-PDF.
[36] Geysers Power Company, LLC. Website: "The Water Story." Accessed From: https://geysers.com/about/recharging-the-geysers/#.

Table 6-5. Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4)

☒	Check box if recycled water is not used and is not planned for use within the service area of the supplier.									
Name(s) of Facility/ies Producing (Treating) the Recycled Water (OPTIONAL):										
Name of Supplier Operating the Recycled Water Distribution System (OPTIONAL):										
Supplemental Water Added in 2025 (Volume) (OPTIONAL):										
Source of 2025 Supplemental Water (OPTIONAL):										
Use Type	Water Type (after treatment if treated) (OPTIONAL)	Additional Information (as needed)	2025	2030	2035	2040	2045	2050 (opt)	**Potential Recycled Water Use**	
			(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	Volume	Narrative Page Number (OPTIONAL)
		Total:								
Notes:										

Table 6-6. 2020 UWMP Recycled Water Use Projection Compared to 2025 Actual (DWR Table 6-5)

☒	**Check the box if recycled water was not used in 2025 nor projected for use in 2020.**	
Use Type	2020 Projection for 2025	2025 Actual Use
	(AF)	(AF)
Total		
Notes:		

6.5.4 Actions to Encourage and Optimize Future Recycled Water Use

At this time, as shown in **Table 6-7**, Cal Water does not currently have specific projects to initiate the use of recycled water within the District. Cal Water's supply portfolio in some districts already includes recycled water. Cal Water has also recently developed a Water Reuse Strategic Plan that evaluated potential reuse opportunities across all Cal Water Districts, including Non-Potable Reuse (NPR), Indirect Potable Reuse (IPR), and Direct Potable Reuse (DPR). It further outlined key aspects of potable reuse projects including project structure, interagency coordination, and source control. Cal Water will utilize this Strategic Plan to further evaluate the feasibility of specific opportunities and is eager to expand its water supply portfolio to utilize water reuse where feasible, and to form partnerships with other agencies and jurisdictions to accomplish this.

Table 6-7. Methods to Expand Future Recycled Water Use (DWR Table 6-6)

☒	Check the box if the Supplier does not plan to expand recycled water use in the future.		
Section 6.5.4	Page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
			(AF)
		Total	
Notes:			

6.6 Desalinated Water Opportunities

☑ ***CWC § 10631 (g)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

There are no plans for the development of desalinated water opportunities in the Redwood Valley District. Although some PWS in the District are close to the Pacific Ocean, the small demands do not justify the development of desalinated water supplies.

6.7 Water Exchanges and Transfers

☑ ***CWC § 10631 (c)*** *A plan shall be adopted in accordance with this chapter and shall do all of the following:*

Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

The combination of purchased water and groundwater has historically provided a reliable source of supply across the District's six PWSs. Cal Water does not hold any surface water rights in this area that could be transferred to other agencies. Therefore, Cal Water is not pursuing water transfers or exchanges at this time.

6.7.1 Exchanges

Cal Water is not actively pursuing water exchanges involving the District and other entities at this time.

6.7.2 Transfers

Cal Water is not actively pursuing water transfers involving the District and other entities at this time.

6.7.3 Emergency Interties

The District does not have any interties, emergency or otherwise, with any other agencies.

6.8 Future Water Projects

☑ ***CWC § 10631** A plan shall be adopted in accordance with this chapter and shall do all of the following:*

(b) (3) For any planned sources of water supply, a description of the measures that are being undertaken to acquire and develop those water supplies.

(f) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use, as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in normal and single-dry water years and for a period of drought lasting five consecutive water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Cal Water has an active well maintenance program to monitor all its wells and identify which wells need to be replaced to maintain the reliability of the system. Cal Water will maintain sufficient wells and distribution facilities to meet the anticipated increases in future demand as needed. In addition to routine well maintenance, Cal Water is currently advancing additional supply-augmentation projects to support reliability and growth, including adding additional wells to its system. Cal Water has been and is also currently undertaking system improvement projects and pipeline replacements within its service area to improve system efficiency and reliability.

As shown in **Table 6-8**, there are no planned future water supply projects or programs that are expected to provide a quantifiable increase to the District's water supply, beyond Cal Water's groundwater well program mentioned above.

Table 6-8. Expected Future Water Supply Projects or Programs (DWR Table 6-7)

☒	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply.						
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.						
	Provide page location of narrative in the UWMP						
Name of Future Projects or Programs	Joint Project with Other Suppliers?		Additional Description (as needed)	Water Type (after treatment if treated) (OPTIONAL)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
	Yes/ No	*If Yes, Supplier Name*					(AF)
Notes:							

6.9 Summary of Existing and Planned Sources of Water

☑ ***CWC § 10631 (b)*** *Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

☑ ***CWC § 10631 (b) (2)***

When multiple sources of water supply are identified, a description of the management of each supply in correlation with the other identified supplies.

☑ ***CWC § 10631 (b) (4) (D)*** *A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

Table 6-10 summarizes the actual volumes of purchased water and groundwater production for calendar year 2025. As discussed above, the Armstrong Valley PWS and Noel Heights PWS solely pump groundwater from the Lower Russian River Valley Basin, the Coast Springs PWS solely pumps groundwater from the Sand Point Area Basin, and the Hawkins PWS solely pumps groundwater from the Santa Rosa Plain Subbasin. The Lucerne PWS is solely served by untreated local surface water purchased from the Yolo County FCWCD. The Rancho del Paradiso PWS is solely served by purchased water from the SSWD. Each PWS within the District relies on its own distinct and geographically separate water source. These supplies are not physically interconnected and therefore cannot be mixed, shared, or reallocated amongst the individual PWSs; however, given that each PWS is internally whole (i.e., supplies and demand are balanced within each discrete system and not dependent on inter-system transfers), the District is evaluated at an aggregate level for the purposes of the Plan.

As discussed further in Section 7.1, all water sources are considered reliable over the planning horizon, therefore, the available supply amounts shown in **Table 6-10** equal the projected demand for each PWS in each year.

Table 6-9. Water Supplies – Actual (DWR Table 6-8)

Water Supply	Additional Description (As Needed)	2025		
		Water Type (after treatment if treated) (OPTIONAL)	**Actual Volume** (AF)	**Total Entitlement** (OPTIONAL) (AF)
Purchased or Imported Water	Yolo County Flood Control and Water Conservation District	Potable	270	
Purchased or Imported Water	Sweetwater Springs Water District	Potable	5	
Groundwater (not desalinated)	Lower Russian River Valley Basin	Potable	79	
Groundwater (not desalinated)	Sand Point Area Basin	Potable	20	
Groundwater (not desalinated)	Santa Rosa Plain Subbasin	Potable	11	
		Subtotal Potable	385	
		Subtotal Non-Potable	0	
		Total	385	

Notes:

(a) The underlying basins are not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

(b) The Armstrong Valley PWS and Noel Heights PWS pump groundwater from the Lower Russian River Valley Basin. The Coast Springs PWS pumps groundwater from the Sand Point Area Basin. The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin.

Table 6-10. Water Supplies – Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Water Type (OPTIONAL)	Projected Water Supply									
			2030		2035		2040		2045		2050 (opt)	
			Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)	Reasonably Available Volume	Total Entitlement (OPTIONAL)
			(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)	(AF)
Purchased or Imported Water	Yolo County FCWCD	Potable	254		248		243		240		237	
Purchased or Imported Water	Sweetwater Springs Water District	Potable	5		4		4		4		4	
Groundwater (not desalinated)	Lower Russian River Valley Basin	Potable	69		67		66		65		64	
Groundwater (not desalinated)	Sand Point Area Basin	Potable	18		18		18		17		17	
Groundwater (not desalinated)	Santa Rosa Plain Subbasin	Potable	11		11		11		10		10	
		Subtotal Potable	357	0	349	0	342	0	337	0	333	0
		Subtotal Non-Potable	0	0	0	0	0	0	0	0	0	0
		Total	357	0	349	0	342	0	337	0	333	0

Notes:

(a) The underlying basins are not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

(b) The Armstrong Valley PWS and Noel Heights PWS pump groundwater from the Lower Russian River Valley Basin. The Coast Springs PWS pumps groundwater from the Sand Point Area Basin. The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin.

6.10 Special Conditions

6.10.1 Climate Change Effects

Cal Water is committed to incorporating climate change into its ongoing water supply planning. Section 4.4 of this Plan includes a description of plausible changes to projected demands under climate change conditions, and Cal Water is currently working to consider the effects of climate change in future demand modeling. The impact of climate change on District supplies is addressed in detail in the key resources described below, which are incorporated into this UWMP by reference:

- In 2016, Cal Water completed a study of climate change impacts on a representative subset of its districts to gain a better understanding of the potential impacts of climate change on the availability of its diverse supplies.[37] The 2016 study relied on the best available projections of changes in climate (temperature and precipitation) through the end of the century to examine how surface water flows and groundwater recharge rates may change. The executive summary of this study is included in this Plan in **Appendix E**.
- Cal Water developed a multi-phase climate change study to assess the climate-related impacts on Cal Water assets, supplies, demands, and vulnerabilities. Phase 1, which primarily consisted of a literature and tools review of previous and complementary studies, was completed in December 2020. Phase 2 included a District-level vulnerability assessment of Cal Water's facilities and operations, an assessment approach that evaluates climate impacts to Cal Water, identification of asset vulnerabilities, and prioritization of climate risks. Phase 2 also included an assessment of climate-driven impacts to water supply resources and demand, and was completed in December 2021. The executive summary for Phase 1 and the Summary for Decision Makers for Phase 2 of these studies are included in this Plan in **Appendix E**.
- SGMA dictates that GSPs include basin-wide water budget models under various climate change scenarios, including future conditions which account for the effects of estimated climate change. The Santa Rosa Plain Subbasin GSP is available on the DWR SGMA Portal website: https://sgma.water.ca.gov/portal/gsp/all.

6.10.2 Regulatory Conditions and Project Development

Emerging regulatory conditions may affect planned future projects and the characterization of future water supply availability and analysis. The District does not have any current plans to develop additional supply sources. If the District does move forward with any plans to develop

[37] California Water Service, 2016. Potential Climate Change Impacts on the Water Supplies of California Water Service, prepared by Gary Fiske and Associates, Inc. and Balance Hydrologics, Inc., dated January 2016.

supply projects, emerging regulatory conditions will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

6.10.3 Other Locally Applicable Criteria

Other locally applicable criteria may affect characterization and availability of an identified water supply (e.g., changes in regional water transfer rules may alter the availability of a water supply that had historically been readily available). The District does not have any current plans to develop additional supply sources. If the District does move forward ahead with any plans to develop supply projects, locally applicable criteria will be considered, and the associated water supply reliability impacts will be assessed in future UWMP updates.

Under SGMA, GSAs have the authority to implement P/MAs that help the Santa Rosa Plain Subbasin reach its sustainability goal, including demand management measures like conservation rebates. As described in Section 6.2.3, the Santa Rosa Plain Subbasin GSP was adopted in January 2022 and approved by DWR on 26 January 2023. As such actions are implemented, Cal Water will consider them as a part of its future supply planning efforts.

6.11 Energy Intensity

☑ ***CWC § 10631.2***

(a) In addition to the requirements of Section 10631, an urban water management plan shall include any of the following information that the urban water supplier can readily obtain:
(1) An estimate of the amount of energy used to extract or divert water supplies.
(2) An estimate of the amount of energy used to convey water supplies to the water treatment plants or distribution systems.
(3) An estimate of the amount of energy used to treat water supplies.
(4) An estimate of the amount of energy used to distribute water supplies through its distribution systems.
(5) An estimate of the amount of energy used for treated water supplies in comparison to the amount used for nontreated water supplies.
(6) An estimate of the amount of energy used to place water into or withdraw from storage.
(7) Any other energy-related information the urban water supplier deems appropriate.
(b) The department shall include in its guidance for the preparation of urban water management plans a methodology for the voluntary calculation or estimation of the energy intensity of urban water systems. The department may consider studies and calculations conducted by the Public Utilities Commission in developing the methodology.
(c) The Legislature finds and declares that energy use is only one factor in water supply planning and shall not be considered independently of other factors.

The "Total Utility Approach" as defined by DWR in the 2025 UWMP Guidebook is used to report water-related energy-consumption data for the Redwood Valley District. Calendar year 2024 is selected as the one-year reporting period, and utility bills for the associated time period are used as the source for energy consumption data. Utility bills reported the following energy consumption data for the Redwood Valley District during calendar year 2024:

$$Total\ Energy\ Consumed\ by\ the\ Redwood\ Valley\ District = 535{,}343\ kilowatt\ hour\ (kWh)$$

Table 6-11 shows the energy consumed for each acre-foot (AF) of water entering the distribution system in the District, including energy associated with the pumping, treatment, conveyance, and distribution of drinking water, but not including energy associated with the treatment of wastewater. Based on this process, the energy intensity is estimated to be 1,354 kilowatt hours per acre-foot (kWh/AF), or 4,156 kWh per million gallons consistent with the DWR 2025 UWMP Submittal Tables (see **Table 6-11**).

Table 6-11. Recommended Energy Intensity – Total Utility Approach (DWR Table O-1B)

Water Delivery Product	Retail Potable Deliveries	**Only for Water Delivery Products Under the Urban Water Supplier's Operational Control**		
Start Date of Reporting Period	1/1/2024	**Sum of All Water Management Processes**	**Non-Consequential Hydropower**	
End Date of Reporting Period	12/31/2024			
Is Upstream Embedded Energy in the Values Reported?	No			
Units of Measure for Water	(AF)	**Total Utility**	**Hydropower**	**Net Utility**
Volume of Water Entering Process		395	-	395
Energy Consumed (kWh)		535,343	-	535,343
Energy Intensity (kWh/vol. converted to MG)		4,156	-	4,156
Quantity of Self-Generated Renewable Energy				
N/A				
Data Quality (Estimate, Metered Data, Combination of Estimates and Metered Data)				
Metered Data				
Data Quality Narrative:				
Utility bills for the associated time period are used as the source for energy consumption data.				
Narrative:				
Total energy consumption represents the energy consumed during pumping, treatment, conveyance, and distribution.				
Notes:				

Chapter 7
Water Supply Reliability Assessment

☑ ***CWC § 10620 (f)***

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

☑ ***CWC § 10630.5***

Each plan shall include a simple lay description of how much water the agency has on a reliable basis, how much it needs for the foreseeable future, what the agency's strategy is for meeting its water needs, the challenges facing the agency, and any other information necessary to provide a general understanding of the agency's plan.

This chapter describes the reliability of the California Water Service (Cal Water) Redwood Valley District's (also referred to herein as the "District") water supplies. Assessment of water supply reliability is complex and dependent upon a number of factors, such as the number of water sources, regulatory and legal constraints, hydrological and environmental conditions, climate change, and expected growth, among others. Based on available historical information and projections of future water uses, regulatory and legal constraints, and hydrological and environmental conditions, including climate change, Cal Water has made its best determination of future water supply reliability for the District. This chapter includes the following sections:

7.1 Constraints on Water Sources

7.2 Reliability by Type of Year

7.3 Supply and Demand Assessment

7.4 Water Supply Management Tools and Options

7.5 Drought Risk Assessment

7.1 Constraints on Water Sources

The source of water supply for the District is a combination of groundwater and purchased water. Each Public Water System (PWS) within the District relies on its own distinct and geographically distinct water source. These supplies are not physically interconnected and therefore cannot be mixed, shared, or reallocated amongst the individual PWSs; however, given that each PWS is internally whole (i.e., supplies and demand are balanced within each discrete system and not dependent on inter-system transfers), the District is evaluated at an aggregate level for the purposes of the Plan. The sole source of supply for each PWS is as follows:

- The source of supply for the Lucerne PWS is untreated local surface water purchased from the Yolo FCWCD.
- The source of supply for the Rancho del Paradiso PWS is purchased water from the SSWD.
- The source of supply for the Armstrong Valley PWS is groundwater pumped from the Lower Russian River Valley Basin (DWR Basin No. 3-004.02).
- The source of supply for the Noel Heights PWS is groundwater pumped from the Lower Russian River Valley Basin (DWR Basin No. 3-004.02).
- The source of supply for the Coast Springs PWS is groundwater pumped from the Sand Point Area Basin (DWR Basin No. 2-027).
    - As needed, the District trucks water to meet peak day demands in the Coast Springs PWS.
- The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin (DWR Basin No. 1-055.01).

Cal Water has identified several potential constraints on future purchased water and groundwater supply availability, including water quality, climate change, and evolving regulations such as the Sustainable Groundwater Management Act (SGMA). These constraints, along with the associated management strategies are summarized in the following sections.

7.1.1 Supply Availability

As discussed in Chapter 6 of this Urban Water Management Plan (UWMP or Plan), Cal Water expects that, under all hydrologic conditions, including a five-year drought period, the District purchased water and groundwater supplies are expected to be sufficient to meet demands.. This assessment is based on the available information regarding purchased water and groundwater supply availability to the District and the additional information presented below.

Cal Water holds certain water rights to groundwater it has pumped and used as an overlying owner and appropriator. Cal Water’s water rights have been dedicated to a public use, and Cal Water is required by the California Public Utilities Commission (CPUC) to provide water to all customers within its designated service area under reasonable rules and regulations. State policy supports and protects municipal and domestic uses (California Water Code §§106-“highest use,” 106.5- “protected to the fullest extent for existing and future needs”), which courts have recognized as warranting significant consideration in balancing water rights. Consistent with this, Sustainable Groundwater Management Act (SGMA) preserved existing rights and priorities without modification (CWC §10720.5). Use of water for domestic purposes is recognized as the “highest use” of water in the State of California pursuant to California Water Code (CWC) §106, and the rights of urban water purveyors should be protected to the fullest extent necessary for existing and future uses, pursuant to CWC §106.5.

Due to successful conservation efforts and response to the historic drought spanning water years 2012-2015, District groundwater pumping volumes were approximately 9.1 percent lower from 2016 through 2025 (i.e., averaging 104 AFY) in comparison to the previous ten years (i.e., averaging 114 AFY from 2006 through 2015; see **Figure 6-3**).

Untreated local surface water purchased from Yolo County FCWCD has always been sufficient to meet District demands in the Lucerne PWS. Purchased water from SSWD has always been sufficient to meet District demands in the Rancho del Paradiso PWS.

Lucerne PWS

The water supply for the Lucerne Public Water System (PWS) is purchased untreated local surface water from the Yolo County FCWCD. Surface water supplies from Yolo County FCWCD are dependent on annual rainfall and inflows into Clear Lake. Because of the operational schedule of the Clear Lake Dam, an adequate supply is available in all but the most severe droughts. In 1976 and 1977 the Clear Lake area experienced the equivalent of two 50-year droughts in successive years. In 1977, the lake level reached a low of -3.39 feet Rumsey and a high of -0.30 feet Rumsey, and Yolo County FCWCD did not receive discharges from the lake. Cal Water did not own the Lucerne PWS at this time and does not know how demand was served in 1977.

In November 2014, the Clear Lake level reached a low of -0.083 feet Rumsey and a high of 2.48 feet Rumsey. In order to ensure that water could still be pulled from the lake, in January 2015 the treatment plant’s intake structure was lowered to a depth of -4.5 feet Rumsey.

According to Cal Water’s purchase agreement with Yolo County FCWCD, in the event of a water shortage, municipal customers will be given priority over other users, and Yolo County FCWCD will attempt to supply nonagricultural water service without reduction before serving agricultural water users.[38] As such, this supply is expected to continue to be highly reliable and meet all of the Lucerne PWS projected demands in all year types.

Coast Springs PWS

The groundwater used in the Coast Springs PWS comes from two sources. Approximately 75 percent of the total supply comes from Well 4-01 located in an alluvial aquifer at the mouth of Dillon Creek. Well 4-01 is a gallery infiltration well under the influence of surface water from Dillon Creek, which drains the local Dillon Creek Watershed. The second source is six deep bedrock wells in the nearby Mesa Watershed known as the “Hill” wells. Water from the Hill wells is also considered to be under the influence of surface water and is regulated by the Surface Water Treatment Rule. The Hill wells are low producing and are used more often in the summer

[38] See the Yolo County FCWCD 2020 Agricultural Water Management Plan (AWMP) Section II.2.d for a detailed description of Yolo County FCWCD water services during droughts and water shortages. The AWMP is accessible from: https://wuedata.water.ca.gov/awmp_plans?year=2020.

months when demand is greatest. All raw groundwater produced by the Coast Springs PWS wells is pumped to a storage tank and treated with membrane filtration before entering the distribution system.

During the summer and fall between 2020 and 2023, Cal Water trucked water into the Coast Springs PWS to supplement supply and to meet peak day demands. The greatest annual supply of trucked water was 1.14 acre-feet (AF). The greatest monthly supply of trucked water in October 2021 totaled 0.37 AF. The elevated peak demands were driven by seasonal population increases associated with vacation use and were further compounded by dry-year conditions. Those conditions were temporary, not representative of typical year-round demand patterns, and have not been experienced before 2020 or since 2023 in the Coast Springs PWS. Due to recent system improvement projects and pipeline replacements that have eliminated the need for the use of trucked water in peak periods in the most recent years, Cal Water does not anticipate requiring trucked water in the future to meet demands.

Armstrong Valley PWS, Noel Heights PWS, and Rancho Del Paradiso PWS

The Armstrong Valley PWS, Noel Heights PWS, and Rancho Del Paradiso PWS all derive their supplies from groundwater in the Lower Russian River Valley Basin or surrounding areas.[39]

The Armstrong Valley PWS pumps groundwater from two wells located near Fife Creek. Both wells are deep wells that pull water both from the alluvial sedimentary deposits of the Creek and also from deeper aquifer zones. These deeper zones are recharged by deep infiltration from the Fife Creek and from inflow from aquifers in the surrounding hills. As a result, they exhibit a slower response to climatic conditions. The wells are not considered to be under the influence of surface water. Groundwater level data collected in the Armstrong Valley PWS wells has varied between approximately 6.0 and 11 feet below ground surface between 2009 and 2025, and has shown no significant trend. There has never been a supply shortage in the Armstrong Valley PWS, and Cal Water is confident that its groundwater supply is reliable.

The Noel Heights PWS is supplied by one well that is located in a topographic depression along Pocket Canyon Creek. This area remains wet and water levels in the well have been stable over time. The well is shallow and pulls water from alluvial deposits of the Pocket Canyon Creek. The well is considered to be under the influence of surface water, and water produced by this well is treated as surface water for turbidity. There have been no known water supply shortages in Noel Heights PWS in the past. However, because the system relies on a single well, if the well were to go out of service for any reason water would need to be trucked in. Cal Water is currently

[39] Armstrong Valley PWS and Noel Heights PWS pump groundwater directly, whereas for the Rancho Del Paradiso PWS, Cal Water purchases the supply from the Sweetwater Springs Water District.

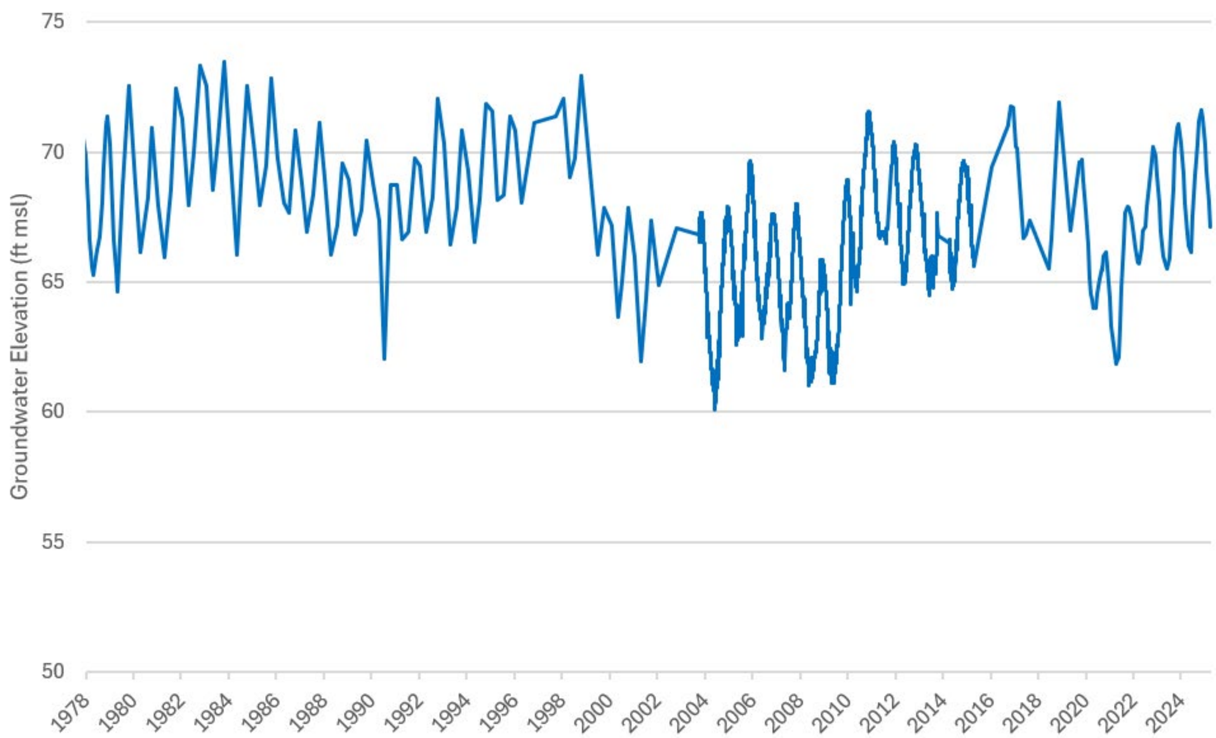
exploring options for adding an additional source of supply to prevent water shortages due to drought events or equipment failure.

The Rancho del Paradiso PWS is supplied (through purchased water from SSWD) by wells that are under the influence of surface water. These wells are located along the Russian River, which is a large perennial river that has flows even during prolonged droughts. The SSWD 2020 Urban Water Management Plan (UWMP) states that it will be able to serve 100 percent of projected demands in normal, single-dry and multiple-dry years.[40] Therefore, the supply is considered reliable in all year types.

Hawkins PWS

The wells in the Hawkins PWS pump water from the Santa Rosa Plain Subbasin of the Santa Rosa Valley Basin. As **Figure 7-1** shows, the groundwater levels in the vicinity of the Hawkins PWS have been stable since 1980. This indicates that a reliable groundwater source is available to the Hawkins PWS in all year types.

Figure 7-1. Groundwater Level Trend at Monitoring Well SRP0357[41]



[40] Sweetwater Springs Water District, 2021. 2020 Urban Water Management Plan Update, dated June 2021.
[41] The site code for well SRP0357 is 383855N1227777W001.

Further, projected District pumping is consistent with the Santa Rosa Plain Subbasin Groundwater Sustainability Plan (GSP) goal to maintain conditions at or above historical conditions (which represent stable recovered groundwater levels). Between 2001 and 2015, the District pumped an annual average of 13.5 AF from the Santa Rosa Plain Subbasin to meet service area demands in the Hawkins PWS. Given that the projected future pumping under all hydrologic scenarios through 2050 within the Hawkins PWS is notably less than historical pumping, and this historical period was used to develop sustainable management criteria in the GSP and did not degrade local groundwater conditions, it is reasonable to conclude that the projected groundwater demand in the Hawkins PWS will not impact the Santa Rosa Plain Subbasin's ability to achieve the sustainability goal. As such the groundwater supply is assumed to be 100 percent reliable in all year types.

However, it is important to note that the Santa Rosa Plain Subbasin is not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. SGMA was intended to preserve the security of water rights in the state and was not intended to determine, modify or alter any surface water or groundwater rights or priorities. (CWC §10720.1(b), 10720.5(a) and (b).) SGMA should therefore not reduce, adversely impact or limit Cal Water's present or future exercise of its domestic water rights or its obligation to serve its municipal customers. As such, any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

It is also important to note that from a regional and Basin-wide standpoint, the Hawkins PWS pumping is only a small fraction of total groundwater pumping. Based on Table 3-10 presented in the GSP, average annual groundwater pumping from water year 2012 to 2018 was approximately 19,900 AFY.[42] Cal Water's average pumping the same period (9.5 AFY) accounts for 0.05 percent of total Santa Rosa Plain Subbasin pumping. It is therefore likely that management of other water users will be a much larger determining factor in maintaining groundwater sustainability in the Santa Rosa Plain Subbasin in the future.

[42] Santa Rosa Plain Groundwater Sustainability Agency, 2021. Groundwater Sustainability Plan: Santa Rosa Plain Groundwater Subbasin, dated December 2021. Accessed From: https://sgma.water.ca.gov/portal/gsp/preview/136.

7.1.2 Water Quality

☑ ***CWC § 10634***

The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Impaired water quality also has the potential to affect water supply reliability. Cal Water is committed to meeting all 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 (DDW) can either adopt the USEPA standards or set more stringent standards, which are then codified in Title 22 of the California Code of Regulations. There are two general types of drinking water standards:

- **Primary Maximum Contaminant Levels (MCLs)** 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. Public water systems 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.

Cal Water routinely monitors its wells and the water that is treated and served to customers to ensure that water delivered to customers meets these drinking water standards. The results of this testing are reported to the SWRCB DDW following each test and are summarized annually in Water Quality Reports (also known as "Consumer Confidence Reports"), which are provided to customers by mail and made available on Cal Water's website:

https://www.calwater.com/water-quality-reports/.

Additionally, a detailed review of the water quality conditions of the Santa Rosa Plain Subbasin are provided in the GSP and Annual Reports, available on the Department of Water Resources (DWR) SGMA Portal website:

https://sgma.water.ca.gov/portal/gsp/all.

Although there is the potential for some regulated constituents to be present in source water, as documented in the Water Quality Reports, the District's monitoring, management, and treatment of its water results in high quality drinking water meeting all drinking water standards being served to customers. Cal Water tracks changes in constituent concentrations to proactively address water quality issues before they impact supply reliability.[43] In the event that water quality constituents are detected in source water at concentrations requiring treatment, the District is able to take impacted source(s) offline to implement appropriate treatment. Further, as part of the siting process for all new wells, Cal Water evaluates the presence of groundwater contamination and avoids placing wells in areas of known contamination.

Cal Water is committed to proactively addressing emerging contaminants and changing MCL requirements as needed.

Given Cal Water's proactive monitoring and management of water quality in its source water supplies, water quality is not expected to impact the reliability of the District's available supplies within the planning horizon (i.e., through 2050).

7.1.3 Climate Change

☑ ***CWC § 10631 (b) (1)***

…For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

Section 6.10 provides a summary of the assessments of climate change on supplies that Cal Water has previously performed and those planned for the near term, as well as those related to SGMA efforts for the Santa Rosa Plain Subbasin. The water budget modeling efforts in the Santa Rosa Plain Subbasin GSP incorporated climate change factors for hydrology and surface water supplies using DWR Central Tendency climate change scenarios to obtain estimated climate change impacts.[44] Section 4.4 of this UWMP presents information on how the impacts of climate change are factored into projected demands in the District. Cal Water is actively working to further quantify and consider future climate change impacts as part of its ongoing supply and operations planning.

[43] Cal Water, 2018. Direct Testimony of Director of Water Quality, 2018 CPUC Rate Case Filing.
[44] Cal Water, 2018. Direct Testimony of Director of Water Quality, 2018 CPUC Rate Case Filing.

7.2 Reliability by Type of Year

☑ ***CWC § 10631 (b)***

Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a), providing supporting and related information, including all of the following:

☑ ***CWC § 10631 (b)(1)***

A detailed discussion of anticipated supply availability under a normal water year, single dry year, and droughts lasting at least five years, as well as more frequent and severe periods of drought, as described in the drought risk assessment. For each source of water supply, consider any information pertinent to the reliability analysis conducted pursuant to Section 10635, including changes in supply due to climate change.

☑ ***CWC § 10635 (a)***

Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the long-term total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Consistent with the 2025 UWMP Guidebook, the water service reliability assessment includes three unique types of years based on hydrologic conditions:

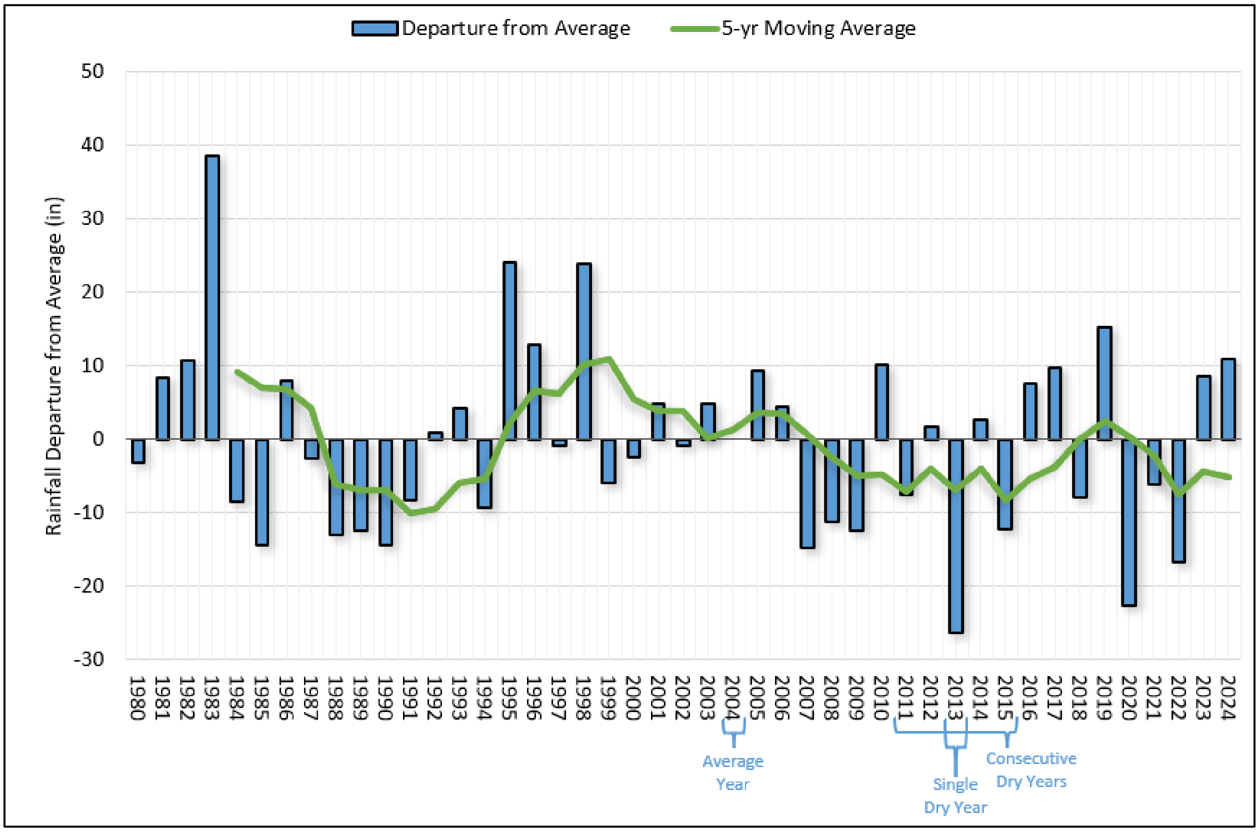
- A normal hydrologic year represents the water supplies available under normal conditions, this could be an averaged range of years or a single representative year;
- A single dry year represents the lowest available water supply; and
- A five-consecutive year drought represents the driest five-year period in the historical record.

Identification of these dry year periods consistent with the 2025 UWMP Guidebook methodology is provided below.

Figure 7-2 compares annual rainfall to the historic average (34.54 inches for 1980 to 2024). The designation of Base Years for drought planning shown in **Table 7-1** below comes from the data underlying **Table 7-2**. The production data record for the Redwood Valley District begins in the year 1998; therefore, the following year type analysis compares District supplies from 1998 to 2024 to the average precipitation from 1980 to 2024.

A normal hydrologic year occurred in 2004 when precipitation was approximately 0.84 percent below the historic average for the period from 1980 to 2024. The driest year occurred in 2013 when the rainfall was approximately 76 percent below average (2013 had 8.36 inches of precipitation). This is taken as the single dry year shown in Table 7-1. The multiple dry water years used to represent a five-consecutive year drought are 2011 through 2015. This period represents the driest five-year period on record for the historical period from 1998 to 2024, with an average precipitation of 26.43 inches per year.

Figure 7-2. Deviation of Annual Rainfall from Long-Term Average



Source: PRISM Climate Group, Oregon State University, http://prism.oregonstate.edu

As discussed in Section 7.1.1, the District's water supplies are reliable regardless of water year type. Therefore, total supplies are expected to be sufficient to meet projected water demands of the District under all hydrologic conditions, including in normal, single dry, and multiple dry years. If existing supplies for a PWS are not sufficient, Cal Water will truck water to meet demand.

As such, the projected "volume available" estimates presented in **Table 7-1** are equal to the maximum demands across projected years and year types shown in **Table 7-2**, **Table 7-3**, and **Table 7-4**. For example, the assumed volume available in a representative single dry year in

Table 7-1 is equal to the projected single dry year demand for the year 2030 as shown in **Table 7-3**.

Table 7-1. Basis of Water Year Data (Reliability Assessment) (DWR Table 7-1)

Year Type	Base Year	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: ___________________________
		Quantification of available supplies is provided in this table as either volume only, percent only, or both.	
		Volume Available (AF)	% of Average Supply
Average Year	2004	357	
Single-Dry Year	2013	367	
Consecutive Dry Years 1st Year	2011	374	
Consecutive Dry Years 2nd Year	2012	374	
Consecutive Dry Years 3rd Year	2013	374	
Consecutive Dry Years 4th Year	2014	374	
Consecutive Dry Years 5th Year	2015	374	

Notes:
(a) As discussed in Section 7.1, the projected "volume available" estimates presented in **Table 7-1** are equal to the maximum demands across projected years and year types shown in **Table 7-2**, **Table 7-3**, and **Table 7-4**. For example, the assumed volume available in a representative single dry year in **Table 7-1** is equal to the projected single dry year demand for the year 2030 as shown in **Table 7-3**.

7.3 Supply and Demand Assessment

Water supply and demand patterns change during normal, single dry, and multiple dry years. Cal Water has relied on the demand modeling described in Chapter 4 to forecast demands for normal, single dry and multiple dry years. As described above, Cal Water's purchased water and groundwater supply for the Redwood Valley District is expected to be able to serve those demands in all year types.[45]

Table 7-2 shows the projected supply and demand totals for a normal year. The supply and demand totals are consistent with those in **Table 6-10** and **Table 4-2**, respectively. **Table 7-3**

[45] The balance between supply and demand totals excludes usage reductions that are not directly a function of Cal Water supplies, but are externally-imposed by other entities, such as the 2015 state-mandated cutbacks.

shows the projected supply and demand totals for the single dry year, and **Table 7-4** shows the projected supply and demand totals for multiple dry year periods extending five years. It should be noted that the supply values shown in **Table 7-2** through **Table 7-4** do not represent the total supply available to the District in a given year, but rather reflect the fact that the combination of available purchased water and groundwater supply sources has always been sufficient (with the exception of the limited need to supplement supplies in certain prior years to meet peak demands in the Coast Springs PWS as discussed above) to meet demands (see Section 7.1.1).

Table 7-2. Normal Year Supply and Demand Comparison – Districtwide (DWR Table 7-2)

	2030	2035	2040	2045	2050 (opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply Totals	357	349	342	337	333
Use Totals	357	349	342	337	333
Surplus/(Shortfall)	0	0	0	0	0

Notes:
(a) The underlying Basins are not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Table 7-3. Single Dry Year Supply and Demand Comparison – Districtwide (DWR Table 7-3)

	2030	2035	2040	2045	2050 (opt)
	(AF)	(AF)	(AF)	(AF)	(AF)
Supply Totals	367	359	352	347	343
Use Totals	367	359	352	347	343
Surplus/(Shortfall)	0	0	0	0	0

Notes:
(a) The underlying Basins are not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

Table 7-4. Multiple Dry Years Supply and Demand Comparison – Districtwide (DWR Table 7-4)

		2030	2035	2040	2045	2050 (Opt)
First Year	Supply Totals	374	366	359	354	349
	Demand Totals	374	366	359	354	349
	Surplus/(Shortfall)	0	0	0	0	0
Second Year	Supply Totals	374	366	359	354	349
	Demand Totals	374	366	359	354	349
	Surplus/(Shortfall)	0	0	0	0	0
Third Year	Supply Totals	374	366	359	354	349
	Demand Totals	374	366	359	354	349
	Surplus/(Shortfall)	0	0	0	0	0
Fourth Year	Supply Totals	374	366	359	354	349
	Demand Totals	374	366	359	354	349
	Surplus/(Shortfall)	0	0	0	0	0
Fifth Year	Supply Totals	374	366	359	354	349
	Demand Totals	374	366	359	354	349
	Surplus/(Shortfall)	0	0	0	0	0

Notes:

(a) The underlying Basins are not adjudicated or critically overdrafted, and the projected groundwater supply volumes are not intended to and do not determine, limit or represent Cal Water's water rights or maximum pumping volumes. Any determination of Cal Water's water rights, as an overlying owner, appropriator, municipal water purveyor or otherwise, is beyond the scope of this report and the UWMP statutes and regulations.

7.4 Water Supply Management Tools and Options

☑ ***CWC § 10620 (f)***

An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

Cal Water coordinates on an ongoing basis with all relevant agencies in the region to optimize the use of regional water supplies. This includes Marin County, Lake County, and other public and private entities with which Cal Water can collaborate to protect and enhance local groundwater and surface water resources.

Cal Water developed multiple regional water supply reliability studies using integrated resource planning practices to create a long-term supply reliability strategy through 2050 for Cal Water districts throughout California. The studies created long-term strategies to address a wide range of water supply challenges including climate change, new regulatory requirements (e.g., SGMA), and potential growth in demands due to new development. These water supply reliability studies were completed on a rolling basis between 2021 and 2025.

Cal Water also has its own aggressive and comprehensive water conservation program that has and will continue to reduce per-capita usage and therefore demands on critical water sources. Cal Water is committed to helping its customers use water efficiently and has developed a range of water conservation programs to support this goal. To ensure that it is providing the right mix of programs in the most cost-effective manner possible, Cal Water routinely conducts comprehensive conservation program analysis and planning. This is done on a five-year cycle in tandem with the UWMP. Cal Water's Conservation Master Plan provides the basis for the information on the implementation of and expected water savings from Demand Management Measures (DMMs) presented in Chapter 9.

Cal Water also monitors and supports the goals of the Bay Area, North Coast, and Westside Sacramento Integrated Regional Water Management Plans, as well as SGMA implementation in the Santa Rosa Plain Subbasin.

In summary, Cal Water has a robust planning process in place with multiple supply projects for consideration to address future supply/demand gaps and to increase supply reliability. Additional conservation, if approved by the CPUC, will also support these efforts. Projects will be developed, as needed, to balance supply reliability and affordability.

7.5 Drought Risk Assessment

☑ ***CWC § 10635(b)***

Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted.

(2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions.

(3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.

(4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

7.5.1 Data, Methods, and Basis for Water Shortage Condition

This drought risk assessment considers the effects on available water supply sources of a five-year drought commencing the year after the assessment is completed, i.e., from 2026 through 2030. This evaluation considers historical drought hydrology and plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria. In the Redwood Valley District, the supply source is a combination of groundwater and purchased water. As such, the same data, methodology, and basis for the conclusions of the above water supply sufficiency analysis for multiple dry year periods through 2050 holds true for purposes of this drought risk assessment (i.e., supply availability through 2030), see Section 7.1.1. Accordingly, as shown in **Table 7-5** of the Plan, the purchased water and groundwater supply is expected to be able to meet the projected demands through 2030, even if there is a five-year drought.

7.5.2 Drought Risk Assessment Water Source Reliability

As described in Chapter 6, purchased water from the SSWD, purchased untreated local surface water from the Yolo County FCWCD, and groundwater from the Lower Russian River Valley Basin, Sand Point Area Basin, and Santa Rosa Plain Subbasin are the sources of water supply for the District. Based on discussion in Section 7.1.1, the District purchased water and groundwater supplies are expected to be sufficient to meet demands in all hydrologic conditions, including an extended five-year drought period.

Cal Water has a long-term agreement with the Yolo County FCWCD for the purchase of untreated local surface water from Clear Lake and no interruptions of this source are anticipated. According to Cal Water's purchase agreement with Yolo County FCWCD, in the event of a water shortage, municipal customers will be given priority over other users. Cal Water also purchases a small amount of water from the SSWD, which is considered highly reliable in all year types.

As described in Sections 4.4 and 6.10.1 of this Plan, the impacts on climate change have already been factored into the District's demand projections and the analysis of the near- and longer-term reliability of the groundwater supply source available to the District.

Regulatory conditions that could affect future water supply availability and project development are discussed in Section 6.10.3 of the Plan. However, the District does not currently have plans for projects to develop additional supply sources, and so these regulatory conditions will be assessed in future UWMP updates if or when the District moves forward with any plans to develop supply projects.

Implementation of SGMA in the Santa Rosa Plain Subbasin is a locally applicable consideration for the District. As discussed in Section 6.2.3 of this Plan, the long-term impacts of SGMA implementation in the Basin are still uncertain. However, it is the intent of the planned projects and management actions to maintain water levels and provide for sustainable management of the groundwater resource. As SGMA-related actions are implemented, Cal Water will consider them as a part of its future supply planning efforts. Further description of the legal protections of municipal groundwater pumping rights and groundwater sufficiency are detailed in Section 7.1.1.

Table 7-5 provides a comparison of the water supply sources available to the District with the total projected water use for an assumed drought period of 2026 through 2030. This includes current climate change conditions. It should be noted that the supply values shown in the table do not necessarily represent the total supply available to the District in a given year, but rather reflect the fact that the available purchased water and groundwater supplies are projected to be sufficient to meet the demands as needed.

In general, the District has sufficient supplies to meet demands in all year types. Regardless, Cal Water has developed a Water Shortage Contingency Plan (WSCP, **Appendix F**) to address potential water shortage conditions resulting from any cause (e.g., droughts, impacted distribution system infrastructure, regulatory-imposed shortage restrictions, etc.). The WSCP, included as **Appendix F**, identifies a variety of actions that Cal Water will implement to reduce demands and further ensure supply reliability at various levels of water shortage.

Table 7-5. Five-Year Drought Risk Assessment Tables (DWR Table 7-5)

2026		Total
Total Water Use	(AF)	393
Total Supplies	(AF)	393
Surplus/Shortfall w/o WSCP Action		0
OPTIONAL: Planned WSCP Actions (use reduction and supply augmentation)		
WSCP - supply augmentation benefit	(AF)	
WSCP - use reduction savings benefit	(AF)	
Revised Surplus/(shortfall)		

2027		Total
Total Water Use (AF)	(AF)	388
Total Supplies (AF)	(AF)	388
Surplus/Shortfall w/o WSCP Action		0
Planned WSCP Actions (use reduction and supply augmentation)		
WSCP - supply augmentation benefit (AF)	(AF)	
WSCP - use reduction savings benefit (AF)	(AF)	
Revised Surplus/(shortfall)		

2028		Total
Total Water Use (AF)	(AF)	383
Total Supplies (AF)	(AF)	383
Surplus/Shortfall w/o WSCP Action		0
Planned WSCP Actions (use reduction and supply augmentation)		
WSCP - supply augmentation benefit (AF)	(AF)	
WSCP - use reduction savings benefit (AF)	(AF)	
Revised Surplus/(shortfall)		

2029		Total
Total Water Use (AF)	(AF)	379
Total Supplies (AF)	(AF)	379
Surplus/Shortfall w/o WSCP Action		0
Planned WSCP Actions (use reduction and supply augmentation)		
WSCP - supply augmentation benefit (AF)	(AF)	
WSCP - use reduction savings benefit (AF)	(AF)	
Revised Surplus/(shortfall)		

Table 7-5. Five-Year Drought Risk Assessment Tables (DWR Table 7-5)

2030		Total
Total Water Use (AF)	(AF)	374
Total Supplies (AF)	(AF)	374
Surplus/Shortfall w/o WSCP Action		0
Planned WSCP Actions (use reduction and supply augmentation)		
WSCP - supply augmentation benefit (AF)	(AF)	
WSCP - use reduction savings benefit (AF)	(AF)	
Revised Surplus/(shortfall)		

Notes:

(a) In general, the District has sufficient supplies to meet demands in all year types through 2030 and it is not anticipated that WSCP actions will be required in the District during the drought period. However, during state, regional, or extreme circumstances, the WSCP would be implemented to reduce demand.

Chapter 8
Water Shortage Contingency Planning

☑ ***CWC § 10640***

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

The Water Shortage Contingency Plan (WSCP) for the California Water Service (Cal Water) Redwood Valley District (also referred to herein as "District") is included in this Urban Water Management Plan (UWMP) as **Appendix F**. The 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 the District 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.

Consistent with California Water Code (CWC) §10632, the WSCP includes six shortage levels to address shortage conditions ranging from up to 10 percent to greater than 50 percent shortage, identifies a suite of demand mitigation measures for the District to implement at each shortage level, and identifies procedures for the District to annually assess whether or not a water shortage is likely to occur in the coming year, among other things.

A summary of the key elements of the WSCP including water shortage levels and demand-reduction actions is shown in **Table 8-1**, **Table 8-2**, and **Table 8-3**. Additional details are provided in **Appendix F**.

Table 8-1. Water Shortage Contingency Plan Levels (DWR Table 8-1)

☒	Check the box if the Supplier uses the Standard six levels of water shortage. Proceed to the next table.		
Standard Shortage Levels	**Percent Shortage Range**	**Suppliers Shortage Levels**	**Percent Shortage Range**
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		
Notes:			

Table 8-2. Supply Augmentation and Other Actions (DWR Table 8-2)

☒	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	**Supply Augmentation Methods and Other Actions by Water Supplier**	**How much is this going to reduce the shortage gap?**		**Additional Explanation or Reference (OPTIONAL)**
		Volume or Percentage	Shortage Gap Reduction Value AF	
See note (a)	See note (a)	See note (a)	See note (a)	See note (a)

Notes:
(a) Cal Water evaluates water supply augmentation projects on an on-going basis. At this time, Cal Water does not have supply augmentation projects planned specifically to address water shortage conditions.

Table 8-3. Demand Reduction Actions (DWR Table 8-3)

X	Is the Supplier completing this table using the standard six levels?				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value AF		
1	Other	Percentage	10%	1. Landscape - Limit landscape irrigation to specific times. 2. Other - Customers must repair leaks, breaks, and malfunctions in a timely manner. 3. Landscape - Restrict or prohibit runoff from landscape irrigation. 4. Prohibit application of potable water to outdoor landscapes within 48 hours of measurable rainfall. (*Landscape - Other landscape restriction or prohibition*). 5. Other - Prohibit use of potable water for washing hard surfaces. 6. Other – Require automatic shut off hoses (*Other - Require automatic shut off hoses*). 7. CII - Lodging establishments must offer opt out of linen service. 8. CII - Restaurants may only serve water upon request. 9. No watering of landscape of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission, the Department of Housing and Community Development, or other State agency (*Landscape - Other landscape restriction or prohibition*). 10. Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water (*Water Features - Restrict water use for decorative water features, such as fountain*).	Yes

X	Is the Supplier completing this table using the standard six levels?				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value AF		
1	Other	--	--	1. Expand Public Information Campaign. 2. Water Bill Inserts (*Improve Customer Billing*). 3. Promote online water waste reporting (*Expand Public Information Campaign*). 4. Expand Rebates or Giveaways of Plumbing Fixtures and Devices. (*Provide Rebates on Plumbing Fixtures and Devices*). 5. Expand Rebates for Landscape irrigation Efficiency (*Provide Rebates for Landscape irrigation Efficiency*). 6. Expand CII Water Use Surveys (*Offer Water Use Surveys*). 7. Expand Res Water Use Surveys (*Offer Water Use Surveys*).	No
2	Other	Percentage	20%	1. Continue with Shortage Level 1 restrictions and prohibitions except where superseded by more stringent restrictions and prohibitions. 2. Landscape - Limit landscape irrigation to specific days.[b] 3. CII - Prohibit the use of non-recirculating systems in all new conveyer car wash and commercial laundry systems (*CII – Other CII restriction or prohibition*). 4. Prohibit the use of single pass cooling systems in new connections (*Other*).	Yes
2	Other	--	--	1. Continue with Shortage Level 1 actions except where superseded by more stringent actions. 2. Water Efficiency Workshops, Public Events (*Other*).	Yes

<table>
<tr><td>X</td><td colspan="5">Is the Supplier completing this table using the standard six levels?</td></tr>
<tr><td rowspan="3">Shortage Level</td><td rowspan="3">Demand Reduction Actions</td><td colspan="2">How much is this going to reduce the shortage gap?</td><td rowspan="3">Additional Explanation or Reference (OPTIONAL)</td><td rowspan="3">Penalty, Charge, or Other Enforcement?</td></tr>
<tr><td rowspan="2">Volume or Percentage</td><td>Shortage Gap Reduction Value</td></tr>
<tr><td>AF</td></tr>
<tr><td>3</td><td>Other</td><td>Percentage</td><td>30%</td><td>1. Continue with Shortage Level 2 restrictions and prohibitions except where superseded by more stringent restrictions and prohibitions.
2. Other - Prohibit use of potable water for construction and dust control.
3. Prohibit use of potable water for street washing (Other)
4. Prohibit Filling Ornamental Lakes or Ponds (Other water feature or swimming pool restriction).</td><td>Yes</td></tr>
<tr><td>3</td><td>Other</td><td>--</td><td>--</td><td>1. Continue with Shortage Level 2 actions except where superseded by more stringent actions.
2. Home or Mobile Water Use Reports (Expand Public Information Campaign).
3. Decrease Frequency and Length of Line Flushing (Decrease Line Flushing).
4. Reduce System Water Loss.
5. Increase Water Waste Patrols/Enforcement (Increase Water Waste Patrols).
6. Implement Drought Rate Structure and Customer Water Budgets (Res)(Implement or Modify Drought Rate Structure or Surcharge).
7. Implement Drought Rate Structure and Customer Water Budgets (CII) (Implement or Modify Drought Rate Structure or Surcharge).</td><td>Yes</td></tr>
</table>

X	Is the Supplier completing this table using the standard six levels?				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap? Volume or Percentage	Shortage Gap Reduction Value (AF)	Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
4	Other	Percentage	40%	1. Continue with Shortage Level 3 restrictions and prohibitions except where superseded by more stringent restrictions and prohibitions. 2. Prohibit vehicle washing except with recirculated water or low-volume systems (*Other - Prohibit vehicle washing except at facilities using recycled or recirculating water).* 3. Prohibit use of water for recreational purposes such as water parks and the filling of pools (*Other water feature or swimming pool restriction).*	Yes
5	Other	Percentage	50%	1. Continue with Shortage Level 4 restrictions and prohibitions except where superseded by more stringent restrictions and prohibitions. 2. Require net zero demand increase on new water service connections (*Moratorium or Net Zero Demand Increase on New Connections).* 3. Prohibit single-pass cooling systems (*Other).*	Yes
5	Other	--	--	1. Continue with Shortage Level 4 actions except where superseded by more stringent actions. 2. Require Pool Covers (*Pools and Spas - Require covers for pools and spas).*	Yes

X	Is the Supplier completing this table using the standard six levels?				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)	Penalty, Charge, or Other Enforcement?
		Volume or Percentage	Shortage Gap Reduction Value		
			AF		
	Other	Percentage	60%	1. Continue with Shortage Level 5 restrictions and prohibitions except where superseded by more stringent restrictions and prohibitions. 2. Moratorium on new water service connections (*Moratorium or Net Zero Demand Increase on New Connections).* 3. Landscape - Prohibit all landscape irrigation.	Yes

Notes:
(a) In certain cases water use restrictions and consumption reduction actions implemented by Cal Water are not specifically called out in DWR's provided demand reduction actions list. The most appropriate DWR provided demand reduction action is included in italics in parenthesis.
(b) Watering restricted to no more than 3 days/week in Shortage Level 2 and Shortage Level 3; no more than 2 days/week in Shortage Level 4; no more than 1 day/week in Shortage Level 5.
(c) Residential water budgets of up to 30% for Shortage Level 3, up to 40% for Shortage Level 4, up to 50% for Shortage Level 5, up to 60% for Shortage Level 6.
(d) CII water budgets of up to 10% for Shortage Level 3, up to 20% for Shortage Level 4, up to 30% for Shortage Levels 5 and 6.

Chapter 9
Demand Management Measures

☑ ***CWC § 10631 (e)***

Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) (A) For an urban retail water supplier, as defined in Section 10608.12, a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.

(B) The narrative pursuant to this paragraph shall include descriptions of the following water demand management measures:

(i) Water waste prevention ordinances.

(ii) Metering.

(iii) Conservation pricing.

(iv) Public education and outreach.

(v) Programs to assess and manage distribution system real loss.

(vi) Water conservation program coordination and staffing support.

(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.

This chapter describes the demand management measures (DMMs) implemented by California Water Service (Cal Water) in its Redwood Valley District (also referred to herein as the "District") to promote efficient water use and support long-term water supply reliability. These measures are organized in accordance with the categories identified in the Urban Water Management Planning Act and reflect both longstanding conservation practices and more recent programmatic developments.

Demand management plays a central role in Cal Water's resource planning strategy. As discussed in earlier chapters, historical reductions in per capita water use in the District have been driven by a combination of metering, conservation-oriented rate design, customer programs, and passive savings associated with plumbing codes and appliance efficiency standards. The measures described in this chapter build on those foundations and represent the primary tools available to manage future demand growth.

This chapter also provides important context for the State's Making Conservation a California Way of Life (MCCWL) regulation, which establishes new water use efficiency standards and performance requirements that extend beyond the Senate Bill (SB) X7-7 framework. While compliance with MCCWL-related Urban Water Use Objectives (UWUOs) is addressed in Chapter 5, many of the actions required to support future compliance—particularly expanded conservation programs, enhanced reporting, and implementation of Commercial, Industrial, and Institutional (CII) performance measures—are described in this chapter.

For public utilities such as Cal Water that are regulated by the California Public Utilities Commission (CPUC), the scope and pace of demand management implementation are closely tied to authorization by the CPUC. Accordingly, this chapter describes both the measures currently in place and the institutional, staffing, and regulatory considerations that influence Cal Water's ability to expand conservation activities in the Redwood Valley District over time.

This chapter includes the following sections:

9.1 Water Waste Prevention Ordinances

9.2 Metering

9.3 Conservation Pricing

9.4 Customer Conservation Programs

9.5 Water Loss Management

9.6 Water Conservation Program Staffing

9.7 Summary and Implementation Considerations

9.1 Water Waste Prevention Ordinances

Cal Water's authority to enforce water waste prevention measures and water use restrictions is established and overseen by the CPUC through Rule 14.1 or Schedule 14.1. In addition, local governments within Cal Water districts may adopt ordinances regulating water use. Cal Water coordinates its water waste prevention efforts with applicable local jurisdictions. For the Redwood Valley District, this coordination includes the Marin, Sonoma and Lake Counties.

CPUC Rule 14.1 defines the District's Water Shortage Contingency Plan ([WSCP]; see **Appendix F**), including, but not limited to, permanent prohibitions on water waste and restrictions on water use. Prohibited water waste practices include, but are not limited to, the following:

- Use of potable water through a broken or defective plumbing fixture or irrigation system after Cal Water has provided written notice to repair the condition and the customer has failed to complete repairs within seven business days of receipt of the notice.

- Application of potable water to landscapes in a manner that results in runoff onto adjacent property, non-irrigated areas, sidewalks, roadways, parking lots, or structures.
- Use of a hose to wash vehicles—including cars, trucks, buses, boats, aircraft, and trailers—unless the hose is equipped with a shut-off nozzle or similar device that immediately stops water flow when not in use.

During water shortage conditions, Schedule 14.1 also authorizes Cal Water to implement additional water use restrictions and penalties, which may include the following:

- Limitations on outdoor irrigation, including restrictions on time of day and frequency of watering.
- Requirements to repair leaks, breaks, or malfunctions within five business days of written notification by Cal Water.
- Application of potable water to driveways, sidewalks, and other hardscapes.
- Use of potable water in water features unless the feature operates as a recirculating system.
- Application of potable water to outdoor landscapes during and within 48 hours following measurable rainfall.
- Serving drinking water in eating or drinking establishments unless requested by the customer.
- Irrigation of ornamental landscaping on public street medians.
- Irrigation of landscapes at newly constructed homes or buildings using potable water in a manner inconsistent with requirements established by the California Building Standards Commission or the Department of Housing and Community Development.
- Requirements for hotels and motels to provide guests with the option to decline daily laundering of towels and linens, with clear and prominent notice provided in each guest room.
- Limitations on filling ornamental lakes or ponds.
- Use of potable water for street cleaning, except for initial wash-down associated with construction activities.
- Use of potable water for construction-related purposes, such as dust control or backfill consolidation, unless no alternative water source or method is available.

These measures form a key component of the District’s overall demand management strategy and support compliance with state water conservation regulations.

9.2 Metering

☑ ***CWC § 526 (a)***

Notwithstanding any other provision of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract … shall do both of the following:

(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings constructed prior to January 1, 1992, located within its service area.

(2) On and after March 1, 2013, or according to the terms of the Central Valley Project water contract in operation, charge customers for water based on the actual volume of deliveries, as measured by a water meter.

☑ ***CWC § 527 (a)***

(a) An urban water supplier that is not subject to Section 526 shall do both of the following:

(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.

All services in the Redwood Valley District are metered. Meters are read monthly and are subject to routine maintenance and calibration to ensure accuracy. Customers are billed monthly based on metered water use.

Cal Water is also piloting automatic meter reading (AMR) and advanced metering infrastructure (AMI) in several of its districts. If deployed more broadly in the future, AMI would enhance the District's ability to detect leaks and other system issues and to notify customers of potential problems. AMI would also allow the provision of more timely and detailed water use information, supporting customer engagement as well as enabling customers to more closely monitor their own water usage and take appropriate actions to improve their water use efficiency.

9.3 Conservation Pricing

The CPUC reviews and authorizes District water rates in a General Rate Case (GRC) every three years. Currently, the District uses a four-tier increasing block rate design for residential water use and a single-tier uniform rate design for non-residential use. The District provides rate assistance to lower income households through its Customer Assistance Program (CAP).

9.4 Customer Conservation Programs

Cal Water has a long-standing water-use efficiency program designed to reduce water use across residential and non-residential customer classes. The program includes landscape conversion incentives, irrigation equipment rebates, indoor device rebates, and customer education resources. Core programs available to residential customers are summarized below. Additional programs are offered to non-residential customers, and program offerings may be adjusted over time based on district-specific needs and program performance.

9.4.1 Current Customer Conservation Programs

Cal Water currently offers residential customers a range of water-use efficiency rebates, support services, and educational resources, including the following:

Turf Replacement

- Turf replacement rebates of up to $3 per square foot for removal of turf and conversion to California-friendly, low-water-use landscaping with efficient irrigation.

Irrigation Equipment Rebates

- Smart Landscape Tune-Up: A free, site-specific irrigation assessment that includes approved repairs to existing irrigation systems and installation of high-efficiency sprinkler nozzles and smart irrigation controllers, as appropriate.
- Smart irrigation controllers: Rebates of $125 per controller for weather- and soil-based irrigation controllers that adjust watering schedules based on site conditions.
- High-efficiency sprinkler nozzles: Rebates of $5 per nozzle for replacing conventional spray nozzles with high-efficiency nozzles that apply water more uniformly.

Indoor Device Rebates

- High-efficiency clothes washers: Rebates of $150 per washer for eligible models that use substantially less water than standard washers.
- MaP Premium high-efficiency toilets: Rebates of $50 per toilet for models using 1.1 gallons per flush or less.
- Conservation kits: Free kits containing water-saving plumbing devices, such as high-efficiency showerheads, faucet aerators, hose nozzles, leak detection tablets, and educational materials.

Online Resources

- Cal Water maintains a suite of online water-use efficiency resources to help customers understand and adopt water-saving practices.

School Education

- Cal Water's school education program includes the Aqua Adventures, A Splash of Creativity, H2Oath, and Water Smart Grant programs. Cal Water's Teacher Toolkit provides teachers with practical guidance and teaching rubrics for helping students learn about resource sustainability and the importance of using water wisely.

These programs are implemented through a combination of in-house staff and contracted service providers. Cal Water conducts ongoing outreach and customer engagement to promote awareness and participation. In addition, customer service representatives are trained to assist customers with high water use or billing concerns by directing them to appropriate conservation programs and educational resources.

9.4.2 Future Customer Conservation Programs

Cal Water understands that its conservation programming must be adapted to the new MCCWL regulatory requirements. For instance, meeting the rigorous outdoor water use standards will require transitioning substantial amounts of turf area to more water efficient landscaping. Therefore, outdoor conservation measures, including turf replacement incentives and support services, will need to be prioritized to drive future water savings. While targeted indoor efficiency measures have also been retained to maximize water savings, the focus remains heavily on outdoor improvements.

Achieving continued water savings in the District requires rapid market transformation towards landscape efficiency. Typically, market transformations can span decades as they require shifting both consumer behaviors and supply chain dynamics, even with incentives. Early adopters have already made necessary adjustments, but many property owners have not yet embraced this change. Landscape transformation represents a significant departure from traditional practices, often perceived as complex and undesirable by many. Overcoming this resistance and encouraging participation will be challenging.

A crucial aspect is convincing customers that embracing landscape efficiency enhances, rather than detracts from, the value of their property. The traditional view equates lush, green lawns with success and economic status. Therefore, changing this deep-seated perception to appreciate the aesthetics and benefits of water-sustainable landscaping is essential.

Given the urgency to transform landscapes without the luxury of time, Cal Water faces several challenges that require:

- Robust customer education.
- High levels of customer motivation.

- Accessibility to landscape design and plant knowledge.
- Considerable labor investment.
- Significant financial resources.

To increase customer engagement, Cal Water's programs must offer compelling incentives, clear communication about the required processes, and substantial support to guide customers through these changes. **Table 9-1** outlines the key barriers to successful deployment of landscape transformation programs.

Table 9-1. Barriers and Customer Requirements of Landscape Transformation Programs

Landscape Transformation Barriers	Customer Requirements
• Customers lack motivation to reduce their water use. • Most customers are unaware of, or overwhelmed by, landscape efficiency programs. • Landscape efficiency solutions must be "customized" for each property. • Water suppliers do not currently have a deep understanding of their customers. • Agencies do not possess the resources to uniquely target and engage their customers.	• Customers desire to have a beautiful landscape. • Each customer has a different vision of what comprises landscape beauty. • Most customers have considered converting their lawn, but they need help to accomplish this. • Customers confirmed that design support is the most important need. • Incentives are necessary to pull the trigger on converting their lawn. • There are a number of misperceptions that disconnect the customer from their actual water usage. They believe most water is used indoors; that they already have efficient equipment; and saving money is the main driver.

Many water users currently do not prioritize landscape water efficiency, lacking both understanding of its urgency and motivation to implement drastic changes.

Cal Water's strategy is to significantly enhance education about the need for outdoor water use reduction and how to achieve it. Fortunately, studies indicate a growing customer interest in aesthetically pleasing, water-efficient landscaping. Many property owners consider turf removal but require assistance to proceed. Time and cost are significant barriers.

To effectively encourage this shift, Cal Water must not only convince customers of the necessity of these changes but also provide them with extensive support—from design assistance to continuous engagement and resources. Additionally, incentives must be compelling enough to convince customers of the value of investing in these changes.

Success will depend on expanding education, services, and incentives to accelerate market transformation. To support this enhanced program structure, Cal Water must accordingly increase its staff, marketing efforts, operational support, and budget to meet these elevated service demands.

In addition to turf replacement, Cal Water has identified a suite of customer conservation programs with demonstrated water-saving potential and meaningful market impact. Together, these measures represent a comprehensive portfolio that—subject to adequate staffing and funding—is intended to support compliance with the MCCWL regulation. The measures summarized in **Table 9-2** are representative of Cal Water's current conservation approach. As program performance is evaluated and technologies evolve, Cal Water may refine this portfolio by modifying, replacing, or adding measures to ensure continued effectiveness and cost-efficient water savings.

Table 9-2. Representative Conservation Measures with Significant Savings Potential

Conservation Measure	Remaining Potential	Reasoning for Selecting
Home Water Budgets	All single-family homes	• Identifies customers with inefficient usage, thus allowing better targeting of programs and assistance. • Provides a foundational step in educating customers with powerful and personal information that identifies site-specific efficiency opportunities. • As an educational tool alone, shown to reduce water use.
Outdoor Efficiency		
Turf Replacement	All properties with remaining turf	• Required measure for meeting landscape and irrigation standards. • Huge remaining opportunity. • Long lifespan measure.
Sprinkler Tune-up	All properties with remaining turf	• Nearly all irrigation systems need repair. • Repairs are necessary before efficiency upgrades are made otherwise new products will not work as designed.

Conservation Measure	Remaining Potential	Reasoning for Selecting
		• High customer demand.
Smart Controllers	All properties with irrigation	• High customer receptivity due to technical aspect of device. • Reduces overwatering by providing the appropriate amount of water based on the local weather.
Pressure Regulating Spray Heads	All properties with popup spray heads	• Millions of non-pressure regulating spray heads. • Reduces water use due to high water pressure and low head drainage.
High Efficiency Sprinkler Nozzles	All properties with popup spray heads	• Millions of high flow nozzles are available for retrofit. • Solution for customers electing to keep turf. • Reduces runoff. • High cost effectiveness. • Generally easy retrofit.
Indoor Efficiency		
Premium Efficiency Toilets	Nearly 50% of existing fixtures are 1.6 GPF or above	• Reliable 25-year life of water savings. • Easy retrofit.
High Efficiency Clothes Washers	All single-family homes and multi-family in-unit washers	• Customers prefer high efficiency models. • Easy to administer. • Washers have 10–12-year life

9.4.3 CII Performance Measures

The MCCWL regulation require urban retail water suppliers to implement a suite of actions intended to improve CII water use efficiency. These actions include converting certain mixed-use meters (MUMs) serving large landscaped areas to dedicated irrigation meters (DIMs), installing approved in-lieu technologies where DIM installation is not pursued, and implementing a broad set of CII best management practices (BMPs). The regulations also require suppliers to classify all CII accounts using a prescribed framework and to identify and catalog large, disclosable buildings.

Importantly, implementation of CII Performance Measures is required regardless of whether a supplier is otherwise projected to comply with its UWUO. As a result, compliance with these requirements will require substantial staffing, technical, and financial resources independent of UWUO compliance outcomes. The following subsections summarize the primary CII Performance Measure requirements applicable to the District.

DIM or In-Lieu Technology Installation

The MCCWL regulation requires Cal Water to install DIMs or implement approved in-lieu technologies at all CII sites served by MUMs that irrigate one-half acre or more of landscaped area.

Installation of DIMs involves significant cost and logistical complexity for both Cal Water and its customers. Activities include site assessments, permitting, meter and backflow device installation, account setup, integration of additional meter reads, and ongoing maintenance and calibration. In recognition of these challenges, the regulations allow suppliers to satisfy the requirement through adoption of approved in-lieu technologies.

Approved in-lieu technologies include the following:

1. Water budget–based rate structures
2. Water budget–based management approaches not tied to rates
3. Hardware upgrades that enhance irrigation performance, including technologies that allow identification of outdoor water use, smart irrigation controllers, and pressure-regulated spray heads
4. Remote sensing technologies
5. Landscape plant palette transformation programs, including green infrastructure such as swales or rain gardens that reduce irrigation demand
6. Other efficient water use technologies, subject to demonstration of improved water use efficiency

For sites utilizing in-lieu technologies, the regulations further require Cal Water to provide education and communication services, irrigation system maintenance support (including audits and testing), and site-specific irrigation scheduling guidance. As a result, Cal Water will be required to take on an active role in supporting irrigation management at CII sites with large, landscaped areas. In addition, Cal Water must calculate landscape water budgets for these sites using prescribed methodologies by June 30, 2029.

CII Account Classification

The MCCWL regulation requires Cal Water to classify all CII accounts using a regulatory classification system that includes the U.S. Environmental Projection Agency (EPA's) 19 ENERGY STAR Portfolio Manager property types, along with additional categories for water recreation facilities, vehicle washes, and commercial laundries. Following classification, Cal Water must identify customers whose water use falls within the 80^{th} to 97.5^{th} percentiles within each category to support targeted delivery of BMPs.

CII Disclosable Buildings

Under the MCCWL regulation, Cal Water is required to identify all disclosable buildings within its service area and provide water use reports upon request. Disclosable buildings are defined as non-manufacturing buildings exceeding 50,000 square feet.[46] Identification of these buildings was required by June 30, 2024, or upon the effective date of the regulations, whichever is later.

Upon request by a building owner or authorized agent, Cal Water must provide water use reports compatible with the EPA's ENERGY STAR Portfolio Manager Data Exchange Services. Reports must include detailed monthly and aggregated usage data for at least the preceding twelve months for each meter serving the building.

Compliance with this requirement will require development of new processes and reporting systems capable of integrating billing data with EPA reporting platforms. Meeting these requirements will necessitate coordinated effort across Cal Water's conservation, billing, and information technology departments.

CII BMPs

The MCCWL regulations require implementation of CII BMPs for customers in the highest water-use percentiles. Cal Water must implement one BMP from each category (five total) for customers in the 80th percentile of usage and two BMPs from each of five categories (ten total) for customers in the 97.5th percentile of usage. The categories of BMPs include outreach and education, incentives, landscape practices, collaboration and coordination, and operational practices, with a range of eligible actions specified in the regulations.

Selection and implementation of BMPs will be guided by customer characteristics, site conditions, and feasibility, and will require substantial program oversight, customer coordination, and tracking.

CII Performance Measures and UWUO Compliance

While the CII Performance Measures are an integral component of the MCCWL regulatory framework, water savings achieved through these measures do not directly contribute toward meeting the District's UWUO reduction targets. Under the regulations, CII Performance Measures contribute to UWUO compliance only through reductions in water use measured by DIMs. Cal Water does not currently utilize a DIM meter classification, and DIM water use is therefore not a component of the District's UWUO calculation. As a result, although implementation of CII Performance Measures is mandatory and expected to yield water use

[46] For the precise definition of a disclosable building, see California Code of Regulations, title 20, section 1683.

efficiency benefits, the associated water savings will not be credited toward UWUO compliance for the District.

9.5 Water Loss Management

Cal Water conducts annual distribution system water loss audits using the American Water Works Association (AWWA) Free Water Audit Software and reports the results to the California Department of Water Resources.[47]

To guide ongoing water loss management, Cal Water has developed a Water Loss Control Compliance Plan and a Water Loss Control Policy. These documents provide a framework for:

- Meeting current and future CPUC and state water loss standards and regulatory requirements;
- Improving audit data quality and validation scores; and
- Identifying and implementing cost-effective water loss control actions.

Cal Water has also conducted a comprehensive assessment comparing each district's current and projected distribution system water loss to applicable water loss standards. The results show that the Redwood Valley District's distribution system loss rates currently fall below the state-established efficient water loss standards applicable to the District pursuant to SB 555 (see **Table 4-6).** For the Redwood Valley District, the focus going forward will be on maintaining and replacing distribution system infrastructure as needed to ensure that distribution system losses remain below regulated levels.

9.6 Water Conservation Program Staffing

Cal Water's Conservation Department is currently staffed by nine full-time equivalent (FTE) positions. In light of mandated UWUO reductions and the extensive reporting and performance requirements associated with the MCCWL regulations, Cal Water has identified a need to expand its conservation program staffing.

While the use of consultants could provide short-term support, the ongoing and long-term nature of the regulatory requirements makes exclusive reliance on temporary staffing impractical. In particular, the data analysis, program tracking, and reporting obligations associated with the MCCWL framework require sustained institutional knowledge and continuity that are best supported through permanent staff.

[47] Completed water audits may be accessed at: https://wuedata.water.ca.gov/

Cal Water's staffing strategy therefore emphasizes strengthening internal capacity to manage conservation programs, lead outreach and customer engagement efforts, support customers, oversee ongoing CII activities, and fulfill reporting and compliance obligations. Consultants are expected to continue to play a targeted role by providing short-term, specialized expertise as needed, allowing flexibility while maintaining a strong in-house program foundation.

Consistent with this strategy, Cal Water has proposed in its 2024 GRC an increase in Conservation Department staffing from nine to 15 positions. The six requested positions and their primary responsibilities are summarized in **Table 9-3**. At the time this UWMP was prepared, a final decision in the 2024 GRC had not yet been issued. As a result, it remains uncertain whether the requested staffing increases necessary to support compliance with state conservation requirements will be authorized.

Table 9-3. Proposed New Conservation Staff Positions

New Position	Responsibilities
Conservation Manager	• Program development/implementation/management • Budgeting • Staff oversight
Regional Conservation Coordinator (2 positions)	• Regional program implementation • District coordination • Customer engagement
Water Resource Sustainability Analyst	• Program tracking/analysis • Compliance assessment/reporting • Data management
Water Resource Sustainability Assistant	• Data entry • Analysis support • Compliance reporting support
Conservation Assistant	• Program application/rebate processing • Customer assistance • Data entry/processing

9.7 Summary and Implementation Considerations

Cal Water has developed and implemented a comprehensive suite of DMMs in the Redwood Valley District that address each category identified in the Urban Water Management Planning Act. These measures include water waste prevention and enforcement, universal metering, conservation-oriented pricing, public education and outreach, active management of distribution system water losses, and a broad portfolio of customer conservation programs. Collectively, these actions have contributed to substantial long-term reductions in per capita water use and have positioned the District well relative to historical conservation benchmarks.

Looking ahead, demand management will play an increasingly important role in meeting the requirements of the MCCWL regulation and supporting water supply reliability. While many conservation-driven reductions are already embedded in the District's baseline demand projections—through authorized programs, plumbing codes and appliance standards, and implementation of conservation rates—additional actions are anticipated to be needed in future years to comply with MCCWL requirements.

For Cal Water, the ability to expand conservation programs, modify rate structures, and implement additional demand management actions is contingent on CPUC authorization. Program funding levels, staffing capacity, and implementation timelines are therefore closely linked to regulatory approval processes, including General Rate Case proceedings. The measures described in this chapter represent both Cal Water's current conservation framework and the foundation upon which expanded efforts may be built, subject to future CPUC decisions.

In this context, Chapter 9 provides a practical and forward-looking assessment of how demand management measures support water use efficiency, regulatory compliance, and long-term resource reliability in the District, while acknowledging the institutional and regulatory factors that shape implementation over the UWMP planning horizon.

Chapter 10
Plan Adoption, Submittal, and Implementation

☑ ***CWC § 10621 (b)***

Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

This chapter provides information on a public hearing, the adoption process for the Urban Water Management Plan (UWMP) and Water Shortage Contingency Plan (WSCP), the adopted UWMP and WSCP submittal process, Plan implementation, and the process for amending the adopted UWMP or WSCP. This chapter includes the following sections:

10.1 Inclusion of All 2025 Data

This UWMP includes the water use and planning data for the entire calendar year of 2025, per the California Department of Water Resources' (DWR's) 2025 UWMP Guidebook.

10.2 Notice of Public Hearing

☑ ***CWC § 10642***

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of both the plan and the water shortage contingency plan. Prior to adopting either, the urban water supplier shall make both the plan and the water shortage contingency plan available for public inspection and shall hold a public hearing or hearings thereon. Prior to any of these hearings, notice of the time and place of the hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of a hearing to any city or county within which the supplier provides water supplies. Notices by a local public agency pursuant to this section shall be provided pursuant to Chapter 17.5 (commencing with Section 7290) of Division 7 of Title 1 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing or hearings, the plan or water shortage contingency plan shall be adopted as prepared or as modified after the hearing or hearings.

Prior to adopting the Plan, California Water Service (Cal Water) held a formal public hearing to present information on its Redwood Valley District (also referred to herein as the "District") 2025 UWMP and WSCP on June 3, 2026, 5:30 PM.

Relevant entities were notified of the UWMP and WSCP review at least 60 days prior to the public hearing, including: (1) cities, counties, and Groundwater Sustainability Agencies (GSAs), and (2) the public. These entities were noticed again with the specific date, time and location of the hearing at least two weeks prior to the public hearing. The notice to the public, as specified in Government Code 6066, and letters to relevant agencies can be found in **Appendix B** and **Appendix C**, respectively.

10.2.1 Notice to Cities and Counties

☑ ***CWC § 10631 (a)*** *A plan shall be adopted in accordance with this chapter that shall do all of the following:*

Urban water suppliers shall coordinate with local or regional land use authorities to determine the most appropriate land use information, including, where appropriate, land use information obtained from local or regional land use authorities, as developed pursuant to Article 5 (commencing with Section 65300) of Chapter 3 of Division 1 of Title 7 of the Government Code.

Table 10-1 lists the cities, counties, and other agencies that were notified. Copies of these letters are provided in **Appendix B**.

Table 10-1. Notification to Cities and Counties (DWR Table 10-1)

City Name	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
County Name **Drop Down List**	60 Day Notice **Drop Down (yes/no)**	Notice of Public Hearing **Drop Down (yes/no)**
Add additional rows as needed		
Marin County	Yes	Yes
Sonoma County	Yes	Yes
Lake County	Yes	Yes

Notes:
(a) In addition to the Cities and Counties notified, Cal Water additionally notified the Santa Rosa Plain Groundwater Sustainability Agency.

10.2.2 Notice to the Public

Notification to the public and to cities and counties also provided instructions on how to view the 2025 UWMP and WSCP prior to the hearing, the revision schedule, and contact information of the UWMP and WSCP preparer. A copy of this notice is included in **Appendix C**.

10.3 Public Hearing and Adoption

☑ ***CWC § 10608.26***

(a) In complying with this part, an urban retail water supplier shall conduct at least one public hearing to accomplish all of the following:

(1) Allow community input regarding the urban retail water supplier's implementation plan for complying with this part.

(2) Consider the economic impacts of the urban retail water supplier's implementation plan for complying with this part.

(3) Adopt a method, pursuant to subdivision (b) of Section 10608.20, for determining its urban water use target.

☑ ***CWC § 10621 (b)***

Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

The deadline for public comments on the UWMP and WSCP was June 6, 2026, three days after the public hearing. The final Plan was formally adopted by Cal Water's Vice President, Water Resources Planning and Sustainability on MM DD, 2026, and was submitted to DWR within 30 days of approval. **Appendix H** presents a copy of the signed Resolution of Plan Adoption. **Appendix B** contains the following:

- Letters sent to and received from various agencies regarding this Plan; and,
- Correspondence between Cal Water and participating agencies.

10.4 Plan Submittal

☑ ***CWC § 10621 (f)***

(1) Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.

☑ ***CWC § 10635 (c)***

The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

☑ ***CWC § 10644 (a)***

(1) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.

(2) The plan, or amendments to the plan, submitted to the department pursuant to paragraph (1) shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

This 2025 UWMP and WSCP were submitted to DWR within 30 days of adoption and by the July 1, 2026 deadline. The submittal was done electronically through DWR's Water Use Efficiency Data Portal, an online submittal tool. The adopted UWMP and WSCP were also sent to the California State Library and to the cities and counties listed in **Table 10-1** no later than 30 days after adoption.

10.5 Public Availability

☑ ***CWC § 10645***

(a) Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

(b) Not later than 30 days after filing a copy of its water shortage contingency plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

On or about MM DD, 2026, an electronic version of the draft 2025 UWMP and WSCP were made available for review by visiting Cal Water's website:

https://www.calwater.com/conservation/uwmp2025.

10.6 Notification of Public Utilities Commission

☑ ***CWC § 10621 (c)***

An urban water supplier regulated by the Public Utilities Commission shall include its most recent plan and water shortage contingency plan as part of the supplier's general rate case filings.

Cal Water is an urban water supplier regulated by the California Public Utilities Commission. Cal Water will include the District's 2025 UWMP and WSCP as part of its General Rate Case Filings.

10.7 Amending an Adopted UWMP or Water Shortage Contingency Plan

☑ ***CWC § 10644 (b)***

If an urban water supplier revises its water shortage contingency plan, the supplier shall submit to the department a copy of its water shortage contingency plan prepared pursuant to subdivision (a) of Section 10632 no later than 30 days after adoption, in accordance with protocols for submission and using electronic reporting tools developed by the department.

If either the 2025 UWMP or WSCP is amended, each of the steps for notification, public hearing, adoption and submittal will also be followed for the amended UWMP or WSCP.

Appendix A: UWMP Act Checklist

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and overview	n/a	Chapter 1 - Chapter 10
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the Supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a Supplier may also choose to include a simple description at the beginning of each chapter.	Plan preparation	n/a	Section 1.6
x	x	Section 2.1	10620(b)	Every person that becomes a Supplier shall adopt UWMP within one year after it has become a Supplier.	Plan preparation	n/a	Section 2.4
x	n/a	Section 2.5	10644	Supplier shall report the Public Water Systems number, volume of delivered water, and number of connections that are included in this UWMP.	Plan preparation	2-1	Section 2.1 Table 2-1
x	x	Section 2.5	10644	Supplier shall report if this UWMP is an individual UWMP and whether the Supplier belongs to a regional UWMP or regional alliance.	Plan preparation	2-2	Section 2.3 Table 2-2
x	x	Section 2.5	10644	Supplier shall report whether the data is in fiscal or calendar years and the units of measure used for reporting water volumes.	Plan preparation	2-3	Section 2.4 Table 2-3
x	x	Section 2.4	10642	Provide supporting documentation that the Supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan preparation	n/a	Section 2.5.2 Section 10.2 Appendix C
x	x	Section 2.4.2	10620(d)(3)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other Suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan preparation	n/a	Section 2.5 Section 10.2 Appendix B

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	n/a	Section 2.4.1	10631(h)	Retail Suppliers will include documentation that they have provided their Wholesale Supplier(s)—if any—with water use projections from that source.	Plan preparation	2-4 R	Section 2.5.1 Table 2-4 Section 4.5
n/a	x	Section 2.4.1	10631(h)	Wholesale Suppliers will provide their Suppliers with identification and quantification of the existing and planned sources of water available from the Wholesale Supplier to the Supplier during various water year types.	Plan preparation	2-4 W	N/A
x	x	Chapter 3.0	10631(a)	Describe the Supplier service area.	System description	n/a	Chapter 3
x	x	Section 3.3	10631(a)	Describe the climate of the Supplier's service area.	System description	n/a	Section 3.3 Figure 3-2
x	x	Section 3.4.1	10631(a)	Provide the current and projected service area populations for 2030, 2035, 2040, 2045 and optionally 2050.	System description	3-1	Section 3.4 Table 3-1
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the Supplier's water management planning.	System description	n/a	Section 3.4 Table 3-2
x	x	Section 3.5	10631(a)	Describe the land uses within the service area… include the current and projected land uses within the existing or anticipated service area affecting the Supplier's water management planning. Describe the land uses within the service area.	System description and baselines	n/a	Section 3.5 Table 3-1
x	Optional	Sections 4.2.3 and 4.2.4	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System water use	4-1 and 4-2	Section 4.2 Table 4-1 Table 4-2

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	Optional	Section 4.3.1	10631(d)(3)(A)	Report the distribution system water loss for each of the five years preceding the plan update.	System water use	4-5	Section 4.3.1 Table 4-5
x	n/a	Section 4.3.2	10631(d)(3)(C)	Retail Suppliers shall provide data to show the distribution loss standards were met.	System water use	4-6	Section 4.3.2 Table 4-6
x	n/a	Section 4.2.5.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the Supplier.	System water use	4-3	Section 4.2.2 Table 4-3
x	n/a	Section 4.2.5.3	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System water use	4-3	Section 4.2.3(1) Table 4-4
x	n/a	Section 4.2.5.3	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System water use	4-3	Section 4.2.3(1) Table 4-4
x	n/a	Section 4.2.5.3	10631(d)(4)(B)(ii)	To the extent that a Supplier reports the information described in subparagraph (A), an urban water Supplier shall… Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of that fact.	System water use	4-3	Section 4.2.3(1) Table 4-4
x	x	Section 4.2.5.6	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System water use	n/a	Section 4.4 Section 7.5 Table 4-7 Table 7-5
n/a	x	Section 5.1	10608.36	Wholesale Suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their Retail Suppliers achieve targeted water use reductions.	Baselines and targets	n/a	N/A

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	n/a	Section 5.2	10608.4	Retail Suppliers shall report on their compliance in meeting their water use targets. Reporting requirements will vary depending on whether the Supplier: - Was considered an urban retail water supplier in 2020, - Met its 2020 target in 2020, or - Was part of a merger or consolidation since 2020. Chapter 5 Subsections 5.2.1, 5.2.2, and 5.2.3 address each of these situations.	Baselines and targets	5-1	Chapter 5 Table 5-1
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System supplies	n/a	Section 6.9 Table 6-9
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change.	System supplies	n/a	Chapter 7
x	x	Section 6.2.2	10631(b)(4)(C)	Indicate whether groundwater is an existing or planned source of water available to the Supplier. If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	Water supplies and recycled water	6-1	Section 6.2 Table 6-1
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the Supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System supplies	n/a	Section 6.2
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System supplies	n/a	Section 6.2.1
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the Supplier has the legal right to pump.	System supplies	n/a	Section 6.2.1

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… (include) information as to whether DWR has identified the basin as a high- or medium-priority basin in the most current official departmental bulletin…	Water supplies and recycled water	n/a	Section 6.2.1
x	x	Section 6.2.2	10631(b)(4)(B)	For unadjudicated basins… describe efforts by the Supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	Water supplies and recycled water	n/a	Section 6.2.3 Section 6.2.4
x	x	Section 6.2.2.	10631(b)(4)(C)	If groundwater is identified as an existing or planned source of water… (include) a detailed description and analysis of the location, amount and sufficiency of groundwater pumped by the Supplier for the past five years.	System supplies	n/a	Section 6.2.5 Table 6-1
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System supplies	6-9	Section 6.9 Table 6-9
x	x	Section 6.1	10631(b)	Identify and quantify the existing and planned sources of water available for 2025, 2030, 2035, 2040, 2045 and optionally 2050.	System supplies	6-8 and 6-9	Section 6.9 Table 6-8 Table 6-9
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System supplies	n/a	Section 6.7
x	n/a	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the Supplier's service area with quantified amount of collection and treatment and the disposal methods.	System supplies (recycled water)	6-2	Section 6.5.2 Table 6-2
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System supplies (recycled water)	6-3	Section 6.5.2 Table 6-3

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the Supplier's service area.	System supplies (recycled water)	6-4	Section 6.5.3 Table 6-4
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System supplies (recycled water)	6-4	Section 6.5.3 Table 6-4
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the Supplier's service area at the end of 5, 10, 15, and 20 years, and describe the actual use of recycled water in comparison to uses previously projected.	System supplies (recycled water)	6-4 and 6-5	Section 6.5.3 Table 6-4 Table 6-5
x	x	Section 6.2.5	10633(f)	Describe the actions that may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System supplies (recycled water)	6-6	Section 6.5.4 Table 6-6
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the Supplier's service area.	System supplies (recycled water)	n/a	Section 6.5.4 Table 6-6
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System supplies	6-7	Section 6.6
x	x	Section 6.2.10	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water Supplier to address water supply reliability in average, single-dry, and for a period of drought lasting five consecutive water years.	System supplies	6-7	Section 6.8 Table 6-7
x	x	Section 6.3 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a Supplier can readily obtain.	System suppliers, energy intensity	O-1A, O-1B, O-1C, and O-2	Section 6.11 Table 6-10

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x		Section 7.1	10634	Provide information on the quality of existing sources of water available to the Supplier and the manner in which water quality affects water management strategies and supply reliability.	Water supply reliability assessment	n/a	Section 7.1.2
x	x	Section 7.2	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the Supplier with the total projected water use over the next 20 years.	Water supply reliability assessment	7-2, 7-3, and 7-4	Section 7.2 Section 7.3 Table 7-1 Table 7-2 Table 7-3 Table 7-4
x	x	Section 7.2.3	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water supply reliability assessment	n/a	Section 7.4
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water supply reliability assessment	n/a	Section 7.5 Table 7-5
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive years.	Water supply reliability assessment	n/a	Section 7.5.1
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water supply reliability assessment	n/a	Section 7.5.2
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the Supplier with the total projected water use for the drought period.	Water supply reliability assessment	7-5	Section 7.5 Table 7-5
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water supply reliability assessment	n/a	Section 7.5 Table 7-5

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water shortage contingency planning	n/a	Appendix F
x	x	Chapter 8	10632(a)(1)	Provide an analysis of water supply reliability (from Guidebook Chapter 7) in the WSCP.	Water shortage contingency planning	n/a	Appendix F (Chapter 2)
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the Supplier will use each year to determine its water reliability.	Water shortage contingency planning	n/a	Appendix F (Chapter 3)
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the Supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water shortage contingency planning	n/a	Appendix F (Chapter 3)
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10%, 20%, 30%, 40%, 50% shortage, and greater than 50% shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water shortage contingency planning	n/a	Appendix F (Chapter 4)
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing WSCP that uses different water shortage levels must cross reference their categories with the six standard categories.	Water shortage contingency planning	8-1	Appendix F (Chapter 4)
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with WSCPs that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water shortage contingency planning	8-2	Appendix F (Section 5.2)
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water shortage contingency planning	8-3	Appendix F (Section 5.1)

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water shortage contingency planning	8-2	Appendix F (Section 5.3)
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to State-mandated prohibitions are appropriate to local conditions.	Water shortage contingency planning	Table 8-3	Appendix F (Section 5.4, Table 5-1)
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water shortage contingency planning	8-2 and 8-3	Appendix F (Section 5.1, Section 5.2, Section 5.7, Table 5-1)
x	x	Section 8.4.6	10632.5	The UWMP shall include a seismic risk assessment and mitigation plan.	Water shortage contingency plan	n/a	Appendix F (Section 5.6)
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water shortage contingency planning	n/a	Appendix F (Chapter 6)
x	x	Section 8.5	10632(a)(5)(B), 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water shortage contingency planning	n/a	Appendix F (Chapter 6)
x	n/a	Section 8.6	10632(a)(6)	Retail Supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water shortage contingency planning	n/a	Appendix F (Chapter 7)
x	x	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the Supplier to enforce shortage response actions.	Water shortage contingency planning	n/a	Appendix F (Chapter 8)

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the Supplier will declare a water shortage emergency per Water Code Chapter 3. *Water Shortage Emergencies* .	Water shortage contingency planning	n/a	Appendix F (Chapter 8)
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the Supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water shortage contingency planning	n/a	Appendix F (Chapter 8)
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	Appendix F (Chapter 9)
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water shortage contingency planning	n/a	Appendix F (Chapter 9)
x	n/a	Section 8.8	10632(a)(8)(C)	Retail Suppliers must describe the cost of compliance with Water Code Chapter 3.3, *Excessive Residential Water Use During Drought* .	Water shortage contingency planning	n/a	Appendix F (Chapter 9)
x	n/a	Section 8.9	10632(a)(9)	Retail Suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data are collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water shortage contingency planning	n/a	Appendix F (Chapter 10)
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the WSCP to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water shortage contingency planning	n/a	Appendix F (Chapter 11)
x	n/a	Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water shortage contingency planning	n/a	Appendix F (Section 5.1.1, Table 5-1)

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Section 8.12	10632(c)	Make available the WSCP to customers and any city or county where it provides water within 30 days after adoption of the plan.	Water shortage contingency planning	n/a	Appendix F (Chapter 12)
x	n/a	Sections 9.1	10631(e)(1)	Retail Suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand management measures	n/a	Chapter 9
n/a	x	Sections 9.2	10631(e)(2)	Wholesale Suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and Supplier assistance program.	Demand management measures	n/a	N/A
x	n/a	Chapter 10	10608.26(a)	Retail Suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan adoption, submittal, and implementation	n/a	Section 2.5.2 Section 10.3
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the Supplier provides water that the Supplier will be reviewing the UWMP and considering amendments or changes to the plan.	Plan adoption, submittal, and implementation	10-1	Section 2.5.2 Section 10.3
x	x	Section 10.4	10621(f)	Each urban water Supplier shall update and submit its 2025 plan to DWR by July 1, 2026.	Plan adoption, submittal, and implementation	n/a	Section 2.4 Section 10.4
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the Supplier made the UWMP and WSCP available for public inspection, published notice of the public hearing, and held a public hearing about the UWMP and WSCP.	Plan adoption, submittal, and implementation	n/a	Chapter 10 Appendix C
x	x	Section 10.2.2	10642	The Supplier is to provide the time and place of the hearing to any city or county within which the Supplier provides water.	Plan adoption, submittal, and implementation	10-1	Section 10.2.1 Table 10-1 Appendix B

Retail (x = required)	Wholesale (x = required)	2025 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	Relevant Submittal Table	2025 UWMP Location
x	x	Section 10.3.2	10642	Provide supporting documentation that the UWMP and WSCP has been adopted as prepared or modified.	Plan adoption, submittal, and implementation	n/a	Section 10.3 Appendix H
x	x	Section 10.4	10644(a)	Provide supporting documentation that the Supplier has submitted their UWMP to the California State Library.	Plan adoption, submittal, and implementation	n/a	Section 10.4
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the Supplier has submitted their UWMP to any city or county within which the Supplier provides water no later than 30 days after adoption.	Plan adoption, submittal, and implementation	n/a	Section 10.4
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The UWMP, or amendments to the UWMP, submitted to DWR shall be submitted electronically.	Plan adoption, submittal, and implementation	n/a	Section 10.4
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the WSCP to DWR within 30 days of adoption.	Plan adoption, submittal, and implementation	n/a	Section 10.7
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its UWMP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 10.5
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its WSCP with DWR, the Supplier has or will make the plan available for public review during normal business hours.	Plan adoption, submittal, and implementation	n/a	Section 10.5
x	x	Section 10.6	10621(c)	If Supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan adoption, submittal, and implementation	n/a	Section 10.6

Appendix B: Correspondence

- UWMP and WSCP Notice of Preparation
- District Mailing List
- UWMP and WSCP Public Draft Comments

The Cal Water Difference

Dear XXXX,

We hope that this note finds you well. California Water Service (Cal Water) is beginning the process of updating our Urban Water Management Plans (UWMP) and Water Shortage Contingency Plans (WSCP) and wanted to ensure you had the pertinent information to participate in the process, which is included in the following notification.

These plans are a critical component of the steps we are taking to meet the current and future water supply needs of our customers, and to elevate our urban water use efficiency.

To develop well-rounded plans, **we are requesting data from the partners that serve our customers** to ensure the plans are representative of the communities we serve. The specific data points we are seeking can be found below the following notice.

At your earliest convenience, **please confirm you have received this Notice of Preparation**. If you have any questions, need any additional information, or would like to find time to meet virtually with our team to discuss this further, please reach out at your convenience.

Notice of Preparation of Urban Water Management Plan and Water Shortage Contingency Plan – 2025 Update

The Urban Water Management Planning Act (California Water Code §10608–10656) requires that California Water Service Company (Cal Water) update its Urban Water Management Plan (UWMP) and associated Water Shortage Contingency Plan (WSCP) every 5 years. The updated UWMP and WSCP are due by July 1, 2026.

Cal Water is currently reviewing its existing UWMP and associated WSCP, which were updated in 2021, and considering revisions to the documents. Coordination with water suppliers, cities, counties, and community organizations in the region is an important part of the preparation of Cal Water's UWMP and WSCP. We invite your agency's participation in this revision process. We are available to discuss the assumptions used in the development of the plans including available water supply, water demands, land use, as well as other aspects of the plans.

A draft of the 2025 UWMP and WSCP will be made available for public review and a public hearing will be scheduled in 2026. In the meantime, if you would like more information regarding Cal Water's 2020 UWMP and WSCP and the schedule for updating these documents, or if you would like to participate in the preparation of the 2025 UWMP and WSCP, please contact Jake Lam at:

Jake Lam
Associate Engineer
California Water Service
jlam@calwater.com

DATA REQUEST – Help Develop Our UWMP and WSCP

We're seeking to coordinate with community partners to ensure we develop a UWMP and associated WSCP that are reflective of our communities. We'd like to begin this partnership today and ask that you provide the following information to Jake Lam (jlam@calwater.com):

- Description of current land use
- GIS files for land use and zoning
- Population growth projections
- Most recent General Plans

We are looking to gather this information by XXXX XX, XXXX.

Once again, we thank you for your continued partnership. If you have any questions, need any additional information, or would like to find time to meet virtually with our team to discuss this further, please reach out at your convenience.

Sincerely,

Kevin McCusker

Director of Government & Community Affairs

About Cal Water

California Water Service provides safe, clean, and affordable water utility service to more than 2 million people statewide. What sets Cal Water apart is its commitment to enhancing the quality of life for its customers and communities. Guided daily by their promise to provide quality, service, and value, the utility's employees lead the way in working to protect the planet, care for people, and operate with the utmost integrity. Integral to Cal Water's strategy is investing responsibly in infrastructure, sustainability initiatives, and community well-being. The utility has been named one of "America's Most Responsible Companies" and the "World's Most Trustworthy Companies" by *Newsweek* and a Great Place to Work®. More information is available at https://link.edgepilot.com/s/4069251c/_CvANuC690u9lTiwQCmjDg?u=http://www.calwaterdifference.com/.

Quality. Service. Value.

Name	Position (if known)	Agency	Other Agency Affiliation (if applicable)
Bruno Sabatier	District 2 Supervisor	Lake County	
Clay Tracy	Water Resources Manager	Marin County	
Sonoma Public Infrastructure	Public Infrastructure Deparment	Sonoma County	
Eric Schanz	General Manager	Sweetwater Springs Water District	
Kristin Sicke	General Manager	Yolo County Flood Control and Water Conservation District	
Erik Cdaret	Asst. General Manager	Yolo County Flood Control and Water Conservation District	

Appendix C: Public Meeting Notice

- Public Meeting Notice of Intent
- Proof of Publication
- Public Meeting Presentation

Appendix D: Historical and Projected Service Area Population, Services, Sales, and Production

California Water Service

Redwood Valley District

Water Supply/Demand Analysis Projections Summary

June 2026

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 1. Historical & Projected Population				
YEAR	**TYPE**	**HOUSEHOLD**	**GROUP QUARTERS**	**TOTAL**
2000	Historical	3,153	0	3,153
2001	Historical	3,205	0	3,205
2002	Historical	3,256	0	3,256
2003	Historical	3,308	0	3,308
2004	Historical	3,359	0	3,359
2005	Historical	3,411	0	3,411
2006	Historical	3,462	0	3,462
2007	Historical	3,514	0	3,514
2008	Historical	3,565	0	3,565
2009	Historical	3,617	0	3,617
2010	Historical	3,668	0	3,668
2011	Historical	3,661	0	3,661
2012	Historical	3,654	0	3,654
2013	Historical	3,646	0	3,646
2014	Historical	3,639	0	3,639
2015	Historical	3,632	0	3,632
2016	Historical	3,625	0	3,625
2017	Historical	3,618	0	3,618
2018	Historical	3,610	0	3,610
2019	Historical	3,603	0	3,603
2020	Historical	3,596	0	3,596
2021	Historical	3,655	0	3,655
2022	Historical	3,657	0	3,657
2023	Historical	3,605	0	3,605
2024	Historical	3,586	0	3,586
2025	Historical	3,583	0	3,583
2030	Projected	3,583	0	3,583
2035	Projected	3,608	0	3,608
2040	Projected	3,608	0	3,608
2045	Projected	3,608	0	3,608
2050	Projected	3,608	0	3,608
2025 to 2050				
Compound Annual Growth Rate (CAGR)				0.0%

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 2. Historical & Projected Services											
YEAR	**TYPE**	**SFR-M**	**SFR-F**	**MFR**	**COM**	**IND**	**GOV**	**IRR**	**OTH**	**REC**	**TOTAL**
2000	Historical	1,867	0	18	67	0	14	0	0	0	1,966
2001	Historical	1,875	0	18	67	0	14	0	0	0	1,974
2002	Historical	1,805	0	18	67	0	14	0	0	0	1,904
2003	Historical	1,824	0	18	67	0	14	0	0	0	1,923
2004	Historical	1,830	0	18	65	0	14	0	0	0	1,928
2005	Historical	1,860	0	17	65	0	15	0	0	0	1,957
2006	Historical	1,859	0	17	64	0	14	0	0	0	1,955
2007	Historical	1,861	0	17	61	0	14	0	0	0	1,953
2008	Historical	1,859	0	17	61	0	14	0	0	0	1,951
2009	Historical	1,854	0	17	60	0	14	0	0	0	1,945
2010	Historical	1,841	0	17	59	0	14	0	0	0	1,931
2011	Historical	1,816	0	17	56	0	14	0	0	0	1,902
2012	Historical	1,804	0	16	55	0	14	0	0	0	1,890
2013	Historical	1,794	0	16	52	0	14	0	0	0	1,876
2014	Historical	1,784	0	16	51	0	14	0	0	0	1,865
2015	Historical	1,774	0	17	51	0	13	0	0	0	1,856
2016	Historical	1,790	0	17	51	0	13	0	0	0	1,871
2017	Historical	1,797	0	17	51	0	13	0	0	0	1,878
2018	Historical	1,802	0	17	48	0	13	0	0	0	1,880
2019	Historical	1,796	0	17	50	0	13	0	0	0	1,876
2020	Historical	1,815	0	17	52	0	13	0	0	0	1,898
2021	Historical	1,847	0	17	53	0	13	0	1	0	1,931
2022	Historical	1,850	0	17	52	0	12	0	1	0	1,933
2023	Historical	1,827	0	16	52	0	12	0	0	0	1,908
2024	Historical	1,819	0	16	52	0	12	0	0	0	1,899
2025	Historical	1,817	0	16	53	0	13	0	1	0	1,899
2030	Projected	1,817	0	16	53	0	13	0	1	0	1,899
2035	Projected	1,831	0	16	53	0	13	0	1	0	1,913
2040	Projected	1,831	0	16	53	0	13	0	1	0	1,913
2045	Projected	1,831	0	16	53	0	13	0	1	0	1,913
2050	Projected	1,831	0	16	53	0	13	0	1	0	1,913
2025 to 2050											
Compound Annual Growth Rate (CAGR)											0.0%

SFR-M = Single-Family Metered
SFR-F = Single-Family Unmetered (Flat Service)
MFR = Multi-Family
COM = Commercial
IND = Industrial
GOV = Government
IRR = Irrigation
OTH = Other/Miscellaneous
REC = Recycled

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 3. Historical & Projected Service Shares

YEAR	TYPE	SFR-M	SFR-F	MFR	COM	IND	GOV	IRR	OTH	REC	TOTAL
2000	Historical	95.0%	0.0%	0.9%	3.4%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2001	Historical	95.0%	0.0%	0.9%	3.4%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2002	Historical	94.8%	0.0%	0.9%	3.5%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2003	Historical	94.8%	0.0%	0.9%	3.5%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2004	Historical	95.0%	0.0%	0.9%	3.4%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2005	Historical	95.0%	0.0%	0.9%	3.3%	0.0%	0.8%	0.0%	0.0%	0.0%	100.0%
2006	Historical	95.1%	0.0%	0.9%	3.3%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2007	Historical	95.3%	0.0%	0.9%	3.1%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2008	Historical	95.3%	0.0%	0.9%	3.1%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2009	Historical	95.3%	0.0%	0.9%	3.1%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2010	Historical	95.3%	0.0%	0.9%	3.1%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2011	Historical	95.5%	0.0%	0.9%	2.9%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2012	Historical	95.5%	0.0%	0.9%	2.9%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2013	Historical	95.6%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2014	Historical	95.6%	0.0%	0.9%	2.7%	0.0%	0.8%	0.0%	0.0%	0.0%	100.0%
2015	Historical	95.6%	0.0%	0.9%	2.7%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2016	Historical	95.7%	0.0%	0.9%	2.7%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2017	Historical	95.7%	0.0%	0.9%	2.7%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2018	Historical	95.9%	0.0%	0.9%	2.6%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2019	Historical	95.7%	0.0%	0.9%	2.7%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2020	Historical	95.6%	0.0%	0.9%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2021	Historical	95.7%	0.0%	0.9%	2.7%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2022	Historical	95.7%	0.0%	0.9%	2.7%	0.0%	0.6%	0.0%	0.1%	0.0%	100.0%
2023	Historical	95.8%	0.0%	0.8%	2.7%	0.0%	0.6%	0.0%	0.0%	0.0%	100.0%
2024	Historical	95.8%	0.0%	0.8%	2.7%	0.0%	0.6%	0.0%	0.0%	0.0%	100.0%
2025	Historical	95.7%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2030	Projected	95.7%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2035	Projected	95.7%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2040	Projected	95.7%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2045	Projected	95.7%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%
2050	Projected	95.7%	0.0%	0.8%	2.8%	0.0%	0.7%	0.0%	0.0%	0.0%	100.0%

SFR-M = Single-Family Metered
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IRR = Irrigation
OTH = Other/Miscellaneous
REC = Recycled

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 4. Historical & Projected Sales in Acre-Feet

YEAR	TYPE	SFR-M	SFR-F[1]	MFR	COM	IND	GOV	IRR	OTH	REC	TOTAL
2000	Historical	376	0	38	8	0	3	0	0	0	424
2001	Historical	438	0	48	12	0	2	0	0	0	500
2002	Historical	485	0	30	15	0	3	0	0	0	534
2003	Historical	392	0	65	42	0	6	0	0	0	505
2004	Historical	385	0	64	39	0	8	0	0	0	496
2005	Historical	335	0	62	37	0	8	0	0	0	442
2006	Historical	319	0	66	36	0	8	0	0	0	428
2007	Historical	305	0	53	29	0	9	0	0	0	396
2008	Historical	289	0	50	33	0	4	0	0	0	377
2009	Historical	268	0	50	24	0	5	0	0	0	347
2010	Historical	253	0	46	19	0	4	0	0	0	323
2011	Historical	232	0	41	20	0	5	0	0	0	298
2012	Historical	235	0	32	18	0	10	0	0	0	294
2013	Historical	227	0	31	19	0	5	0	0	0	281
2014	Historical	207	0	34	17	0	6	0	0	0	263
2015	Historical	187	0	23	14	0	3	0	0	0	227
2016	Historical	192	0	26	13	0	3	0	0	0	235
2017	Historical	204	0	24	11	0	3	0	0	0	243
2018	Historical	208	0	25	13	0	5	0	0	0	252
2019	Historical	207	0	26	12	0	7	0	0	0	252
2020	Historical	238	0	32	16	0	9	0	0	0	295
2021	Historical	238	0	31	15	0	4	0	0	0	288
2022	Historical	220	0	30	12	0	7	0	1	0	270
2023	Historical	201	0	34	12	0	7	0	0	0	254
2024	Historical	229	0	35	15	0	4	0	0	0	283
2025	Historical	219	0	35	16	0	4	0	0	0	275
2030	Projected	198	0	32	13	0	5	0	0	0	248
2035	Projected	193	0	31	11	0	4	0	0	0	239
2040	Projected	188	0	30	10	0	4	0	0	0	232
2045	Projected	185	0	29	9	0	4	0	0	0	228
2050	Projected	182	0	29	9	0	3	0	0	0	223
2025 to 2050											
Compound Annual Growth Rate (CAGR)											-0.8%

SFR-M = Single-Family Metered
SFR-F = Single-Family Unmetered (Flat Service)
MFR = Multi-Family
COM = Commercial
IND = Industrial
GOV = Government
IRR = Irrigation
OTH = Other/Miscellaneous
REC = Recycled

[1] SFR-F sales is an estimate.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 5. Historical & Projected Sales Shares

YEAR	TYPE	SFR-M	SFR-F[1]	MFR	COM	IND	GOV	IRR	OTH	REC	TOTAL
2000	Historical	89%	0%	9%	2%	0%	1%	0%	0%	0%	100%
2001	Historical	88%	0%	10%	2%	0%	0%	0%	0%	0%	100%
2002	Historical	91%	0%	6%	3%	0%	1%	0%	0%	0%	100%
2003	Historical	78%	0%	13%	8%	0%	1%	0%	0%	0%	100%
2004	Historical	78%	0%	13%	8%	0%	2%	0%	0%	0%	100%
2005	Historical	76%	0%	14%	8%	0%	2%	0%	0%	0%	100%
2006	Historical	74%	0%	15%	8%	0%	2%	0%	0%	0%	100%
2007	Historical	77%	0%	13%	7%	0%	2%	0%	0%	0%	100%
2008	Historical	77%	0%	13%	9%	0%	1%	0%	0%	0%	100%
2009	Historical	77%	0%	14%	7%	0%	1%	0%	0%	0%	100%
2010	Historical	78%	0%	14%	6%	0%	1%	0%	0%	0%	100%
2011	Historical	78%	0%	14%	7%	0%	2%	0%	0%	0%	100%
2012	Historical	80%	0%	11%	6%	0%	3%	0%	0%	0%	100%
2013	Historical	81%	0%	11%	7%	0%	2%	0%	0%	0%	100%
2014	Historical	78%	0%	13%	6%	0%	2%	0%	0%	0%	100%
2015	Historical	83%	0%	10%	6%	0%	1%	0%	0%	0%	100%
2016	Historical	82%	0%	11%	6%	0%	1%	0%	0%	0%	100%
2017	Historical	84%	0%	10%	5%	0%	1%	0%	0%	0%	100%
2018	Historical	83%	0%	10%	5%	0%	2%	0%	0%	0%	100%
2019	Historical	82%	0%	10%	5%	0%	3%	0%	0%	0%	100%
2020	Historical	81%	0%	11%	5%	0%	3%	0%	0%	0%	100%
2021	Historical	83%	0%	11%	5%	0%	1%	0%	0%	0%	100%
2022	Historical	82%	0%	11%	5%	0%	2%	0%	0%	0%	100%
2023	Historical	79%	0%	13%	5%	0%	3%	0%	0%	0%	100%
2024	Historical	81%	0%	12%	5%	0%	1%	0%	0%	0%	100%
2025	Historical	80%	0%	13%	6%	0%	2%	0%	0%	0%	100%
2030	Projected	80%	0%	13%	5%	0%	2%	0%	0%	0%	100%
2035	Projected	81%	0%	13%	5%	0%	2%	0%	0%	0%	100%
2040	Projected	81%	0%	13%	4%	0%	2%	0%	0%	0%	100%
2045	Projected	81%	0%	13%	4%	0%	2%	0%	0%	0%	100%
2050	Projected	82%	0%	13%	4%	0%	1%	0%	0%	0%	100%

SFR-M = Single-Family Metered	COM = Commercial	IRR = Irrigation
SFR-F = Single-Family Unmetered (Flat Service)	IND = Industrial	OTH = Other/Miscellaneous
MFR = Multi-Family	GOV = Government	REC = Recycled

[1] SFR-F sales is an estimate.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 6. Historical & Projected Sales Per Service in Gallons/Service/Day											
YEAR	TYPE	SFR-M	SFR-F[1]	MFR	COM	IND	GOV	IRR	OTH	REC	TOTAL
2000	Historical	180	0	1,869	103	0	172	0	0	0	193
2001	Historical	209	0	2,369	160	0	117	0	0	0	226
2002	Historical	240	0	1,503	203	0	214	0	0	0	250
2003	Historical	192	0	3,202	558	0	400	0	0	0	234
2004	Historical	188	0	3,181	530	0	503	0	0	0	230
2005	Historical	161	0	3,217	509	0	503	0	0	0	202
2006	Historical	153	0	3,463	498	0	499	0	0	0	196
2007	Historical	146	0	2,781	421	0	550	0	0	0	181
2008	Historical	139	0	2,634	489	0	286	0	0	0	172
2009	Historical	129	0	2,635	356	0	291	0	0	0	159
2010	Historical	123	0	2,438	288	0	259	0	0	0	149
2011	Historical	114	0	2,220	321	0	293	0	0	0	140
2012	Historical	116	0	1,732	290	0	638	0	0	0	139
2013	Historical	113	0	1,750	320	0	316	0	0	0	134
2014	Historical	103	0	1,889	289	0	393	0	0	0	126
2015	Historical	94	0	1,212	242	0	179	0	0	0	109
2016	Historical	96	0	1,378	228	0	224	0	0	0	112
2017	Historical	101	0	1,235	201	0	239	0	0	0	115
2018	Historical	103	0	1,332	244	0	333	0	0	0	119
2019	Historical	103	0	1,376	222	0	458	0	0	0	120
2020	Historical	117	0	1,664	271	0	602	0	74	0	139
2021	Historical	115	0	1,608	254	0	275	0	14	0	133
2022	Historical	106	0	1,599	208	0	485	0	343	0	125
2023	Historical	98	0	1,876	208	0	546	0	0	0	119
2024	Historical	112	0	1,951	261	0	285	0	320	0	133
2025	Historical	108	0	1,961	264	0	300	0	13	0	129
2030	Projected	97	0	1,771	216	0	333	0	111	0	116
2035	Projected	94	0	1,706	193	0	298	0	111	0	112
2040	Projected	92	0	1,664	174	0	269	0	111	0	108
2045	Projected	90	0	1,637	159	0	245	0	111	0	106
2050	Projected	89	0	1,610	147	0	226	0	111	0	104
2025 to 2050 Compound Annual Growth Rate (CAGR)											-0.9%

SFR-M = Single-Family Metered
SFR-F = Single-Family Unmetered (Flat Service)
MFR = Multi-Family
COM = Commercial
IND = Industrial
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OTH = Other/Miscellaneous
REC = Recycled

[1] SFR-F sales is an estimate.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 7. Historical & Projected Per Capita Water Use in Gallons/Person/Day											
YEAR	**TYPE**	**SFR-M**	**SFR-F[1]**	**MFR**	**COM**	**IND**	**GOV**	**IRR**	**OTH**	**REC**	**TOTAL**
2000	Historical	107	0	11	2	0	1	0	0	0	120
2001	Historical	122	0	13	3	0	1	0	0	0	139
2002	Historical	133	0	8	4	0	1	0	0	0	146
2003	Historical	106	0	17	11	0	2	0	0	0	136
2004	Historical	102	0	17	10	0	2	0	0	0	132
2005	Historical	88	0	16	10	0	2	0	0	0	116
2006	Historical	82	0	17	9	0	2	0	0	0	110
2007	Historical	78	0	13	7	0	2	0	0	0	101
2008	Historical	72	0	13	8	0	1	0	0	0	94
2009	Historical	66	0	12	6	0	1	0	0	0	86
2010	Historical	62	0	11	5	0	1	0	0	0	79
2011	Historical	56	0	10	5	0	1	0	0	0	73
2012	Historical	57	0	8	4	0	2	0	0	0	72
2013	Historical	56	0	8	5	0	1	0	0	0	69
2014	Historical	51	0	8	4	0	2	0	0	0	65
2015	Historical	46	0	6	3	0	1	0	0	0	56
2016	Historical	47	0	6	3	0	1	0	0	0	58
2017	Historical	50	0	6	3	0	1	0	0	0	60
2018	Historical	51	0	6	3	0	1	0	0	0	62
2019	Historical	51	0	6	3	0	2	0	0	0	63
2020	Historical	59	0	8	4	0	2	0	0	0	73
2021	Historical	58	0	7	4	0	1	0	0	0	70
2022	Historical	54	0	7	3	0	2	0	0	0	66
2023	Historical	50	0	8	3	0	2	0	0	0	63
2024	Historical	57	0	9	4	0	1	0	0	0	70
2025	Historical	55	0	9	4	0	1	0	0	0	68
2030	Projected	49	0	8	3	0	1	0	0	0	62
2035	Projected	48	0	8	3	0	1	0	0	0	59
2040	Projected	47	0	7	3	0	1	0	0	0	57
2045	Projected	46	0	7	2	0	1	0	0	0	56
2050	Projected	45	0	7	2	0	1	0	0	0	55
2025 to 2050											
Compound Annual Growth Rate (CAGR)											-0.9%

SFR-M = Single-Family Metered	COM = Commercial	IRR = Irrigation
SFR-F = Single-Family Unmetered (Flat Service)	IND = Industrial	OTH = Other/Miscellaneous
MFR = Multi-Family	GOV = Government	REC = Recycled

[1] SFR-F sales is an estimate.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 8. Historical & Projected Non-Revenue Water (NRW) in Acre-Feet[1]						
YEAR	TYPE	AUTHORIZED UNBILLED USE	APPARENT LOSS	REAL LOSS	RECYCLED LOSS	TOTAL
2000	Historical					272
2001	Historical					256
2002	Historical					279
2003	Historical					228
2004	Historical					225
2005	Historical					245
2006	Historical					264
2007	Historical					227
2008	Historical					173
2009	Historical					167
2010	Historical					136
2011	Historical					124
2012	Historical					176
2013	Historical					189
2014	Historical					99
2015	Historical					98
2016	Historical	1	6	67	0	74
2017	Historical	1	6	83	0	91
2018	Historical	2	7	105	0	113
2019	Historical	1	7	88	0	96
2020	Historical	4	8	74	0	86
2021	Historical	4	8	79	0	91
2022	Historical	4	7	86	0	96
2023	Historical	3	7	111	0	121
2024	Historical	2	7	103	0	112
2025	Historical	3	7	99	0	109
2030	Projected	3	7	99	0	109
2035	Projected	3	7	100	0	110
2040	Projected	3	7	100	0	110
2045	Projected	3	7	100	0	110
2050	Projected	3	7	100	0	110

[1]Total non-revenue water estimates are available prior to 2016, calculated as total water production less metered sales and estimated unmetered customer water use. Starting in 2016, non-revenue water estimates come from the Water Loss Report for the District that is filed annually with the Department of Water Resources.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 9. Historical & Projected Non-Revenue Water in GCD[1, 2]							
YEAR	TYPE	SERVICES	AUTHORIZED UNBILLED USE	APPARENT LOSS	REAL LOSS	RECYCLED LOSS	TOTAL
2000	Historical	2,067					118
2001	Historical	2,076					110
2002	Historical	2,003					124
2003	Historical	2,022					101
2004	Historical	2,027					99
2005	Historical	2,058					106
2006	Historical	2,056					115
2007	Historical	2,055					99
2008	Historical	2,052					75
2009	Historical	2,046					73
2010	Historical	2,031					60
2011	Historical	2,001					55
2012	Historical	1,988					79
2013	Historical	1,973					86
2014	Historical	1,962					45
2015	Historical	1,952					45
2016	Historical	1,972	1	3	30	0	33
2017	Historical	1,973	0	3	38	0	41
2018	Historical	1,984	1	3	47	0	51
2019	Historical	1,980	1	3	39	0	43
2020	Historical	1,995	2	3	33	0	39
2021	Historical	2,008	2	3	35	0	40
2022	Historical	2,013	2	3	38	0	43
2023	Historical	2,002	1	3	50	0	54
2024	Historical	2,023	1	3	46	0	50
2025	Historical	1,998	1	3	44	0	49
2030	Projected	1,998	1	3	44	0	49
2035	Projected	2,012	1	3	44	0	49
2040	Projected	2,012	1	3	44	0	49
2045	Projected	2,012	1	3	44	0	49
2050	Projected	2,012	1	3	44	0	49

[1]GCD = gallons/connection/day, calculated with total connections (active + inactive)

[2]Total non-revenue water estimates are available prior to 2016, calculated as total water production less metered sales and estimated unmetered customer water use. Starting in 2016, non-revenue water estimates come from the District's Water Loss Report filed annually with the Department of Water Resources.

Table 10. Projected Baseline and Adjusted Potable Demand in Acre-Feet

	2030	2035	2040	2045	2050
Baseline Potable Water Demand	379	382	382	382	382
Demand Adjustments					
Passive Conservation	-7	-10	-11	-11	-11
Active Conservation	-16	-24	-31	-36	-42
Water Service Cost Growth	-2	-3	-4	-6	-7
Household Income Growth	2	4	6	8	10
Water Loss Management	0	0	0	0	0
Total Adjustments	-23	-33	-40	-45	-49
Adjusted Potable Water Demand	357	349	342	337	333

Table 11. Projected Single-Dry-Year and Multi-Dry-Year Demand in Acre-Feet

	2030	2035	2040	2045	2050
Normal Year	357	349	342	337	333
Single-Dry-Year	367	359	352	347	343
Multi-Dry-Year	374	366	359	354	349

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 12. Historical & Projected Demand in Acre-Feet					
YEAR	TYPE	SALES	NRW[1]	DEMAND[2]	GPCD[3]
2000	Historical	424	272	696	197
2001	Historical	500	256	756	211
2002	Historical	534	279	812	223
2003	Historical	505	228	733	198
2004	Historical	496	225	720	191
2005	Historical	442	245	687	180
2006	Historical	428	264	692	179
2007	Historical	396	227	623	158
2008	Historical	377	173	550	138
2009	Historical	347	167	514	127
2010	Historical	323	136	459	112
2011	Historical	298	124	421	103
2012	Historical	294	176	470	115
2013	Historical	281	189	470	115
2014	Historical	263	99	362	89
2015	Historical	227	98	325	80
2016	Historical	235	74	309	76
2017	Historical	243	91	333	82
2018	Historical	252	113	365	90
2019	Historical	252	96	348	86
2020	Historical	295	86	381	95
2021	Historical	288	91	378	92
2022	Historical	270	96	366	89
2023	Historical	254	121	375	93
2024	Historical	283	112	395	98
2025	Historical	275	109	383	96
2030	Projected	248	109	357	89
2035	Projected	239	110	349	86
2040	Projected	232	110	342	85
2045	Projected	228	110	337	83
2050	Projected	223	110	333	82
2025 to 2050 Compound Annual Growth Rate (CAGR)				-0.6%	-0.6%

[1]Non-Revenue Water (NRW)
[2]Demand is equal to the sum of water sales and non-revenue water.
[3]Gallons per capita per day.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 13. Historical Water Production in Acre-Feet

YEAR	TYPE	WELLS	SURFACE	PURCHASED	RECYCLED[1]	OTHER[2]	TOTAL
2000	Historical	207	489	0	0	0	696
2001	Historical	224	532	0	0	0	756
2002	Historical	259	554	0	0	0	812
2003	Historical	250	483	0	0	0	733
2004	Historical	252	468	0	0	0	720
2005	Historical	229	457	1	0	0	687
2006	Historical	249	436	7	0	0	692
2007	Historical	180	437	6	0	0	623
2008	Historical	165	379	6	0	0	550
2009	Historical	152	356	6	0	0	514
2010	Historical	146	307	6	0	0	459
2011	Historical	134	282	6	0	0	421
2012	Historical	144	320	7	0	0	470
2013	Historical	154	311	6	0	0	470
2014	Historical	127	229	6	0	0	362
2015	Historical	124	196	5	0	0	325
2016	Historical	126	210	6	0	0	342
2017	Historical	145	218	8	0	0	370
2018	Historical	151	251	4	0	0	406
2019	Historical	155	233	7	0	0	395
2020	Historical	147	265	7	0	1	420
2021	Historical	148	266	5	0	1	420
2022	Historical	143	261	4	0	1	409
2023	Historical	161	273	5	0	0	439
2024	Historical	145	290	5	0	0	440
2025	Historical	163	270	5	0	0	438

[1]Includes water from recycling and desalter supply sources.

[2]Other water may include leased and wheeled water, as well as backwash and wastewater from treatment plant operation. Negative volumes represent production that has not entered the distribution system.

California Water Service - Redwood Valley District
Water Supply/Demand Analysis and Projections Summary

Table 14. Historical Water Production Shares							
YEAR	TYPE	WELLS	SURFACE	PURCHASED	RECYCLED[1]	OTHER[2]	TOTAL
2000	Historical	30%	70%	0%	0%	0%	100%
2001	Historical	30%	70%	0%	0%	0%	100%
2002	Historical	32%	68%	0%	0%	0%	100%
2003	Historical	34%	66%	0%	0%	0%	100%
2004	Historical	35%	65%	0%	0%	0%	100%
2005	Historical	33%	67%	0%	0%	0%	100%
2006	Historical	36%	63%	1%	0%	0%	100%
2007	Historical	29%	70%	1%	0%	0%	100%
2008	Historical	30%	69%	1%	0%	0%	100%
2009	Historical	30%	69%	1%	0%	0%	100%
2010	Historical	32%	67%	1%	0%	0%	100%
2011	Historical	32%	67%	1%	0%	0%	100%
2012	Historical	31%	68%	1%	0%	0%	100%
2013	Historical	33%	66%	1%	0%	0%	100%
2014	Historical	35%	63%	2%	0%	0%	100%
2015	Historical	38%	60%	1%	0%	0%	100%
2016	Historical	37%	61%	2%	0%	0%	100%
2017	Historical	39%	59%	2%	0%	0%	100%
2018	Historical	37%	62%	1%	0%	0%	100%
2019	Historical	39%	59%	2%	0%	0%	100%
2020	Historical	35%	63%	2%	0%	0%	100%
2021	Historical	35%	63%	1%	0%	0%	100%
2022	Historical	35%	64%	1%	0%	0%	100%
2023	Historical	37%	62%	1%	0%	0%	100%
2024	Historical	33%	66%	1%	0%	0%	100%
2025	Historical	37%	62%	1%	0%	0%	100%

[1]Includes water from recycling and desalter supply sources.

[2]Other water may include leased and wheeled water, as well as backwash and wastewater from treatment plant operation. Negative volumes represent production that has not entered the distribution system.

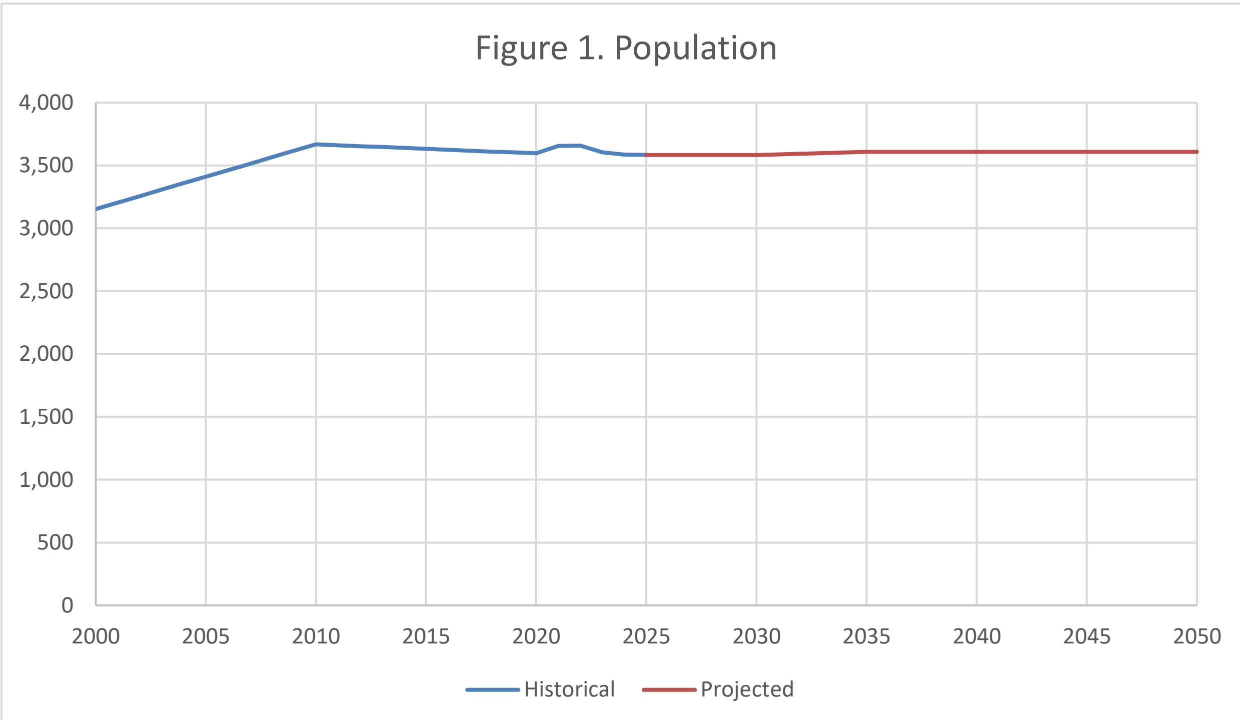


Figure 1. Population
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Historical
Projected

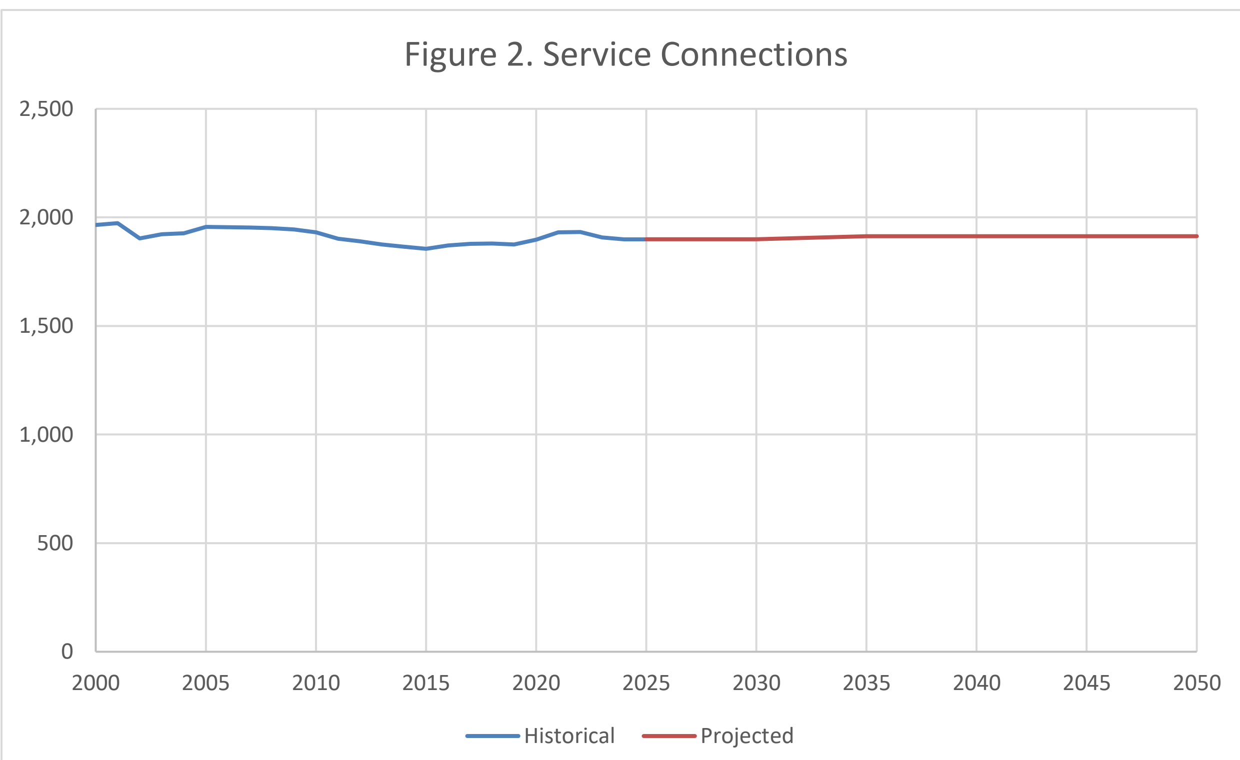


Figure 2. Service Connections
2,500
2,000
1,500
1,000
500
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Historical
Projected

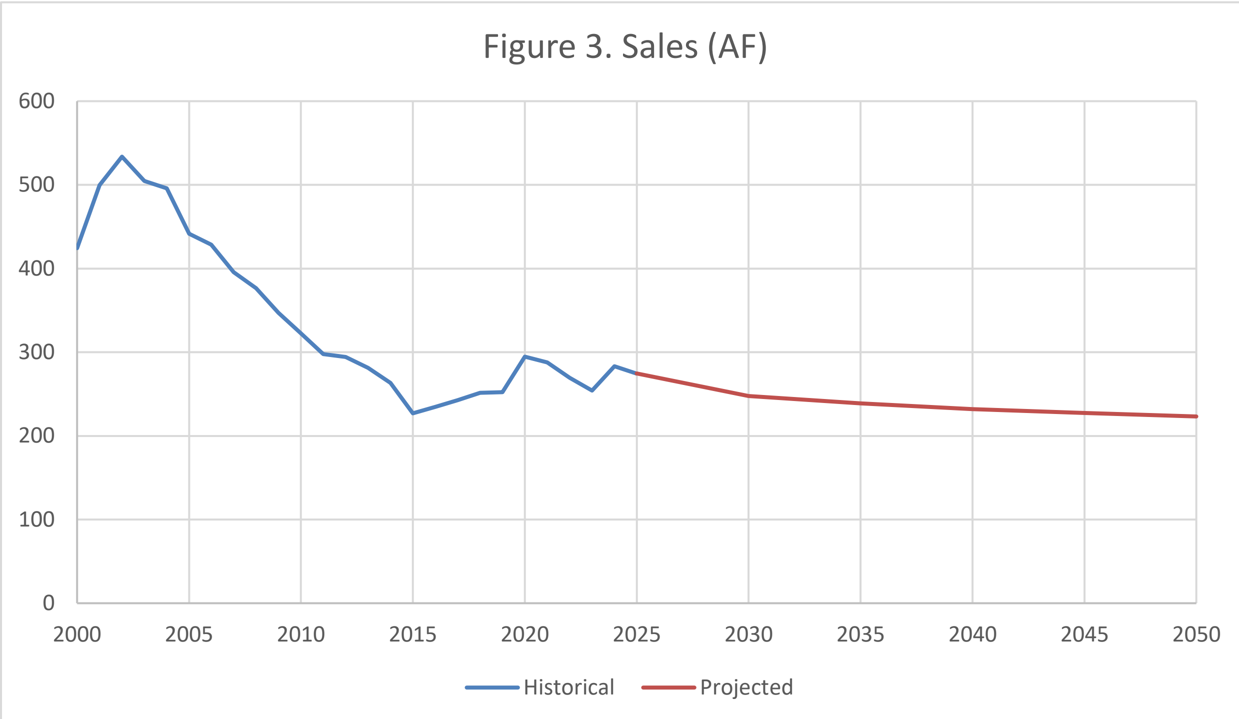


Figure 3. Sales (AF)
600
500
400
300
200
100
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Historical
Projected

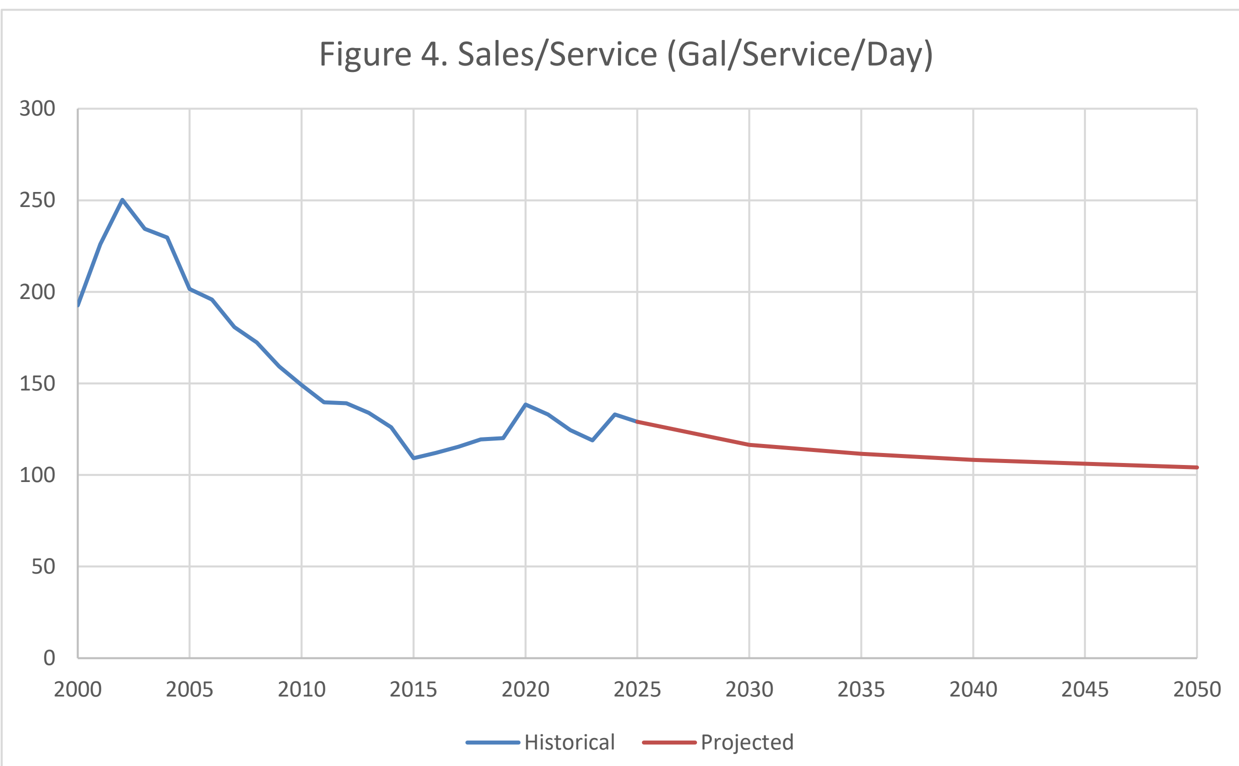
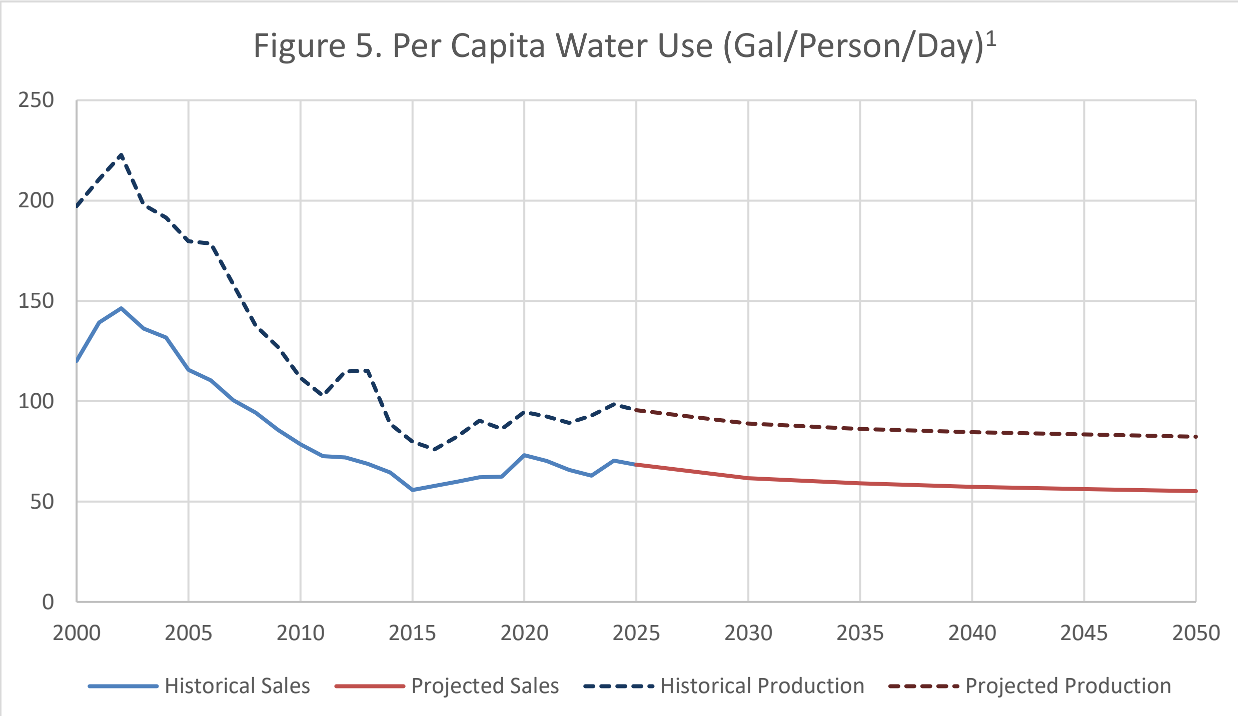
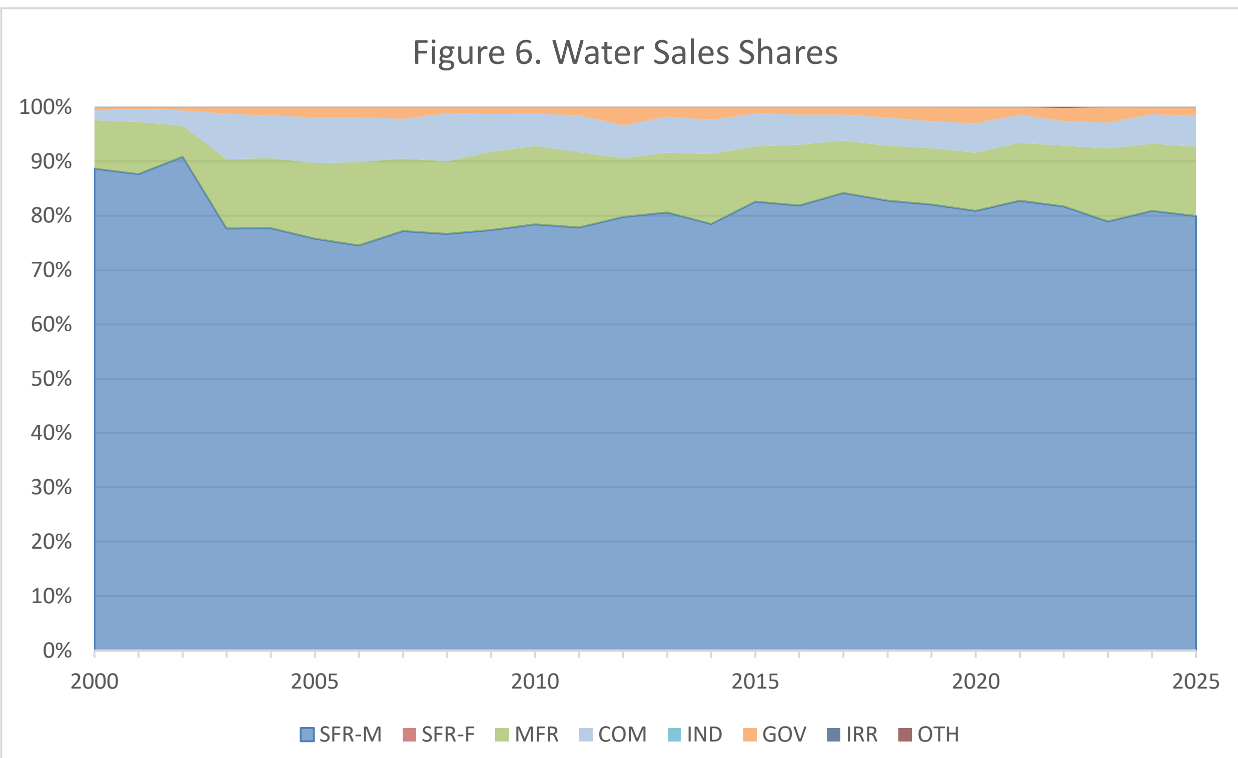


Figure 4. Sales/Service (Gal/Service/Day)
300
250
200
150
100
50
0
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
Historical
Projected





SFR-M = Single-Family Metered	COM = Commercial	IRR = Irrigation
SFR-F = Single-Family Unmetered (Flat Service)	IND = Industrial	OTH = Other/Miscellaneous
MFR = Multi-Family	GOV = Government	REC = Recycled

[1]Difference between the production and sales data series in Figure 5 is non-revenue water.

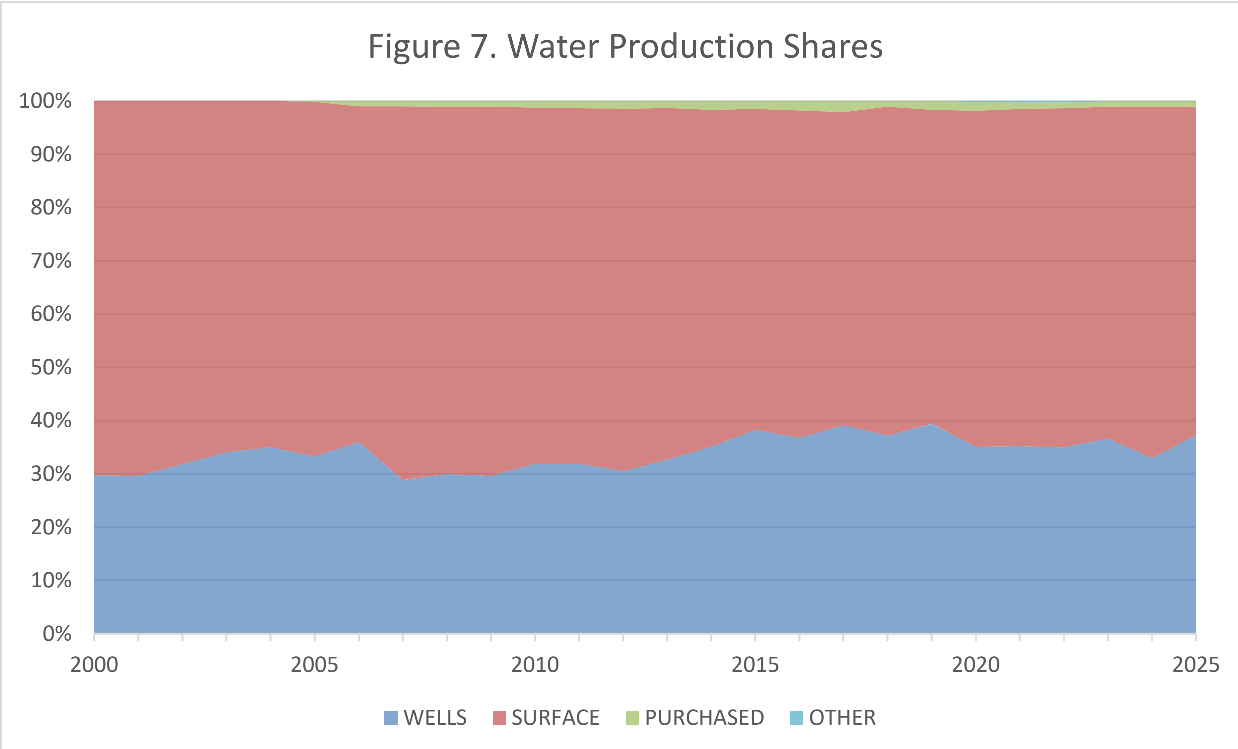


Figure 7. Water Production Shares
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2005
2010
2015
2020
2025
WELLS
SURFACE
PURCHASED
OTHER

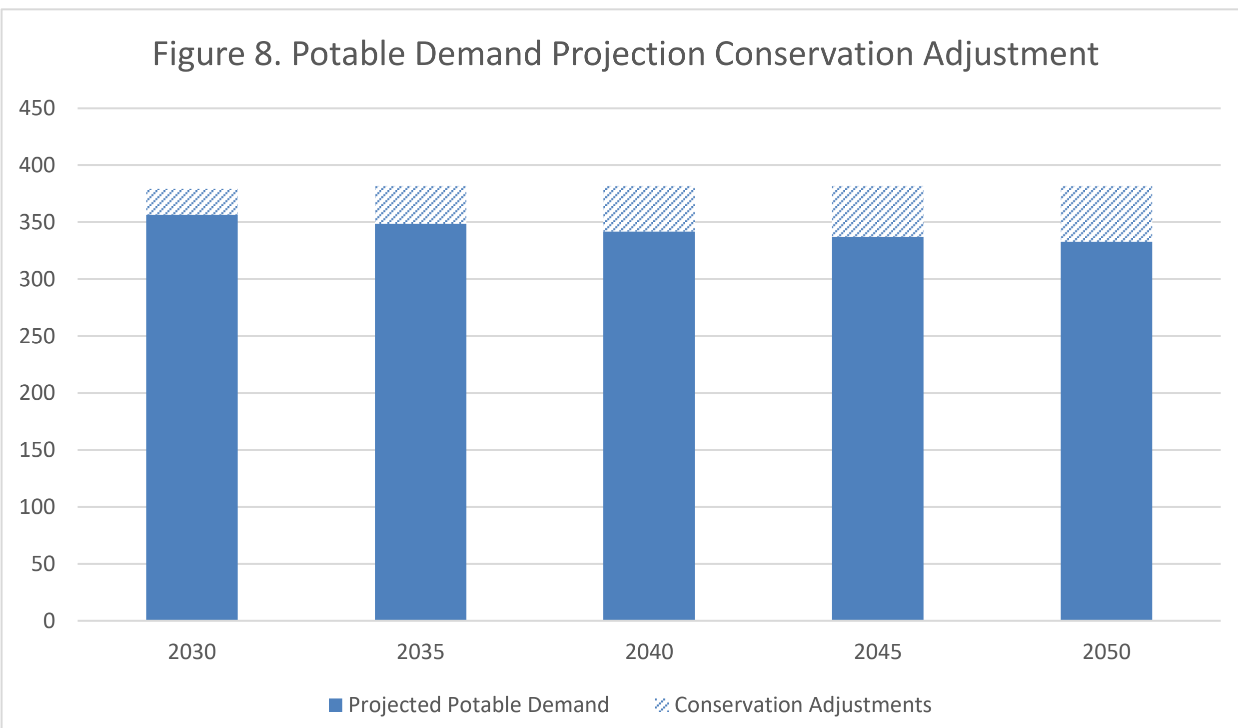


Figure 8. Potable Demand Projection Conservation Adjustment
450
400
350
300
250
200
150
100
50
0
2030
2035
2040
2045
2050
Projected Potable Demand
Conservation Adjustments

Water Supply Assessment (WSA) Information

Table 15. WSA Demand Treated as Additive to Regional Growth Projections

WSA	% of WSA Demand Added to Projection[1]
Coast Springs Empty Residential Lots	100%

[1]Percent of WSA demand considered to be additive to regional growth forecast.

Compound Annual Growth Rates (CAGR)

Table 16. Historical Service Growth

Class	2020 to 2025	2015 to 2025	2010 to 2025	2005 to 2025
SFR[1]	0.0%	0.2%	-0.1%	-0.1%
MFR	-1.2%	-0.6%	-0.4%	-0.3%
COM	0.1%	0.3%	-0.8%	-1.1%
IND	0.0%	0.0%	0.0%	0.0%
GOV	0.0%	-0.2%	-0.5%	-0.6%
IRR	0.0%	0.0%	0.0%	0.0%
OTH	17.1%	0.0%	0.0%	0.0%
REC	0.0%	0.0%	0.0%	0.0%

[1]Total metered and unmetered single-family services

Table 17. Historical Growth between Decennial Censuses

Series	2010 to 2020	2000 to 2020	1990 to 2020
Population	-0.20%	0.66%	0.44%
Total Housing Units	-1.42%	-0.23%	-0.15%
Occupied Housing Units	-1.42%	-0.23%	-0.15%

Table 18. Regional Growth Forecasts from Land Use Planning Entities

Source: ABAG PBA50 TAZ Forecasts
Range: 2015-2050

Series	CAGR
Population	-0.28%
Housing	-0.01%
Employment	0.21%

Compound Annual Growth Rates (CAGR) Used in Demand Projections

Table 19. Historical Service Growth

Time Series	Basis	Projection CAGR	Override CAGR[1]
Population	No Projected Growth	0.00%	
Services			
SFR	No Projected Growth	0.00%	
MFR	No Projected Growth	0.00%	
COM	No Projected Growth	0.00%	
IND	No Projected Growth	0.00%	
GOV	No Projected Growth	0.00%	
IRR	No Projected Growth	0.00%	
OTH	No Projected Growth	0.00%	
REC	No Projected Growth	0.00%	

SFR = Single-Family	IND = Industrial	OTH = Other/Miscellaneous
MFR = Multi-Family	GOV = Government	REC = Recycled
COM = Commercial	IRR = Irrigation	

[1]If value is present, then the demand model uses this value instead of the Basis value.

Appendix E: Climate Change Studies – Executive Summaries

- Potential Climate Change Impacts on the Water Supplies of California Water Service
- Climate Change – Water Resource Monitoring and Adaptation Plan – Phase 1 and Phase 2

Potential Climate Change Impacts on the Water Supplies of California Water Service

Prepared by

Gary Fiske and Associates, Inc.
Balance Hydrologics, Inc.

January 2016

Executive Summary

Introduction

California Water Service Company (Cal Water) provides water service to roughly 478,000 customers – about 1.7 million people – located in 83 state-wide communities in 24 service districts. Cal Water's districts rely on a variety of supply sources, including local groundwater, local surface water, and imported supplies. It is critical for Cal Water to gain a better understanding of the potential impacts of climate change on the availability of those supplies. Impacts are inherently uncertain, but Cal Water believes that the only responsible course is to carefully incorporate climate change into its ongoing water supply planning.

The present project and report represent a first step in that path. In order for Cal Water to determine how its long-term water supply planning should reflect climate change impacts, it must first have an understanding of what the impacts of climate change on its supply sources might be. That is the purpose of this study.

The work reported on here focuses on the sample of Cal Water districts highlighted in Figure ES-1. These districts account for 85% of Cal Water's total 2014 production and reflect the diversity of all Cal Water districts, including geographic, hydrologic, and climatic conditions and primary and secondary supply sources.

Changes in climate can affect the availability of local groundwater and surface water supplies, as well as purchased imported supplies. This study separately addresses the impacts on each of these for each sample district. It relies on the best available projections of changes in climate (temperature and precipitation) through the end of the century. It then uses the climate projections to examine how surface water flows and groundwater recharge rates may change.

For imported supplies, this study relies on studies already completed by wholesale providers where possible. Where no such studies have been done or where the data from such studies was unavailable, other approaches were developed to estimate climate change impacts on these supplies.

The results reported here provide an integrated view of how projected climate changes may affect water supply availability for Cal Water's service districts. The results also represent a first step in integrating potential future climate change impacts into Cal Water's ongoing supply planning. Because of the inherent uncertainties, a nuanced risk assessment may be needed to guide the incorporation of these results into long-range planning. Beyond the Company's supply/infrastructure planning, the results also can affect the Company's triennial General Rate Cases; they may also have potential operational implications.

Figure ES- 1. Cal Water Service Districts with Sample Districts Highlighted

Estimating Changes in Climate

Climate change is primarily driven by increased concentrations of greenhouse gases (GHGs) in the atmosphere. The trajectory of future climate change is a function of the rate at which those concentrations are projected to increase and the manner in which the atmosphere and oceans respond to increased concentrations. Both are difficult to model. Thus, while the scientific community overwhelmingly agrees that climate change will occur (and indeed may already have begun), the trajectory of those changes is very uncertain.

The projections of temperature and precipitation that underlie this study are based on 40 of the latest Global Circulation Models (GCMs) run as part of the Coupled Model Intercomparison Project Phase 5 (CMIP5). Generally speaking, this type of approach is termed an ensemble analysis, for which the downscaled climate projections for any particular Cal Water Service District were based on the median of the 40 downscaled GCM datasets. The GCMs used by the analysis are driven by two GHG emission pathways that bound the possible trajectories of GHG concentrations.

Impacts of Climate Change on Water Supplies

The supplies for each district consist of a mix of local surface water, local groundwater, and/or purchased imports. Climate change impacts were estimated for each of these components. The approaches used for each are described below. Based on the breakdown of district production among the supply sources, Table ES-1 shows the ranges of projected overall climate change impacts on available supply, relative to the historic average.[1] Table ES-2 groups this vulnerability into 4 categories of expected change, and Figure ES-2 maps the end-of-century vulnerability.

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[1] The historical averages used here, and elsewhere in this report, are based on the entire range of historical data available for the district-specific analyses. These ranges vary across districts, and are specified within the district-specific technical memoranda.

Table ES- 1. Projected Changes in Available Supply due to Climate Change

District		Percentage Change in Supply		
		2020	2050	2100
BK	Minimum	-10%	-10%	-12%
	Maximum	-12%	-16%	-20%
VIS	Minimum	-7%	-8%	-8%
	Maximum	-9%	-10%	-14%
KRV	Minimum	-13%	-16%	-19%
	Maximum	-16%	-21%	-31%
MPS/SSF/BG	Minimum	0%	-2%	-6%
	Maximum	0%	-7%	-15%
LAS	Minimum	-3%	-3%	-10%
	Maximum	-4%	-18%	-28%
CH	Minimum	2%	2%	0%
	Maximum	3%	1%	-3%
ORO	Minimum	0%	8%	5%
	Maximum	0%	-8%	-7%
DOM/HR/PV	Minimum	0%	0%	-1%
	Maximum	0%	-2%	-3%
STK	Minimum	0%	0%	-8%
	Maximum	0%	-14%	-17%
SLN	Minimum	-6%	-6%	-6%
	Maximum	-7%	-7%	-7%

Table ES- 2. Categories of Projected Supply Vulnerability

District	Supply Vulnerability		
	2020	2050	2100
KRV	3	4	4
BK	3	3	4
LAS	1	3	4
VIS	2	2	3
STK	1	2	3
SLN	2	2	2
MPS/SSF/BG	1	1	3
DOM/HR/PV	1	1	1
ORO	1	1	1
CH	1	1	1

Districts in Category 1 expect <5% reduction in supply. Category 2 indicates a reduction of 5-10%. Category 3 indicates an expected reduction of 10-15%. Category 4 reductions exceed 15%.

Figure ES- 2. Cal Water 2100 Vulnerability to Climate Change

Vulnerability levels:
Green = Low
Yellow = Moderate
Light Red = High
Dark Red = Very High

Estimating Climate Change Impacts on Local Surface Supplies

For those Cal Water districts that obtain a portion of their water supplies from local surface water, projected average annual precipitation in each of three forecast years (2020, 2050, 2100) were compared to historical precipitation to estimate the projected average annual discharge for that forecast year. Table ES-3 shows the estimated percent changes in surface water availability compared to historical averages.

Table ES- 3. Estimated Impacts on Local Surface Supply Availability

District		Percent Change in Runoff		
		2020	2050	2100
BK	Minimum Impact	-17%	-18%	-19%
	Maximum Impact	-18%	-19%	-23%
KRV	Minimum Impact	-17%	-18%	-19%
	Maximum Impact	-18%	-19%	-23%
MPS/SSF/BG	Minimum Impact	+3%	+6%	+12%
	Maximum Impact	+3%	+5%	+6%

Of the three districts, the two in the southern San Joaquin Valley are projected to experience significant reductions in their local surface supplies. In contrast, the Bear Gulch district surface supply is forecast to increase.

Estimating Climate Change Impacts on Local Groundwater Supplies

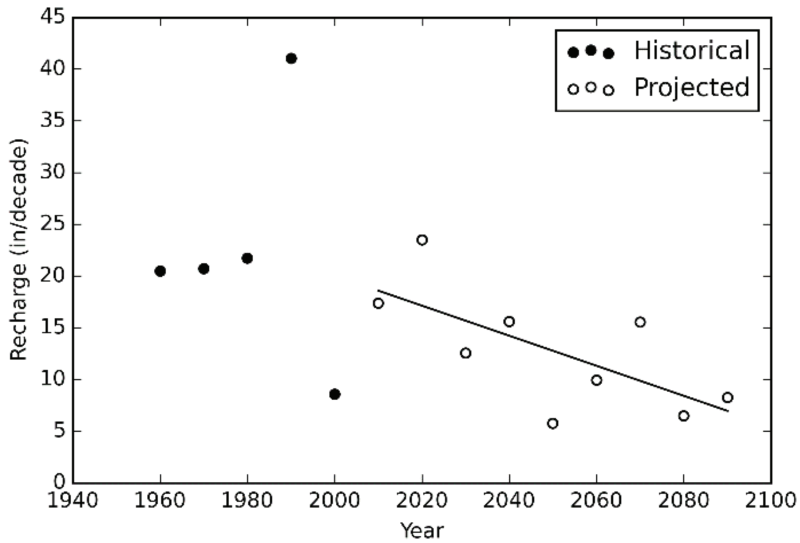
Climate change impacts on Cal Water's local groundwater supplies result from changes in projected groundwater recharge. The three groundwater recharge components include:

- Local river sources;
- Direct recharge from precipitation on the groundwater basin; and
- Recharge from agricultural and urban deep percolation.

The analysis first estimated the split of local recharge among these three components using geographic and geologic data, geochemical markers, and previously published reports and other supporting information. The climate change impacts on each component were then estimated, consolidated into overall projections of recharge impacts, and compared to estimated historical recharge rates.

Estimates of impacts on river recharge used the methodology for local surface supply described above. For the purposes of this phase of work, it was assumed that the change in recharge from the river is proportional to the change in total annual discharge. The estimated amount of water that will recharge directly into a groundwater basin from rain (or snow) is based on a balance of evapotranspiration (ET), precipitation rates, and soil water capacity. Recharge is estimated using both historical and projected precipitation and temperature data. Decadal averages in projected recharge are then used to calculate long-term trends. This is illustrated in Figure ES-3 for Kern River Valley.

Figure ES- 3. Historic and Projected Decadal Direct-Precipitation Recharge for Kern River Valley



A quantitative projection of recharge from deep percolation beneath irrigated fields and urban areas is beyond the scope of this phase. Instead, districts for which a significant proportion of recharge is from agricultural and urban water are identified and expected trends under climate change of this water source for those districts are estimated. At-risk service areas with decreasing agricultural and urban water sources can be explored further in future work.

The estimated percentage impacts on each of the recharge components are multiplied by the expected fractions that each component is of total recharge to calculate the range of expected recharge reductions. Table ES-4 shows those results for each district, excluding the impacts of urban/agricultural applied water percolation.

Actual impacts on Cal Water's ability to pump groundwater may be less than these recharge reductions because the storage volumes in different basins have differing degrees of responsiveness to changes in recharge. The degree to which changes in recharge volumes translate into available groundwater supply is a function of the hydrogeologic attributes of the basin. A detailed understanding of those characteristics would require a level of modeling that is well beyond the scope of this phase of work. Instead, the estimates of basin responsiveness were based on the historical record of how the basin's water level has varied with recent climate variability. For some districts, the basin appears to be highly responsive, while for others changes in climate do not have much impact.

Table ES- 4. Projected Changes in Average Annual Groundwater Recharge

District		Percentage Change in Recharge		
		2020	2050	2100
BK	Minimum	-14%	-15%	-15%
	Maximum	-14%	-15%	-18%
VIS	Minimum	-9%	-10%	-11%
	Maximum	-9%	-10%	-14%
KRV	Minimum	-13.4%	-19%	-23%
	Maximum	-15%	-22%	-35%
MPS/SSF/BG	Minimum	-2%	-4%	-6%
	Maximum	-2%	-6%	-12%
LAS	Minimum	-7%	-8%	-13%
	Maximum	-8%	-18%	-25%
CH	Minimum	6%	4%	1%
	Maximum	6%	2%	-4%
ORO	Minimum	0%	0%	0%
	Maximum	0%	0%	0%
DOM/HR/PV	Minimum	0%	0%	0%
	Maximum	0%	0%	0%
STK	Minimum	-2%	-3%	-6%
	Maximum	-2%	-4%	-7%
SLN	Minimum	-7%	-7%	-7%
	Maximum	-7%	-7%	-7%

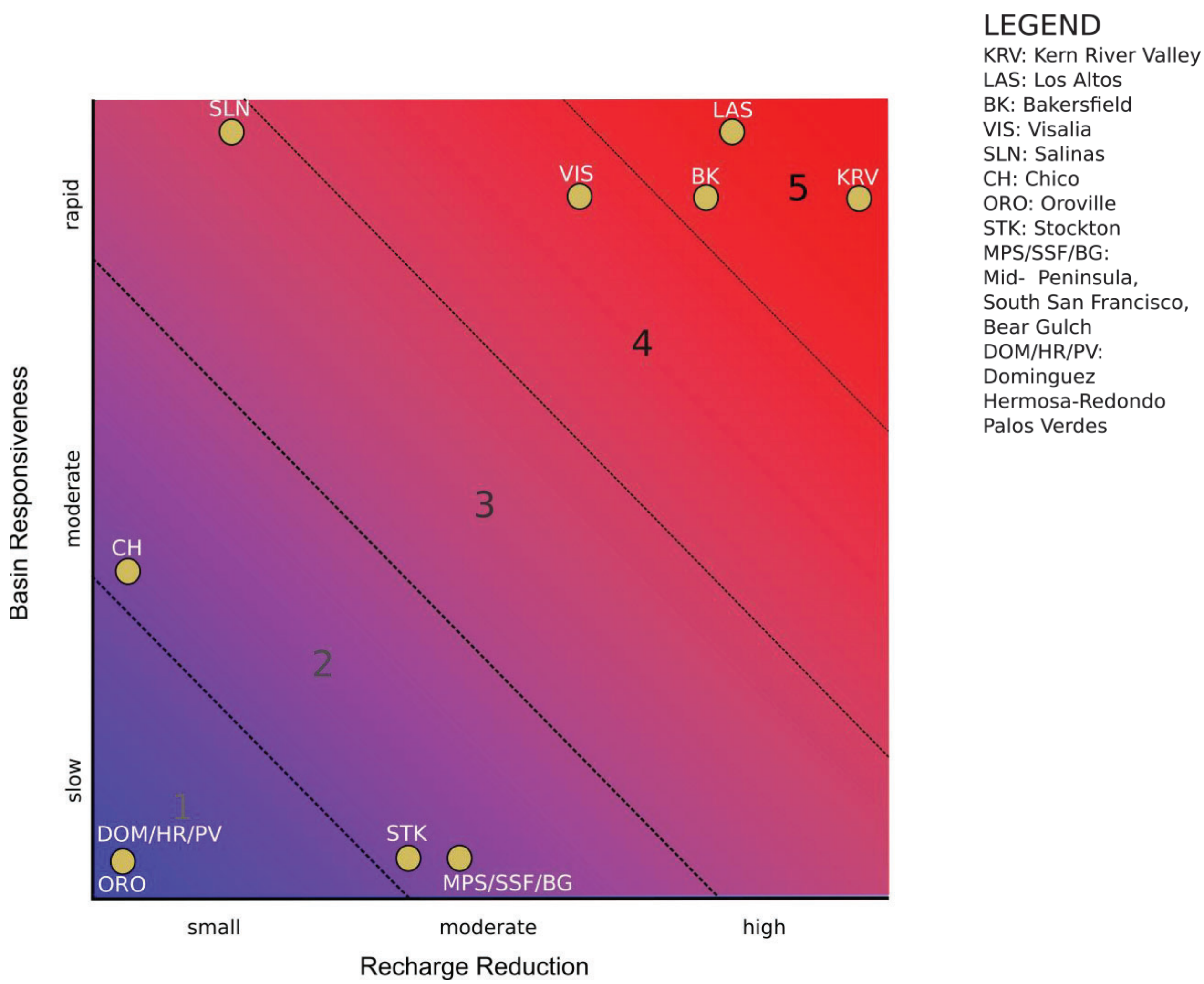
The overall risk to Cal Water's groundwater supplies for each district is based on the expected recharge reductions and the expected responsiveness of basin water level to those reductions. Table ES-5 rates each district's groundwater supply risk on a 1-5 scale, with 1 indicating little or no risk and 5 indicating high risk. Figure ES-4 is a visual depiction of these ratings.

Generally speaking, the groundwater supply impacts are large for the districts in the southern San Joaquin Valley. The Los Altos District also shows a high impact, largely because a significant portion of its recharge is from imported supplies, which are forecast to decrease significantly. Further north in the Central Valley, groundwater supplies are less affected. The Bay Area and Los Angeles Basin districts also show relatively smaller impacts.

Table ES- 5. District Groundwater Risk Ratings

District	Rating
BK	5
KRV	5
LAS	5
VIS	4
SLN	3
CH	2
MPS/SSF/BG	2
STK	2
ORO	1
DOM/HR/PV	1

Figure ES- 4. Groundwater Risk Ratings



Impacts of Climate Change on Imported Water Supplies

About half of Cal Water's supply is imported water that is purchased from wholesale suppliers. The supply and delivery systems of these suppliers are generally very complex and it is impossible within the confines of this project to independently model the impacts of climate change on those systems. The analysis therefore relied on available data, including the results of any climate change modeling that these suppliers themselves have done and other indicators of climate change impacts.

As a result, the climate change scenarios on which the estimates of impacts on different wholesale supplies are based will differ from one another and from the approach described above for the analysis of local supply impacts. The time frames of the results also differ. However, despite those limitations, important information about potential future climate change impacts on wholesale water supply availability was developed. Table ES-6 compares summary measures of central tendency for the potential district-specific climate change impacts on the availability of imported supplies.

Table ES- 6. Projected Climate Change Impacts on Imported Supplies

District	Source	Mid-Century	Late-Century
BK	SWP	-7%	-17%
LAS	SWP, CVP	-9%	-21%
ORO	SWP	-1%	-3%
MPS/SSF/BG	SFPUC	-10%	-20%
DOM/HR/PV	MWD	-1% to -2%	-2% to -5%
STK	USBR	-5%	-10%

Conclusions and Next Steps

The study results indicate significant risks for some districts. This points to the need for Cal Water to account for these risks in its future water supply planning if it is to minimize the adverse effects on its customers. The sole focus of this effort was to assess the potential climate change impacts on Cal Water's supplies. That is an important first step in integrating climate change into supply planning, but this study was not designed to:

- Analyze the impacts of these future supply limitations on Cal Water's ability to serve future customer demands. This is a function of such factors as water rights and contractual arrangements, how future demands are forecast to grow, how water conservation programming will affect those demands, and how Cal Water might modify the manner in which it operates its system.

- Develop mitigation plan to evaluate how potential supply and infrastructure investments and/or acquisition of new supplies might address any adverse impacts on water supply reliability.

- Formally assess alternative approaches to incorporating climate change in Cal Water's supply planning.

Possible next steps for Cal Water include:

- Methodological enhancements to reduce some of the uncertainties in the results reported herein;

- Development and acquisition of better and more complete data;

- Extending this study to other Cal Water districts;

- Developing a plan to mitigate anticipated climate change impacts on supply; and

- Integrating climate change into the Company's ongoing water supply planning.

Despite the study's limitations and uncertainties, three critical messages emerge:

- Cal Water supplies in the 21st century are likely to be adversely affected by climate change.

- These impacts will vary considerably across districts, depending on geography and source mix. For some districts, the impacts can be significant; for others, little or no impacts are projected.

- The impacts will generally increase over time. Anticipated late-century impacts are forecast to be significantly higher in some districts than impacts at mid-century. Moreover, during the period that climate change is forecast to increasingly constrain supplies, demands are also generally forecast to increase, further exacerbating the adverse impacts on water supply reliability.

Climate Change-Water Resource Monitoring and Adaptation Plan – Phase 1

December 17, 2020

California Water Service
1720 North First Street
San Jose, CA 95112

Submitted by:
ICF
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Executive Summary

Shifts in the frequency and severity of natural hazards resulting from climate change, often referred to as climate hazards, increasingly threaten water resources in California. These relevant climate hazards include reductions to snowpack, greater concentrations of precipitation in both a shorter rain season and isolated atmospheric river events, and more volatility between wet and dry water years.

To identify and prepare for impacts from these hazards, California Water Service (Cal Water) is seeking to identify climate change vulnerabilities to water supplies, operations and facilities, and to develop adaptation strategies to address those vulnerabilities through a Climate Change Water Resources Monitoring and Adaptation Plan. This body of work is intended to provide Cal Water with information to inform decisions on water system/asset management and resource planning to better prepare for and respond to current and projected changes to climate. This work represents a forward-looking approach in addressing climate risks for California utilities, as the large majority of water wholesaler and utilities have not completed climate vulnerability and adaptation plans.

In the first phase of this effort, the ICF team collaborated with Cal Water to conduct a literature and tools review as the foundation for subsequent phases of work. In Phase 2 of this project, the ICF team and Cal Water will undertake a vulnerability assessment of Cal Water's facilities and operations by developing an assessment approach that evaluates climate impacts to Cal Water, identifies asset vulnerabilities, and prioritizes climate risks. Phase 3 will focus on an assessment of climate-driven impacts to water supply resources and demand. This first phase of research and assessment will provide Cal Water with a clear "lay of the land" in understanding available methodologies and lessons learned in conducting vulnerability assessments and developing adaptation plans in the water sector. This work can provide key insights for Cal Water, industry practitioners, and Cal Water customers on best practices and needs in climate vulnerability and adaptation efforts.

This first phase will also act as a foundation for Cal Water to build on in subsequent phases of work. ICF and Cal Water will build on research and findings developed in Phase 1 to define the scope of Phases 2 and 3.

In Phase 1, the ICF team undertook three areas of review:

1) Literature and tools related to adaptation planning by water suppliers and other relevant organizations
2) Methods and data in Cal Water's 2016 Vulnerability Study "Potential Climate Change Impacts on the Water Supplies of California Water Service"
3) Climate change impact assessments and adaptation plans beyond Cal Water (wholesalers, state agencies) that could affect Cal Water's vulnerability or adaptive capacity

In the first part of our assessment, the studies we reviewed conclude that there is high certainty of climate-driven reductions to snowpack, wetter winter months, and more volatility between wet and dry water years. While California water systems are designed to operate under a wide range of hydrologic conditions, they are not designed to absorb and adapt to the projected levels of change, which could have impacts on historical supplies from reservoir systems and groundwater systems. These studies also revealed a suite of potential approaches to vulnerability assessment and risk assessment that are applicable to Phases 2 and 3.

Key studies that the ICF team referenced include Brown and Caldwell's "Impacts of Climate Change on Honolulu Water Supplies and Planning Strategies for Mitigation", the Water Research Foundation's (WRF)'s "Mapping Climate Exposure and Climate Information Needs to Water Utility Business Functions", the Metropolitan Water District's (MWD)'s "2015 Integrated Water Resources Plan" and "2015 Urban Water Management Plan", and the U.S. Environmental Protection Agency's (EPA's) Climate Resilience Evaluation and Awareness Toolkit (CREAT).

In the second part of our review, we found that Cal Water's 2016 Climate Change Vulnerability Study undertook a high-level investigation of impacts of climate change on water supply, including surface water, groundwater, and imported water throughout Cal Water service areas. However, the study did not use uniform metrics across water suppliers, was unable to apply the currently available downscaled climate projections, and did not consider the full suite of potential climate impacts to Cal Water's systems, including impacts of compounding climate hazards and impacts on Cal Water facilities and operations.

In the third part of this work, the ICF team researched and assessed existing climate vulnerability assessments and adaptation efforts that have an impact on Cal Water's ability to mitigate impacts from climate change. This included efforts by water supply wholesalers connected to Cal Water's system, and state agencies that regulate Cal Water's supplies, operations, and planning efforts. This will allow Cal Water to build on existing actions and avoid recreating adaptation efforts that are planned or have been implemented.

Cal Water has undertaken key steps toward adaptation planning since the 2016 Vulnerability Study, such as this work to provide additional vulnerability analysis, working locally to identify and prepare to meet Sustainable Groundwater Management Act (SGMA) requirements, and coordinating with wholesalers on their identified climate-driven vulnerabilities. Phases 2 and 3 of this work will further frame system vulnerabilities within an adaptation planning context for a flexible and anticipatory response.

The ICF team's literature review focused on identifying approaches for assessing water utility vulnerabilities of assets and water resources, and adaptation planning needs (summarized in Table 1). To identify these priority approaches, the team reviewed a list of publications with input from Cal Water on key sources. We reviewed and analyzed the relevant literature for applicability to Cal Water, the advantages and fit within a robust plan for assessment, and the potential disadvantages. We highlighted those approaches in the sections on key takeaways and the applicability of approaches to Cal Water. Table 1 provides important considerations raised by the ICF team during this process.

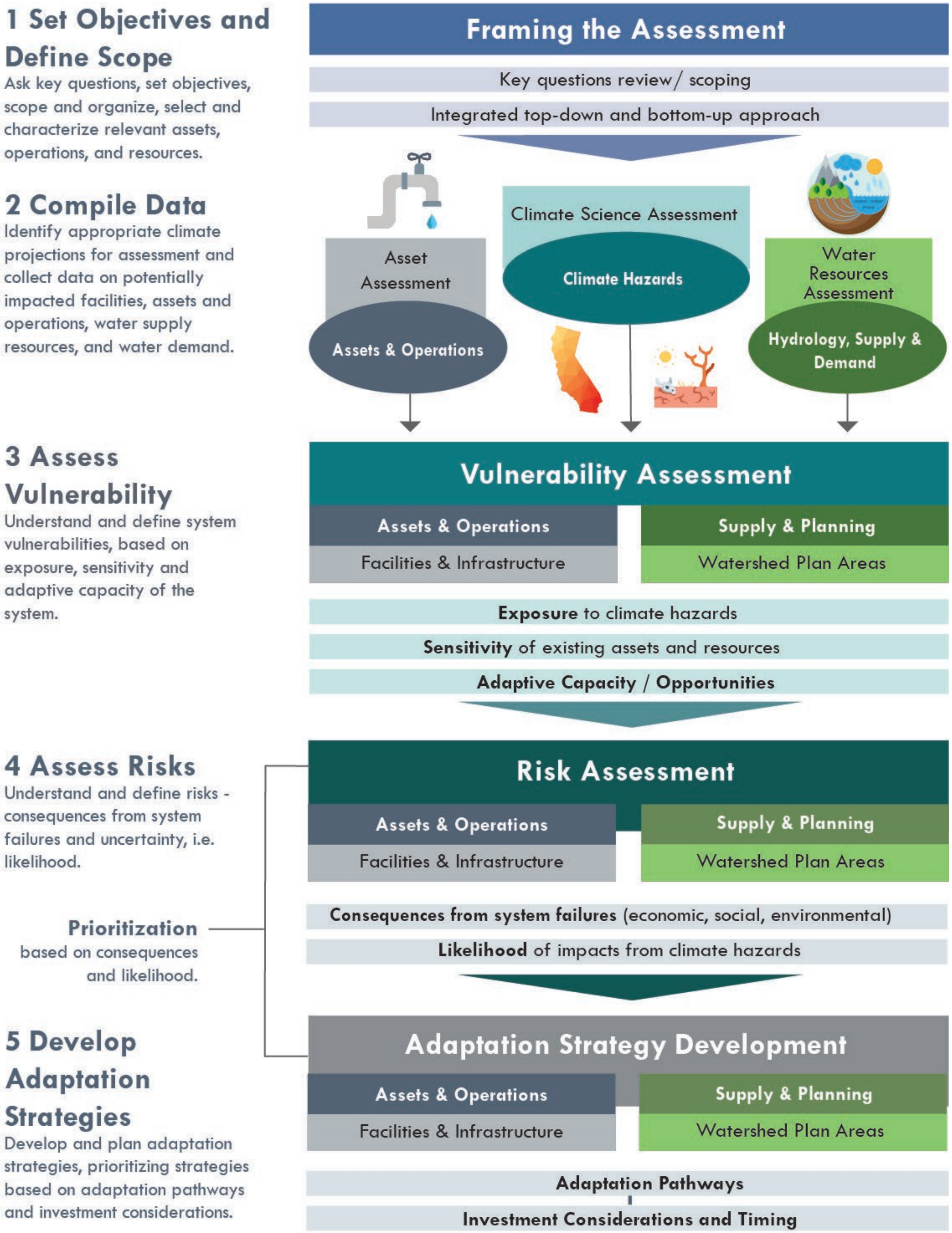
Table 1: Advantages and disadvantages of identified approaches

Identified Approach	Advantages	Disadvantages
Integrated resource-level (i.e., top-down) and asset-level (i.e., bottom-up) approaches to vulnerability assessment	• Allows for matching available information with appropriate methodologies • Supports evaluation of vulnerabilities in both water supply resources and physical systems: an integrated approach can help to address gaps in either area	• Bottom-up approaches can require extensive historical data and asset-level data • Integration of climate projections into hydrological models can be challenging. For example, data inputs for hydrological models and the outputs from climate projections may be incompatible or require additional data processing
Robust Decision-Making	• Supports identification of decisions for response under a range of potential climate futures • Supports alignment between climate impacts and operating units/business functions • Ensures the scope focuses on critical services, assets, and resources • Supports the development of adaptation pathways and measures • Provides a framework for information that can signal the need for critical decisions on adaptation	• Involves significant investment of time to identify performance metrics, business functions, and key variables • Even with significant time invested on the front end, scope can change and require rescoping later in the effort • Requires a strong understanding of utility decision-making
Applying climate projections to hydrologic modeling, future demand and planning scenarios	• Generates better understanding of impacts of extreme scenarios, snowpack loss, drought, increased temperatures, precipitation whiplash, and other hydrologic changes in water supply resources and downstream demands • Allows for modeling of a range of climate scenarios to better account for uncertainties in resource management and climate outcomes • Integrates climate projections with scaled historical time series data	• Can require substantial data, and may introduce bias (due to selected climate scenarios) • It is necessary to identify performance metrics and thresholds related to available climate variables; these can be difficult to identify and thresholds may not exist • Relies on necessary simplifying assumptions to model complex hydrologic systems
Stress testing and scenarios	• Supports management of uncertainty, especially in the absence of data • Allows for understanding of climate impacts on system performance within a risk framework	• Can require refined climate information (e.g. hydrological variables) and detailed asset information • Can require the integration of climate information into hydrological models, which may require

Identified Approach	Advantages	Disadvantages
	• Supports identification of major performance metrics and their potential for failure • Helps in understanding how the severity of impacts varies for facilities, operations, and water supplies under different climate change conditions.	significant data processing to be compatible with one another • Can result in qualitative or directional findings that don't provide straightforward adaptation responses
Engaging staff in climate change vulnerability assessments and adaptation plans	• Provides perspective for setting study parameters • Provides targeted input and data into assessment • Identifies existing data gaps and actions to address gaps • Supports development of institutional capacity for monitoring impacts, adaptation planning, and implementation	• Can be time-consuming for team members attending workshops and interviews; requires a targeted approach to ensure efficiency and that the right data is captured • Requires cross-team coordination that may be outside of "normal" communication pathways, e.g. between engineers and policy specialists
Evaluating costs of inaction	• Helps to prioritize adaptation planning needs • Creates a better understanding of the risks to Cal Water	• Requires scaling information on past costs without clear data on future impacts, creating uncertainties in estimates
Use of Flexible Adaptation Pathways	• Helps to select appropriate timing (including lead time from planning to implementation) and application of adaptation measures • Considers and compares multiple strategies in adaptation planning • Includes triggers that signal when decision-makers should decide on switching to another pathway • Allows for adaptive decisions under uncertainty by integrating points for re-assessing pathway and actions • Considers alternative external developments over time	• Does not provide a fixed timeline for actions • This approach is relatively new and may require coordination with budget cycles and external policy updates, since actions evolve over time • May push decision burden onto future decision-makers who did not develop original pathway

Our team synthesized these identified methodologies, findings, and insights into an overarching approach for characterizing climate vulnerabilities and planning for adaptation at both an asset level and water supply planning level to suit Cal Water's needs in addressing climate change impacts, shown in Figure 1.

Figure 1: Climate Assessment Framework



Source: Silvestrum Climate Associates, October 2020

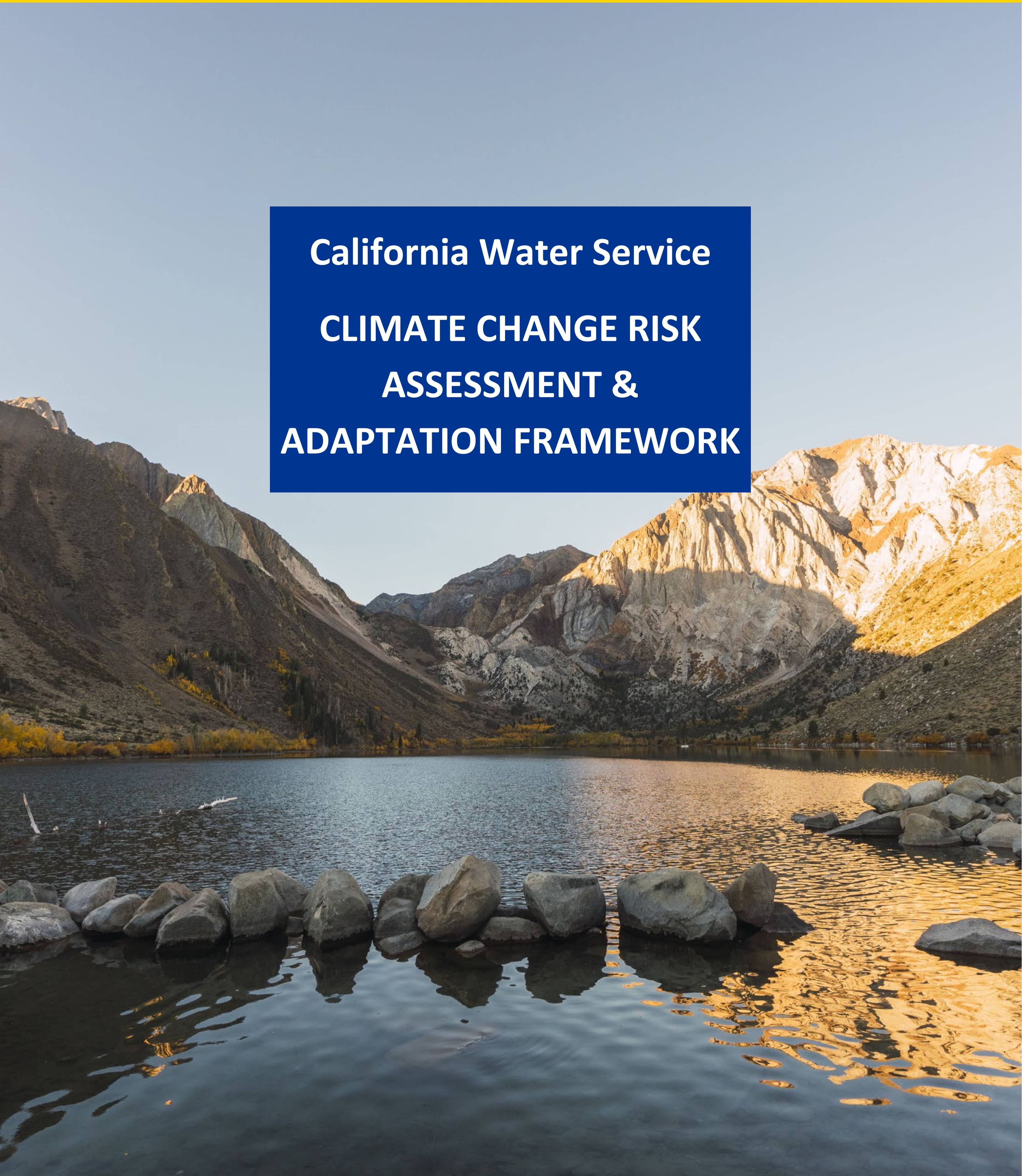
Based on this review, the ICF team is making the following key recommendations for guiding Cal Water's efforts in identifying climate vulnerabilities and planning for adaptation:

- **Apply a standard conceptual framework to vulnerability assessment which integrates both top-down analysis and bottom-up analysis (see Figure 1).** The standard conceptual framework for assessing climate vulnerabilities and risks includes understanding exposure, sensitivity, and adaptive capacity, and potential impacts as components of vulnerability, and consequence and likelihood as components of risk. Top-down analysis would begin by applying downscaled Global Climate Model (GCM) projections to assess impacts on water supply resources and the bottom-up analysis would begin by identifying system sensitivities to climate hazards. These analyses are complementary.
- **Use a robust decision making (RDM) framework for vulnerability assessment and adaptation planning** by seeking to identify decisions for response under a range of potential climate futures, mapping impacts on operating units/business functions, and ensuring that the scope focuses on critical services, assets, and resources. A robust decision-making framing will support the development of adaptation pathways and measures by monitoring information that signals the need for critical decisions on adaptation.
- **Engage staff and key stakeholders in the planning process** to gain a holistic planning perspective for setting study parameters, providing targeted input into assessment and plan development, and supporting institutional capacity for adaptation.
- **Build off of the 2016 Cal Water Climate Change Impact study by applying updated climate models and projections for additional hydrologic variables** to hydrologic modeling, future demand and planning scenarios, and scaled historical time series data to better understand impacts of extremes, precipitation whiplash, and other hydrologic changes in water supply resources. We recommend presentation of this with uniform metrics for more actionable findings.
- **Assess climate impact consequence by stress-testing key water system performance metrics.** This includes developing a range of impact scenarios to understand how the severity of impacts varies for facilities, operations, and water supplies under different climate change conditions.
- **Evaluating the order of magnitude cost of inaction.** We recommend communicating consequences in terms of direct costs to Cal Water and customers without adaptation actions to prioritize adaptation response.
- **Follow a step-by-step, iterative process to adaptive management which fully aligns with potential exposure to climate hazards and vulnerabilities**, including:
    - Utilizing Flexible Adaptation Pathways in planning for selecting appropriate timing and application of adaptation measures
    - Planning for monitoring and evaluation
    - Evaluating adaptation investment decisions

During Phases 2 and 3 in which Cal Water and the ICF team will further assess vulnerability, we will frame the study outputs within a decision-making context for compatibility with adaptation planning concepts and eventual investment in adaptation measures.

California Water Service

CLIMATE CHANGE RISK ASSESSMENT & ADAPTATION FRAMEWORK



December 2021

Summary for Decision Makers

Study Purpose

California Water Service already faces climate risks — wildfire, increasing temperatures, sea level rise, flooding, and drought — and seeks to address these risks by identifying them and taking action. This Study works to (1) identify and prioritize climate-driven risks to Cal Water's supply reliability, operations, and assets and (2) project and assess changes to the supply of and demand for Cal Water resources. This Study is intended to assist in understanding climate change risk across all Cal Water's districts, spanning its future supply and demand as well as its key operations and assets. The report identifies primary risks to Cal Water across the districts as well as top risks to individual districts.

Using this study and the proposed adaptation framework, Cal Water can continuously monitor and address the following types of risks:

- Immediate risks given near-term threat and low risk tolerance
- Actions to take when a trigger is reached (e.g., when information becomes available or there is external opportunity for an adaptation strategy)
- District-specific risks requiring targeted management attention
- Risks to disadvantaged and vulnerable communities

Policy Context for Climate Risk Assessment and Adaptation Planning

Various state agencies are expected to develop requirements on water utilities for incorporating climate change adaptation into their planning and operations including conducting vulnerability assessments as a starting point. These policy frameworks and requirements include:

1. The California Public Utilities Commission (CPUC) Order Instituting Rulemaking (OIR) R.18-04-019 to Consider Strategies and Guidance for Climate Change Adaptation (2020). The statutory deadline for finalizing requirements for Phase II, expected to apply to water utilities, has been extended to December 2022.
2. The California Coastal Commission (CCC) Critical Infrastructure at Risk: Sea Level Rise Planning Guidance for California's Coastal Zone (Draft, November 2021).
3. The California Natural Resources Agency (CNRA) 2021 Climate Adaptation Strategy (Draft, October 2021).
4. The 2020 Water Resilience Portfolio in response to Governor's Executive Order N-10-19.
5. The State Water Resources Control Board's 2017 Comprehensive Response to Climate Change.

6. The Task Force on Climate-Related Financial Disclosures (TCFD) from the Financial Stability Board recommend that organizations to describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term. Furthermore, it recommends that asset managers describe how climate-related risks and opportunities are factored into relevant products or investment strategies.

Summary of Findings of Climate Change Risks

All districts face climate change risks, and all districts face at least 6 of the top identified risks to Cal Water. Factors that affect district vulnerability include groundwater dependency, State Water Project (SWP) dependency, limited supply diversity, and location in coastal or wildfire-prone areas.

Risks to Supply Reliability

Without action, Cal Water may face significant water supply reliability and operational impacts that will challenge its ability to meet the water needs of its customers by mid-century due to changes to State Water Project deliveries, decreasing groundwater recharge, increasing duration, intensity, and frequency of droughts, and increasing outdoor demands.

Annual State Water Project (SWP) deliveries are likely to decrease in average years and the driest years may result in no deliveries. Average climate models project a decrease of 15% while the driest models project an average annual decrease of up to 36%. The Antelope Valley and Livermore districts are at particularly high risk.

Groundwater recharge is expected to decrease in some basins. Up to 20% decrease in average annual groundwater recharge is expected due to decreases in average precipitation, streamflow, and/or water available for managed recharge. Decreased recharge could limit sustainable yield from groundwater basins and lead to supply shortages. The King City and Visalia districts show the greatest average groundwater recharge decline.

Decreased surface water supply availability is expected due to longer, more severe, and more frequent droughts. The driest climate scenarios include megadroughts of 10 to 20+ years in duration, with districts in Southern California more at risk than districts in Northern California. The driest climate models project dry year precipitation decreases of 45 to 70%, with the Antelope Valley, Los Altos, and Livermore districts at the highest risk of large supply availability decreases during the driest years. Central tendency models project that dry year frequency may increase up to 10%. Decreased local and imported surface water supplies could lead to supply shortages.

Outdoor demands will increase due to increased evapotranspiration (ET) and longer, more frequent, and more severe droughts. Increased demands could lead to shortages and/or challenges to operations. The Antelope Valley, Bear Gulch, Chico-Hamilton, and Visalia districts are at particularly high risk of increased demands.

Risks to Operations

Without action, major risks to operations include surface water quality from increasing temperatures and wildfire could further limit the ability to deliver water to customers and significantly increase treatment costs. Wildfire will also continue to threaten Cal Water workforce and operations throughout the century, including disruption of operations due to smoke.

Water quality will decrease due to high temperatures and low rainfall. A 24–36% increase in number of hot days with no precipitation could increase algal blooms, cyanotoxins, sediments, and eutrophication. This may increase water treatment costs and potentially impact supply availability. Multiple districts are at high risk. By mid-century Antelope Valley, Redwood Valley, and Stockton, could experience high impacts.

Water quality will also decrease due to increased wildfire risk and frequency of intense rainfall. Based on downscaled wildfire projections, districts may see an increase of 4–122% over historical averages of annual area burned by wildfire. An increase of 10–12% in extreme precipitation events could alter vegetation cover and infiltration rates, resulting in greater quantities of debris and pollutants that enter waterways after fire events. Post-fire debris flows may also disrupt operations, increase water treatment costs, and reduce water available for distribution. Multiple districts are at particularly high risk. Some districts, such as Oroville, may face higher consequences due to limited supply alternatives.

Worker health and safety will be endangered due to wildfire. A 4–122% increase in wildfire risk could increase the amount of smoke, threatening the safety of outdoor workers. All districts are likely to experience an increase in wildfire risk and are highly vulnerable to experiencing impacts to worker health and safety, including from wildfire smoke.

Natural snowpack storage may decrease due to declining snowpack due to temperature increases. A 17–57% decrease in April 1st snowpack is projected for the watersheds that provide surface water supplies for Cal Water's districts. This decrease in snowpack storage could lead to overall reduced supply and force Cal Water (or reservoir managers) to adjust reservoir storage facilities and operations to adapt to decreased surface flows. All districts are at high risk except those with supply not influenced by snowpack.

Risks to Assets

Without action, riverine and urban flooding poses a serious threat to Cal Water's assets, including pumps and treatment facilities**.** Rising groundwater and sea level rise present a risk to coastal assets, especially pressurized mains. Wildfire will continue to threaten assets, with an increase in areas burned in some districts and surrounding areas.

More frequent and severe riverine and urban flooding can result in service disruption and infrastructure damage due to loss of access to assets, damage to electrical components, long recovery time from disruption, and difficulty in moving or replacing fixed assets**.** Flooding could also occur from urban stormwater runoff. The most vulnerable assets are pumps, intakes, valves, wells, treatment facilities and radio sites. About half of all districts are vulnerable, particularly Chico-Hamilton.

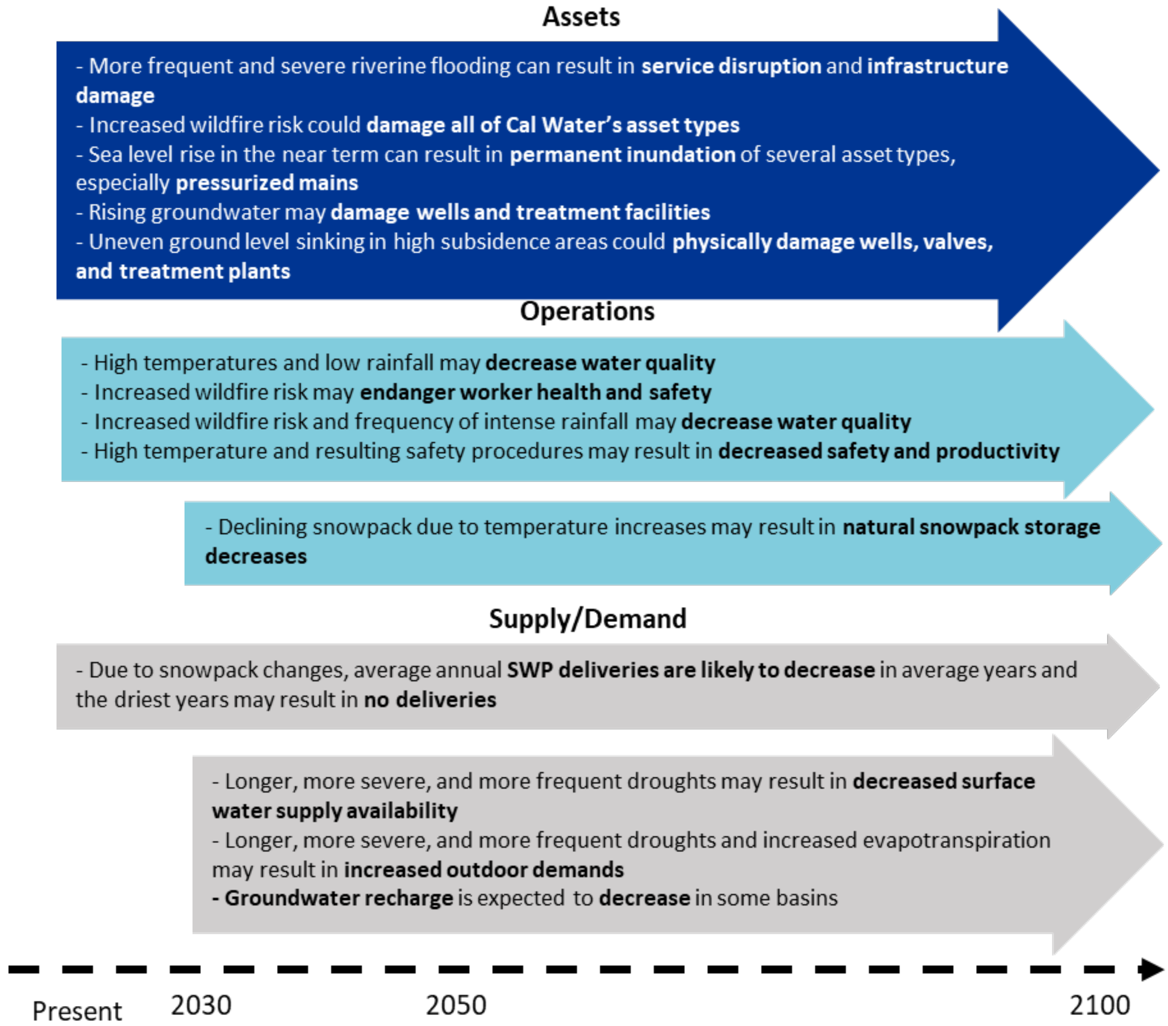
Sea level rise can result in permanent inundation of several asset types, especially pressurized mains. Assets located along low-lying coastal shorelines are most vulnerable to sea level rise. South San Francisco and Hermosa Redondo districts are at particularly high risk.

Rising groundwater due to sea level rise may affect wells and treatment facilities. Sea level rise can flood wells and treatment facilities or cause saltwater intrusion in wells, affecting operations, water quality, or preventing access to facilities. Portions of Redwood Valley, Salinas, South San Francisco, Hermosa Redondo, and Dominguez districts are at particularly high risk.

Increased wildfire risk could affect all of Cal Water's asset types. Cal Water's most vulnerable assets include pressurized mains, radio sites, and treatment facilities, which may see elevated impacts. All districts have assets in CALFIRE threat areas of High and above.

Figure 1 below summarizes climate-related risks over the short, medium, and long term. Across all Cal Water districts, many of these risks are already present, though severity of the risk will differ district by district. District profiles accompanying this report identify those risks by district.

Figure 1: Summary of climate-related risks to Cal Water over the short, medium, and long term. Timing of risks will differ by district.



Addressing Priority Risks

An adaptation framework is provided to assist Cal Water in incorporating the outcomes of this study into further analysis of investment decision making over time.

The primary steps of the adaptation framework are summarized below in Figure 2.

Figure 2: The Adaptation Framework follows 8 steps and is an iterative process for adaptation planning

Identify Issues

- **Step 1.** Following risk assessment, prioritize among risks.
- **Step 2.** Refine understanding of the priorty risks that Cal Water seeks to address.

Develop Responses

- **Step 3.** Determine willingness to accept risk to determine need for new management strategies (adaptation measures).
- **Step 4.** Identify adaptation options for risks that require new management strategies.

Evaluate Responses

- **Step 5.** Evaluate timing of adaptation options using an *adaptation pathways* approach.
- **Step 6.** Evaluate effectiveness of adaptation options using stress tests.

Advance Options & Reassess Risk

- **Step 7.** Plan for investment in near-term actions identified in the adaptation pathway
- **Step 8.** Reassess risks to Cal Water and Cal Water's risk tolerance to any newly identified risks or non-priority risks.

The departments primarily affected by climate risks include Water Resource Sustainability; Water Quality; Operations; and Engineering. District Management will be affected by vulnerabilities in those districts (see Climate District Profiles available for each district).

Cal Water will need to address vulnerabilities exacerbated by climate change to prepare its systems for continued operation and to continue to meet established level of service goals. Changing climate conditions may change the historical balance between supply and demand and increase management requirements of assets and operations. Adaptation options should be developed and evaluated for major identified risks. Given that supply availability is dictated by many factors outside of Cal Water's control, it may be important for Cal Water to seek adaptation measures in collaboration with wholesalers and local and federal water management agencies.

Appendix F: Water Shortage Contingency Plan

PUBLIC REVIEW DRAFT

Water Shortage Contingency Plan 2025

Redwood Valley District

May 2026

Chapter 1
Introduction

☑ ***CWC § 10640***

(a) Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630). The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

(b) Every urban water supplier required to prepare a water shortage contingency plan shall prepare a water shortage contingency plan pursuant to Section 10632. The supplier shall likewise periodically review the water shortage contingency plan as required by paragraph (10) of subdivision (a) of Section 10632 and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

☑ ***CWC § 10632.3***

It is the intent of the Legislature that, upon proclamation by the Governor of a state of emergency under the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code) based on drought conditions, the board defer to implementation of locally adopted water shortage contingency plans to the extent practicable.

This document describes the Water Shortage Contingency Plan (WSCP) for the California Water Service (Cal Water) Redwood Valley District (also referred to as the “District”). The WSCP includes the levels of response to a water shortage caused by drought or by supply interruptions caused by infrastructure failure, regulatory mandate, or catastrophic human-caused or natural events. The primary objective of the WSCP is to ensure that the District 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.

Specifically, this WSCP includes the following chapters:

Chapter 1 - Introduction

Chapter 2 - Water Supply Reliability Analysis

Chapter 3 - Annual Water Supply and Demand Assessment Procedures

Chapter 4 - Water Shortage Levels

Chapter 5 - Shortage Response Actions

Chapter 6 - Communication Protocols

Chapter 7 - Compliance and Enforcement

Chapter 8 - Legal Authorities

Chapter 9 - Financial Consequences of WSCP

Chapter 2
Water Supply Reliability Analysis

☑ ***CWC § 10632 (a) (1)*** *The analysis of water supply reliability conducted pursuant to Section 10635.*

As described in Chapter 6 of the Redwood Valley District's 2025 Urban Water Management Plan (UWMP or Plan), the source of water supply for the District is a combination of groundwater and purchased water. Each Public Water System (PWS) within the District relies on its own distinct and dedicated water source. These supplies are not physically interconnected and therefore cannot be mixed, shared, or reallocated amongst the individual Public Water Systems (PWSs); however, given that each PWS is internally whole (i.e., supplies and demand are balanced within each discrete system and not dependent on inter-system transfers), the District is evaluated at an aggregate level for the purposes of the Plan. The sole source of supply for each PWS is as follows:

- The source of supply for the Lucerne PWS is untreated local surface water purchased water from the Yolo Flood Control and Water Conservation District (FCWCD).
- The source of supply for the Rancho del Paradiso PWS is purchased water from the Sweetwater Springs Water District (SSWD).
- The source of supply for the Armstrong Valley PWS is groundwater pumped from the Lower Russian River Valley Basin (DWR Basin No. 3-004.02).
- The source of supply for the Noel Heights PWS is groundwater pumped from the Lower Russian River Valley Basin (DWR Basin No. 3-004.02).
- The source of supply for the Coast Springs PWS is groundwater pumped from the Sand Point Area Basin (DWR Basin No. 2-027).
- The Hawkins PWS pumps groundwater from the Santa Rosa Plain Subbasin (DWR Basin No. 1-055.01).

The basins are not adjudicated and are not in a condition of critical overdraft.[1]

Chapter 7 of the District's 2025 UWMP demonstrates that the supplies available to the District are considered reliable in extended drought conditions, and are expected to continue to be sufficient to meet projected District demands in all hydrologic conditions evaluated, including an extended five-year drought period. Although water shortage conditions are not expected to arise due to drought, this WSCP addresses potential water shortage conditions resulting from any

[1] DWR, 2019. Sustainable Groundwater Management Act 2018 Basin Prioritization, State of California, dated January 2019.

cause (e.g., droughts, impacted distribution system infrastructure, regulatory-imposed shortage restrictions, catastrophic events, etc.).

Under the Sustainable Groundwater Management Act (SGMA), Groundwater Sustainability Agencies (GSAs) have the authority to implement projects and management actions (P/MAs) that help basins reach their sustainability goal. As described in Chapter 6 of the District's 2025 UWMP, the District falls within the jurisdiction of the Santa Rosa Plain GSA, whose Groundwater Sustainability Plan (GSP) includes various P/MAs. These P/MAs do not include any immediately planned groundwater pumping allocations, pumping fees, or other provisions which would be expected to impact the availability of groundwater supply to the District. If such actions are adopted in the future, Cal Water will consider them as a part of its future supply planning efforts.

Chapter 3
Annual Water Supply and Demand Assessment Procedures

☑ ***CWC § 10632 (a) (2)***

The procedures used in conducting an annual water supply and demand assessment that include, at a minimum, both of the following:

(A) The written decision-making process that an urban water supplier will use each year to determine its water supply reliability.

(B) The key data inputs and assessment methodology used to evaluate the urban water supplier's water supply reliability for the current year and one dry year, including all of the following:

(i) Current year unconstrained demand, considering weather, growth, and other influencing factors, such as policies to manage current supplies to meet demand objectives in future years, as applicable.

(ii) Current year available supply, considering hydrological and regulatory conditions in the current year and one dry year. The annual supply and demand assessment may consider more than one dry year solely at the discretion of the urban water supplier.

(iii) Existing infrastructure capabilities and plausible constraints.

(iv) A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual water supply and demand assessment.

(v) A description and quantification of each source of water supply.

☑ ***CWC § 10632.1***

An urban water supplier shall conduct an annual water supply and demand assessment pursuant to subdivision (a) of Section 10632 and, on or before July 1 of each year, submit an annual water shortage assessment report to the department with information for anticipated shortage, triggered shortage response actions, compliance and enforcement actions, and communication actions consistent with the supplier's water shortage contingency plan. An urban water supplier that relies on imported water from the State Water Project or the Bureau of Reclamation shall submit its annual water supply and demand assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later.

☑ ***CWC § 10632.2***

An urban water supplier shall follow, where feasible and appropriate, the prescribed procedures and implement determined shortage response actions in its water shortage contingency plan, as identified in subdivision (a) of Section 10632, or reasonable alternative actions, provided that descriptions of the alternative actions are submitted with the annual water shortage assessment report pursuant to Section 10632.1. Nothing in this section prohibits an urban water supplier from taking actions not specified in its water shortage contingency plan, if needed, without having to formally amend its urban water management plan or water shortage contingency plan.

On an annual basis, the District will conduct an Annual Water Supply and Demand Assessment (AWSDA) to identify whether there is likely to be a water shortage condition in the coming year, assuming it is dry. Each element of the AWSDA is described below.

1. Evaluation Criteria

The Evaluation Criteria that will be used to identify whether the District is likely to experience a water shortage in the coming year include:

a. **Purchased Water Available Supply -** Because the District purchases potable water from SSWD and untreated local surface water from Yolo County FCWCD for its Rancho del Paradiso PWS and Lucerne PWS, respectively, the evaluation of District supplies for a particular year will be based largely on information provided by SSWD and Yolo County FCWCD.

    i. Should the District not receive information from either SSWD or Yolo County FCWCD by June 1st, the District will assume supply availability in line with prior recent drought year availability.

b. **Supply Well Operational Constraints -** A comparison of groundwater level elevations to well operational depths to identify the need to: (1) lower pump depths and (2) site and drill additional supply wells.

c. **Treatment and Distribution System Constraints -** An assessment of the probabilities of facility and infrastructure outages and the degree to which they could limit Cal Water's ability to access, convey, or treat adequate supplies, including any planned maintenance or capital improvements over the next year that could affect its ability to provide sufficient supply to meet demands.

d. **Local Regulatory Conditions -** Evaluation of (1) any new GSA policies (e.g., pumping allocations) or sustainability criteria that could trigger a change in the groundwater volume available for pumping, and (2) any new limitations on well permitting that could limit the ability to deepen existing supply wells or drill new supply wells.

e. **State Regulatory Conditions -** Evaluation of any state-mandated drought or water use restrictions.

In the Spring prior to the submittal date, these Evaluation Criteria will be assessed by Cal Water staff, including District staff with detailed knowledge of District operations, well conditions, and local GSA activities. The data used to support the AWSDA may include, but are not limited to, supply capacity, supply and pump capacity, firm capacities, tank storage capacity, groundwater level measurements, water quality system demand, and zone demand.

2. Water Supply

As described above, the District obtains its supplies from purchased water from SSWD (Rancho del Paradiso PWS) and untreated local surface water purchased from Yolo County FCWCD (Lucerne PWS) and pumped groundwater from the Sand Point Area Basin

(Coast Springs PWS), the Lower Russian River Valley Basin (Noel Heights PWS and , and the Santa Rosa Plan Subbasin of the Santa Rosa Valley Basin (Hawkins PWS). As discussed in Chapter 7 of the District's 2025 UWMP, these supplies are projected to be sufficient to serve future demands. The only identified potential constraints on water supply are the operational limitations and potential local regulatory conditions identified in the Evaluation Criteria above.

3. Unconstrained Customer Demand

   The demand forecast described in Chapter 4 of the District's 2025 UWMP yields the anticipated annual unconstrained water demand, (i.e. the expected water use in the absence of shortage-caused reductions in water use) to support the AWSDA. During a drought cycle, unconstrained demand typically increases due to higher-than-normal air temperatures and lower-than-normal precipitation. The supply reliability analysis and Drought Risk Assessment presented in Chapter 7 of the District's 2025 UWMP accounts for this anticipated shift in unconstrained water demand, and as discussed above, even with these increases in demand, the available supply (i.e., purchased water and groundwater) is expected to be sufficient to meet these demands.

4. Planned Water Use for Current Year Considering Dry Subsequent Year

   Cal Water will evaluate the anticipated supplies for the current year, assuming that the following year will be dry, as defined above, using the identified Evaluation Criteria. Barring changes in supply availability per the Evaluation Criteria, the assumed dry subsequent year is not expected to affect the manner in which Cal Water will utilize its available supplies basin in the current year, and the planned water use for the current year will equal the unconstrained demand.

5. Infrastructure Considerations

   As part of its triennial General Rate Case applications to the California Public Utilities Commission (CPUC), Cal Water prepares a Supply-Demand Analysis (CPUC SD Analysis) for each of its districts. The CPUC SD Analysis is an inventory of water production and pump assets that provide direct and indirect sources of supply to meet customer demands in accordance with CPUC General Order 103-A and California Code of Regulations (CCR) Title 22 Waterworks Standards. This CPUC SD Analysis is based on a combination of regulatory requirements, professional consultant recommendations, and industry standard practices, including those from the American Water Works Association (AWWA) and American Society of Civil Engineers (ASCE). It identifies specific vulnerabilities in different pressure zones within the system and evaluates the system against performance criteria that meet regulatory requirements and ensure operationally adequate levels of service.

This analysis will guide Cal Water's evaluation of operational treatment/distribution constraints that could potentially limit the availability of supplies. This evaluation of supply well operational constraints and treatment and distribution constraints will assess potential impacts on supply availability or related factors (e.g., mandated demand reductions). If such constraints are identified, Cal Water will develop a plan to address these constraints, mitigate potential effects, and implement the appropriate water Shortage Level of action per Chapter 5, below.

6. Other Factors

   As identified under the Evaluation Criteria above, local regulatory conditions could potentially limit the availability of supplies. Therefore, Cal Water will evaluate the development of new regulatory constraints in the Spring of each year and assess their potential impacts on supply availability or related factors (e.g., mandated demand reductions). If such constraints are identified, Cal Water will develop a plan to address these constraints and mitigate potential effects and implement the appropriate water Shortage Level of action per Chapter 5, below.

Consistent with California Water Code (CWC) § 10632.1, Cal Water will complete and submit an AWSDA to DWR by July 1st of each year.

Chapter 4
Water Shortage Levels

☑ ***CWC § 10632 (a) (3)***

(A) Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage. Urban water suppliers shall define these shortage levels based on the suppliers' water supply conditions, including percentage reductions in water supply, changes in groundwater levels, changes in surface elevation or level of subsidence, or other changes in hydrological or other local conditions indicative of the water supply available for use. Shortage levels shall also apply to catastrophic interruption of water supplies, including, but not limited to, a regional power outage, an earthquake, and other potential emergency events.

(B) An urban water supplier with an existing water shortage contingency plan that uses different water shortage levels may comply with the requirement in subparagraph (A) by developing and including a cross-reference relating its existing categories to the six standard water shortage levels.

Consistent with the requirements of CWC § 10632(a)(3), this WSCP is based on the six Shortage Levels shown in **Table 4-1**. These Shortage Levels are intended to address shortages caused by any condition, including the catastrophic interruption of water supplies.

Table 4-1. Water Shortage Contingency Plan Levels (DWR Table 8-1)

☒	Check the box if the Supplier uses the Standard six levels of water shortage.		
Standard Shortage Levels	**Percent Shortage Range**	**Suppliers Shortage Levels**	**Percent Shortage Range**
1	Up to 10%		
2	Up to 20%		
3	Up to 30%		
4	Up to 40%		
5	Up to 50%		
6	>50%		
NOTES:			

Shortage response actions for each of these Shortage Levels are identified and discussed in Chapter 5.

Chapter 5
Shortage Response Actions

☑ ***CWC § 10632 (a) (4)***

Shortage response actions that align with the defined shortage levels and include, at a minimum, all of the following:

(A) Locally appropriate supply augmentation actions.

(B) Locally appropriate demand reduction actions to adequately respond to shortages.

(C) Locally appropriate operational changes.

(D) Additional, mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions.

(E) For each action, an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

☑ ***CWC § 10632 (b)***

For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

This chapter describes the response actions Cal Water will take to deal with the shortages associated with each of the six Shortage Levels enumerated in Chapter 4. As discussed above, the existing District supplies are expected to be able to serve 100% of future demands under all hydrologic conditions evaluated. However, inasmuch as Cal Water may have to implement shortage response actions to comply with state mandates or local regulatory changes, or respond to catastrophic events, it is important to carefully identify and describe the anticipated necessary actions.

5.1 Demand Reduction

The combinations of demand-reduction actions required to resolve the shortages associated with each of the six Shortage Levels are based on Cal Water's experience in dealing with past drought-related shortages and also include other actions deemed appropriate to achieve the required demand reductions. In order to evaluate and ensure that the right actions would be implemented with the proper level of intensity, Cal Water employed the Drought Response Tool (DRT), an Excel spreadsheet model developed by EKI Environment and Water, Inc. (EKI).

The DRT provides a quantitative framework that allows Cal Water to systematically estimate the monthly and cumulative annual demand reductions expected to result from particular combinations of drought response actions and associated implementation rates. Data inputs to the DRT include total production, sector-specific water use, population, and assumptions regarding the split between indoor and outdoor water use for each customer sector (class).

For each drought response action, the user specifies:

- The customer class(es) and end use(s) that are affected;
- The percent savings for those end use(s) for each account that implements the action based on evaluations reported in the literature, or where such studies are not available, on best estimates based on Cal Water experience; and
- The percentage of accounts assumed to implement the action, which is presumed to be the result of the intensity level of Cal Water program implementation, including but not limited to marketing and enforcement activities.

Based on the foregoing inputs, the DRT calculates the resulting monthly savings. Cal Water adjusted the combination of actions and implementation levels to achieve the targeted savings levels at each of the six Shortage Levels.

In order to evaluate the robustness of the DRT, Cal Water modeled the actions implemented during the height of the last drought for a subset of its districts, and found that the modeled water shortage reductions were generally consistent with the observed responses. In short, the DRT is a robust, transparent tool that can be used to tie a particular set of shortage-response actions to an expected reduction in demand.

For each of the Shortage Levels, the modeling targeted the maximum demand reduction, ergo:

- 10% for Shortage Level 1,
- 20% for Shortage Level 2,
- 30% for Shortage Level 3,
- 40% for Shortage Level 4,
- 50% for Shortage Level 5, and
- 60% for Shortage Level 6.

The key DRT inputs and outputs for each of the six water shortage levels are reproduced in **Attachment A**.

shows the water shortage reduction actions, savings assumptions, and implementation rates that are required for the District to achieve the targeted annual demand reductions for each of the Shortage Levels. At each Shortage Level, there are two types of demand-reduction actions identified:

- Restrictions on customer water usage; and,
- Consumption reduction actions by Cal Water to encourage decreased water usage.

The total demand reductions are governed by is a set of user-specified constraints to ensure that usage levels do not endanger health and safety or result in unacceptable economic impacts. The

DRT will not permit estimated usage reductions to violate these constraints, regardless of the demand reduction actions selected. For most districts, including the Redwood Valley District, the following default constraints are used:

- A minimum residential indoor per capita daily usage of 25 gallons,
- A maximum residential outdoor usage reduction of 100%,
- A maximum Commercial, industrial, and institutional (CII) indoor usage reduction of 30%, and
- A maximum CII outdoor usage reduction of 100%.

Many actions are implemented across a number of Shortage Levels, some at increasing implementation levels. Therefore, the actions are listed as a row under the first Shortage Level at which they are implemented, and the implementation rate is shown under each Shortage Level column heading at the right. The unit savings represent a percentage savings of the end uses indicated in the table.

Because of the DRT logic described above, the format of **Table 5-1** differs from that of the default DWR table.

5.1.1 Defining Water Features

☑ ***CWC § 10632 (b)***

For purposes of developing the water shortage contingency plan pursuant to subdivision (a), an urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.

As required by CWC §10632, Cal Water distinguishes between “decorative water features” such as ponds, lakes, and fountains that are artificially supplied with water and “recreational water features” such as swimming pools and spas. Prohibitions on water use for decorative water features are listed separately from those for recreational water features (see **Table 5-1**).

Table 5-1. Demand Reduction Actions to Achieve Required Savings (DWR Table 8-3)

Water Shortage Response Action	End Use(s)	End Use Savings	Implementation by Shortage Level						Penalty, Charge, or Other Enforcement?
			1	2	3	4	5	6	
Shortage Level 1: Minimal Shortage									
Water Use Restriction (a)									
Landscape - Limit landscape irrigation to specific times	Irrigation	**10%**	80%						Yes
Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Leaks	**100%**	40%	75%	75%	75%	75%	75%	Yes
Landscape - Restrict or prohibit runoff from landscape irrigation	Irrigation	**3%**	50%	75%	75%	75%	75%	75%	Yes
Prohibit application of potable water to outdoor landscapes within 48 hours of measurable rainfall (*Landscape - Other landscape restriction or prohibition*)	Irrigation	**20%**	50%	75%	75%	75%	100%		Yes
Other - Prohibit use of potable water for washing hard surfaces	Misc. Outdoor	**17%**	50%	75%	75%	75%	75%	75%	Yes
Other - Require automatic shut-off hoses (*Other - Require automatic shut of hoses*)	Misc. Outdoor	**17%**	50%	75%	75%	75%	75%	75%	Yes
CII - Lodging establishments must offer opt out of linen service	Fixtures & Appliances	**0.5%**	50%	75%	75%	75%	75%	75%	Yes
CII - Restaurants may only serve water upon request	Fixtures & Appliances	**0.5%**	75%	75%	75%	75%	75%	75%	Yes

Water Shortage Response Action	End Use(s)	End Use Savings	Implementation by Shortage Level						Penalty, Charge, or Other Enforcement?
			1	2	3	4	5	6	
No watering of landscape of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission, the Department of Housing and Community Development, or other State agency (*Landscape - Other landscape restriction or prohibition*)	Irrigation	**50%**	0.00%	0.00%	0.00%	0.00%	0.00%		Yes
Prohibit Potable Water Use for Decorative Water Features that do not Recirculate Water (*Water Features - Restrict water use for decorative water features, such as fountains*)	Misc. Outdoor	**50%**	50%	75%	75%	75%	75%	75%	Yes
Consumption Reduction									
Expand Public Information Campaign	All	**0.5%**	50%	75%	75%	75%	75%	75%	No
Water Bill Inserts *(Improve Customer Billing)*	All	**0.5%**	100%	100%	100%	100%	100%	100%	No
Promote online water waste reporting *(Expand Public Information Campaign)*	All	**10%**	0.1%	0.4%	0.4%	0.4%	0.5%	0.5%	No
Expand Rebates or Giveaways of Plumbing Fixtures and Devices *(Provide Rebates or Giveaways of Plumbing Fixtures and Devices)*	All	**10%**	1%	3%	3%	4%	4%	5%	No
Expand Rebates for Landscape Irrigation Efficiency (*Provide Rebates for Landscape Irrigation Efficiency*)	All	**10%**	1%	3%	3%	4%	4%	5%	No

Water Shortage Response Action	End Use(s)	End Use Savings	Implementation by Shortage Level						Penalty, Charge, or Other Enforcement?
			1	2	3	4	5	6	
Offer CII Water Use Surveys *(Offer Water Use Surveys)*	All CII uses	**5%**	1%	4%	4%	4%	4%	4%	No
Offer Res Water Use Surveys *(Offer Water Use Surveys)*	All Residential Uses	**5%**	1%	4%	4%	4%	4%	4%	No
Shortage Level 2: Moderate Shortage									
Restrictions									
Landscape - Limit landscape irrigation to specific days	Irrigation	**15%-79%** (b)		100%	15%	20%	40%		Yes
Prohibit the use of non-recirculating systems in all new conveyer car wash and commercial laundry systems (*Other)*	Fixtures & Appliances	**50%**		See note (c)	See note (c)	See note (c)	See note (c)	See note (c)	Yes
Consumption Reduction									
Water Efficiency Workshops, Public Events *(Other)*	All Residential Uses	**5%**		70%	70%	70%	70%	75%	No
Shortage Level 3: Severe Shortage									
Restrictions									
Other - Prohibit use of potable water for construction and dust control	Misc. Outdoor	**100%**			1%	1%	1%	1%	Yes
Prohibit use of potable water for street washing (*Other - Prohibit use of potable water for washing hard surfaces*)	Misc. Outdoor	**100%**			1%	1%	1%	1%	Yes

Water Shortage Response Action	End Use(s)	End Use Savings	Implementation by Shortage Level						Penalty, Charge, or Other Enforcement?
			1	2	3	4	5	6	
Prohibit Filling Ornamental Lakes or Ponds (*Water Features - Restrict water use for decorative water features, such as fountains*) (*Other water feature or swimming pool restriction*)	Misc. Outdoor	**100%**			1%	1%	1%	1%	Yes
Consumption Reduction									
Home or Mobile Water Use Reports (*Expand Public Information Campaign*)	All	**5%**			15%	50%	50%	50%	No
Decrease Frequency and Length of Line Flushing (*Decrease Line Flushing*)	Non Revenue Water	**25%**			50%	50%	50%	50%	No
Reduce System Water Loss	Non Revenue Water	**100%**			10%	10%	10%	30%	No
Increase Water Waste Patrols/Enforcement (*Increase Water Waste Patrols*)	All	**10%**			1%	2%	4%	5%	No
Implement Drought Rate Structure and Customer Water Budgets (Res) (*Implement or Modify Drought Rate Structure or Surcharge*)	All Residential Uses	**30%-60%** [c]			15%	35%	45%	75%	Yes
Implement Drought Rate Structure and Customer Water Budgets (CII) (*Implement or Modify Drought Rate Structure or Surcharge*)	All CII uses	**10%-30%** [d]			10%	35%	45%	75%	Yes

Water Shortage Response Action	End Use(s)	End Use Savings	Implementation by Shortage Level						Penalty, Charge, or Other Enforcement?
			1	2	3	4	5	6	
Shortage Level 4: Critical Shortage									
Water Use Restrictions									
Prohibit vehicle washing except with recirculated water or low-volume systems (*Other - Prohibit vehicle washing except at facilities using recycled or recirculating water*)	Misc. Outdoor	**10%**				50%	50%	50%	Yes
Prohibit use of water for recreational purposes such as water parks and the filling of pools (*Other water feature or swimming pool restriction*)	Misc. Outdoor	**100%**				1%	1%	1%	Yes
Shortage Level 5: Emergency Shortage									
Water Use Restrictions									
Require net zero demand increase on new water service connections (*Moratorium or Net Zero Demand Increase on New Connections*)	All	**100%**					0.00%	0.00%	Yes
Prohibit single-pass cooling systems (*Other*)	Cooling	**50%**					20%	20%	Yes
Consumption Reduction Actions									
Require Pool Covers (*Pools and Spas - Require covers for pools and spas*)	Misc. Outdoor	**28%**					10%	10%	Yes

Water Shortage Response Action	End Use(s)	End Use Savings	Implementation by Shortage Level						Penalty, Charge, or Other Enforcement?
			1	2	3	4	5	6	
Shortage Level 6: Extreme Shortage									
Water Use Restrictions									
Moratorium on new water service connections (*Moratorium or Net Zero Demand Increase on New Connections*)	All	**100%**						0.00%	Yes
Landscape - Prohibit all landscape irrigation	Irrigation	**100%**						50%	Yes
Cumulative Annual Savings			**10%**	**20%**	**30%**	**40%**	**50%**	**60%**	

Notes:

(a) In certain cases water use restrictions and consumption reduction actions implemented by Cal Water are not specifically called out in DWR's provided demand reduction actions list. The appropriate DWR provided demand reduction action is included in italics in parenthesis.
(b) Watering restricted to no more than 3 days/week in Shortage Level 2 and Shortage Level 3; no more than 2 days/week in Shortage Level 4; no more than 1 day/week in Shortage Level 5.
(c) Implementation rates are not currently well understood and are therefore not presented. These rates will be evaluated through additional study of this water use restriction.
(d) Residential water budgets of up to 30% for Shortage Level 3, up to 40% for Shortage Level 4, up to 50% for Shortage Level 5, up to 60% for Shortage Level 6.
(e) CII water budgets of up to 10% for Shortage Level 3, up to 20% for Shortage Level 4, up to 30% for Shortage Levels 5 and 6.

5.2 Supply Augmentation

As indicated in **Table 5-2**, Cal Water has not identified any specific supply augmentation actions to assist in resolving future District water shortages but are currently assessing potential options. As identified in Chapter 3, Cal Water may consider drilling new wells if necessary due to declining groundwater levels. However, Cal Water considers these actions to be operational changes (described in Section 5.3), rather than accessing a new supply source.

Table 5-2. Supply Augmentation and Other Actions (DWR Table 8-3)

☒	Is the Supplier completing this table using the standard six levels? (yes/no)			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap?		Additional Explanation or Reference (OPTIONAL)
		Volume or Percentage	Shortage Gap Reduction Value AF	
See note (a)	See note (a)	See note (a)	See note (a)	See note (a)

NOTES:
(a) Cal Water evaluates water supply augmentation projects on an on-going basis. At this time, Cal Water does not have supply augmentation projects planned specifically to address water shortage conditions.

5.3 Operational Changes

As discussed above in Chapter 3, the primary operational change that Cal Water will consider in the District is extracting groundwater from new wells in the Armstrong Valley PWS, Hawkins PWS, Noel Heights PWS, and Coast Springs PWS following identification of this need as part of the AWSDA or related processes. The District may consider, as needed, purchasing additional supplies from SSWD in the Rancho del Paradiso PWS and/or untreated local surface water from Yolo County FCWCD in the Lucerne PWS. As identified in **Table 5-1**, the District will decrease the frequency and length of line flushing under Shortage Level 3 and beyond. The District will also evaluate the potential benefits of altering other maintenance cycles and expediting infrastructure repairs to improve system efficiency, to the extent feasible.

In addition, Cal Water is actively participating in the implementation of the Basin GSP, and will make operational changes as necessary to support SGMA compliance.

5.4 Mandatory Restrictions

The water shortage response actions included in include a variety of mandatory customer water use restrictions that will be necessary to achieve the targeted demand reductions for the different Shortage Levels. The types of restrictions and the manner and degree of enforcement for these restrictions vary by Shortage Level, and are discussed in Chapter 7.

5.5 Emergency Response Plan

Cal Water has an Emergency Response Plan (ERP) in place that coordinates the overall response to a disaster within the District.

The ERP addresses Cal Water's responsibilities in emergencies associated with natural disaster, human-caused emergencies, and technological incidents. It provides a framework for coordination of response and recovery efforts within Cal Water in cooperation with local, state, and federal agencies, as well as other public and private organizations. The ERP establishes an emergency organization to direct and control operations during a period of emergency by assigning responsibilities to specific personnel.

The ERP does the following:

- It conforms to the State mandated Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS), and it effectively structures emergency response at all levels in compliance with the Incident Command System (ICS).
- It establishes response policies and procedures, while providing Cal Water clear guidance related to emergency planning.
- It describes and details procedural steps necessary to protect lives and property.
- It outlines coordination requirements.
- It provides a basis for unified training and response exercises to ensure compliance.

The District has installed backup power generators at many of its booster sites and pump storage sites that can be operated in the event of a system wide power outage. A complete loss of power has never been experienced, but the generators have been used in the past to overcome localized outages.

The District currently does not have interties, emergency or otherwise, with any other agencies as described in Section 6.7.3 of the District's 2025 UWMP.

5.6 Seismic Risk Assessment and Mitigation Plan

☑ ***CWC § 10632.5***

(a) In addition to the requirements of paragraph (3) of subdivision (a) of Section 10632, beginning January 1, 2020, the plan shall include a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities.

(b) An urban water supplier shall update the seismic risk assessment and mitigation plan when updating its urban water management plan as required by Section 10621.

(c) An urban water supplier may comply with this section by submitting, pursuant to Section 10644, a copy of the most recent adopted local hazard mitigation plan or multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multihazard mitigation plan addresses seismic risk.

Cal Water's ERP includes information on various hazards and a related fault map overlying the District. The Hazard Mitigation Plans for Lake County, Marin County, and Sonoma County, which include additional discussion of area earthquake risk and mitigation, can be found at:

- Lake County: https://www.lakecountyca.gov/1383/Multi-Jurisdictional-Hazard-Mitigation-P
- Marin County: https://publicworks.marincounty.gov/documents/marin-county-operational-area-multi-jurisdictional-hazard-mitigation-plan-2023/
- Sonoma County: https://permitsonoma.org/hazard-mitigation

5.7 Shortage Response Action Effectiveness

above shows the effectiveness of the specific demand-reduction actions and implementation levels necessary for the district to achieve the targeted savings for each water Shortage Level. The bottom row indicates the total annual cumulative savings expected to be reached at each water Shortage Level. Additional details, including anticipated savings on a month-by-month basis are provided in the DRT model inputs and outputs included in **Attachment A**.

Chapter 6
Communication Protocols

☑ ***CWC § 10632 (a) (5)***

Communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding, at a minimum, all of the following:

(A) Any current or predicted shortages as determined by the annual water supply and demand assessment described pursuant to Section 10632.1.

(B) Any shortage response actions triggered or anticipated to be triggered by the annual water supply and demand assessment described pursuant to Section 10632.1.

(C) Any other relevant communications.

Cal Water intends to escalate communication to customers and stakeholders, as needed, throughout any water shortage situation to help ensure they are aware of current conditions, any water use restrictions that are in effect, and the many ways Cal Water can help them reduce their water use. Cal Water's outreach efforts may include multiple channels, including bill messages, bill inserts, direct mail, email, letters, social media, print, radio, music streaming services, TV, over-the-top media, movie theatre advertising, and group presentations.

These efforts will expand on current Cal Water outreach efforts and will be customized to the needs at the time of the shortage to ensure a proper channel mix so that the maximum audience is reached as efficiently as possible.

Chapter 7
Compliance and Enforcement

☑ ***CWC § 10632 (a) (6)*** *For an urban retail water supplier, customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions as determined pursuant to Section 10632.2.*

Schedule 14.1 includes specific Enforcement provisions that take effect upon activation. When Schedule 14.1 is activated, its Enforcement section supersedes the Enforcement provisions in Rule 14.1, and enforcement of the applicable requirements will be administered in accordance with the enforcement procedures described in Schedule 14.1 for the period it remains in effect.

7.1 Water Use Restrictions

In accordance with Rule 14.1, Cal Water is currently authorized to take the following actions to enforce the water use restrictions:

First Violation: Cal Water shall provide the customer with a written notice of violation. In addition, Cal Water is authorized to take the following actions:

a) If the customer currently receives service through a metered connection, install a real-time water measurement device on the customer's service line and provide the customer with access to information from the device. The cost of the device, including installation and on-going operating costs, may be billed to the customer, and nonpayment may result in discontinuation of service.

b) If the customer does not currently receive service through a metered connection, install a water meter on the customer's service line, charge the customer for water use pursuant to Cal Water's metered service tariffs and rules, and install a real-time water measurement device on the customer's service line and provide the customer with access to information from the device. The cost of the device, including installation and ongoing operating costs, may be billed to the customer, and nonpayment may result in discontinuance of service.

Second Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Cal Water shall provide the customer with a second written notice of violation and is authorized to install a flow-restricting device on the customer's service line. Cal Water shall not be held liable for any injuries, damages, and/or consequences arising from the installation of a flow-restricting device.

In June 2021 Cal Water submitted an update to Rule 14.1 and Schedule 14.1 to the CPUC for approval, to align with the restrictions identified in this WSCP. Rule 14.1 and Schedule 14.1 were approved by the CPUC in July 2021. Rule 14.1 and Schedule 14.1 are discussed in more detail in Chapter 8. The current versions of Rule 14.1 and Schedule 14.1 can be found on the Cal Water website.

The passage of Assembly Bill 1572 includes both regulatory responsibilities and customer-facing obligations relating to the prohibition of potable water for irrigating non-functional turf. Cal Water plans to submit a revised Rule 14.1 and Schedule 14.1 to the CPUC for approval prior to January 1, 2027, to be in compliance with the regulatory requirements and is developing communication materials and an outreach plan to be in compliance with the customer-facing obligations.

7.2 Non-Essential, Wasteful Uses

In the event that more stringent measures are needed, implementation of Schedule 14.1 would be requested from the CPUC. If implemented, Cal Water is currently authorized to take the following actions when its personnel verify a customer is using potable water for non-essential, wasteful uses.

First Violation: Cal Water shall provide the customer with a written notice of violation. In addition, Cal Water is authorized to take the following actions:

A. If the customer currently receives service through a metered connection, install a real- time water measurement device on the customer’s service line and provide the customer with access to information from the device. The cost of the device, including installation and ongoing operating costs, may be billed to the customer, and nonpayment may result in discontinuance of service.

B. If the customer does not currently receive service through a metered connection, install a water meter on the customer’s service line, charge the customer for water use pursuant to Cal Water’s metered service tariffs and rules, and install a real-time water measurement device on the customer’s service line and provide the customer with access to information from the device. The cost of the device, including installation and ongoing operating costs, may be billed to the customer, and nonpayment may result in discontinuance of service.

Second Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Cal Water shall provide the customer with a second written notice of violation. In addition to the actions prescribed under the first violation above, Cal Water is authorized to take the following actions:

A. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule or other Cal Water tariffs.

   i. If Shortage Level 1 is in effect, $25
   ii. If Shortage 2 is in effect, $50
   iii. If Shortage Level 3 is in effect, $100
   iv. If Shortage Level 4 is in effect, $200
   v. If Shortage Level 5 is in effect, $400
   vi. If Shortage Level 6 is in effect, $800

B. At its sole discretion, waive the waste of water penalty if the customer participates in a water use evaluation provided by Cal Water and/or provides documentation to Cal Water proving that a drip irrigation system, micro spray irrigation system, high-efficiency sprinkler system, or properly programmed smart irrigation controller has been installed, after a notice of violation was delivered, and is in use at the customer's service address.

Third Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the second violation, Cal Water shall provide the first and second violations above, Cal Water is authorized to take the following actions:

A. Apply the following waste of water penalties, which are in addition to any other charges authorized by this Schedule or other Cal Water tariffs.

   i. If Shortage Level 1 is in effect, $50
   ii. If Shortage Level 2 is in effect, $100
   iii. If Shortage Level 3 is in effect, $200
   iv. If Shortage Level 4 is in effect, $400
   v. If Shortage Level 5 is in effect, $800
   vi. If Shortage Level 6 is in effect, $1,600

B. At its sole discretion, waive the waste of water surcharge if the customer participates in a water use evaluation provided by Cal Water and/or provides documentation to Cal Water proving that a drip irrigation system, micro spray irrigation system, high- efficiency sprinkler system, or properly programmed smart irrigation controller has been installed, after notice of violations have been delivered, and is in use at the customer's service address.

Fourth Violation: If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the third violation, Cal Water shall provide the customer with a fourth written notice of violation. In addition to actions set forth in previous violations prescribed above, Cal Water is authorized to install a flow-restricting device on the customer's service line.

Egregious Violations: Notwithstanding the foregoing framework for penalties, customers who Cal Water has verified are egregiously using potable water for non-essential, wasteful uses are subject to having a flow- restricting device installed on their service line. After providing the customer with one notice of egregious violation, either by direct mail or door hanger, which documents the egregious use of potable water for non-essential, wasteful uses and explains that failure to correct the violation may result in the installation of a flow-restricting device on the customer's service line, Cal Water is authorized to install a flow-restricting device on the customer's service line.

7.3 Drought Surcharges

Water budgets and associated drought surcharges are included as actions in . Cal Water may implement such actions through the implementation of Schedule 14.1.

Chapter 8
Legal Authorities

☑ ***CWC § 10632 (a) (7)***

(A) A description of the legal authorities that empower the urban water supplier to implement and enforce its shortage response actions specified in paragraph (4) that may include, but are not limited to, statutory authorities, ordinances, resolutions, and contract provisions.

(B) A statement that an urban water supplier shall declare a water shortage emergency in accordance with Chapter 3 (commencing with Section 350) of Division 1.

(C) A statement that an urban water supplier shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

Cal Water is a public water utility that is regulated by the CPUC. As such, it does not have the authority to adopt resolutions or ordinances. Rule 14.1, as filed with the CPUC, serves as Cal Water's restrictions on non-essential, wasteful uses of potable water. In the event that more stringent measures are required, Cal Water may request the addition of Schedule 14.1 which serves as Cal Water's WSCP and includes leveled mandatory reductions and drought surcharges. Cal Water shall coordinate with any city or county within which it provides water supply services for the possible proclamation of a local emergency as defined in Section 8558 of the Government Code and to ensure consistency with local resolutions and ordinances.

On June 14, 2021, Cal Water filed its current Schedule 14.1 with the CPUC which became effective on July 14, 2021.[2] The Schedule lays out the leveled mandatory reductions and drought surcharges associated with Cal Water's WSCP. This filing is consistent with Resolution W-5034, adopted by the Commission on April 9, 2015, ordering compliance with requirements of the State Water Resources Control Board (SWRCB).

Schedule 14.1 is an extension of Rule 14.1. The compliance and enforcement information presented in Chapter 7 is based on the current versions of both Rule 14.1 and Schedule 14.1.

[2] For reference, the current versions of Rule 14.1 and Schedule 14.1 are included as **Attachment B**.

Chapter 9
Financial Consequences of WSCP

☑ ***CWC § 10632 (a) (8)***

A description of the financial consequences of, and responses for, drought conditions, including, but not limited to, all of the following:

(A) A description of potential revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(B) A description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions described in paragraph (4).

(C) A description of the cost of compliance with Chapter 3.3 (commencing with Section 365) of Division 1.

In 2008, the CPUC approved the creation of a Water Revenue Adjustment Mechanism (WRAM) and Modified Cost Balancing Accounts (MCBA). The goals of the WRAM and MCBA are to sever the relationship between sales and revenue to remove the disincentive to reduce water use. The WRAM and MCBA are designed to be revenue neutral in order to ensure that both the utility and ratepayers are neither harmed nor benefitted.

In 2020, the CPUC ordered that regulated water utilities may not include the continuation of the WRAM and MCBA in their next general rate case filing but may propose the use of a Monterey-Style Revenue Adjustment Mechanism and Incremental Cost Balancing Account. As such, as of 2023 the WRAM and MCBA are no longer in place for Cal Water.

During a water shortage, Cal Water will file for a Drought Memorandum Account, or similar, to track incremental shortage-related expenses to be reviewed by the CPUC for future recovery in rates. Cal Water will also file for a Drought Lost Revenue Memorandum Account, or similar, to track reduced sales to be reviewed by the CPUC for future recovery in rates.

Both the Drought Memorandum Account and Drought Lost Revenue Memorandum Account are mechanisms that have been approved by the CPUC in previous droughts.

Chapter 10
Monitoring and Reporting

☑ ***CWC § 10632 (a) (9)*** *For an urban retail water supplier, monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements.*

During the period 2014-16, in order to effectively respond to the drought, Cal Water realigned its organizational structure to ensure sufficient resources were available to implement its WSCP. The day-to-day implementation was overseen by the Director of Drought Management & Conservation, with the assistance of the Drought Response Project Manager. The Director of Drought Management & Conservation reported to a team of Cal Water's Officers (Steering Committee), including the President & CEO, the Vice President of Corporate Communications & Community Affairs, the Vice President of Customer Service & Information Technology, the Vice President of Operations, and the Vice President of Continuous Improvement.

Reporting to the Director of Drought Management & Conservation was a team of functional leads, each responsible for managing individual portions of Cal Water's Plan. This team included the Director of Customer Service, the Water Conservation Manager, the Manager of Corporate Communications, the Water Supply Manager, and the Government & Community Relations Manager.

Cal Water will implement a similar structure to effectively manage future water shortages which will be overseen by the Vice President, Water Resources Planning and Sustainability.

This structure includes regular meetings with reporting on items such as:

- Aggregate customer demands,
- Customer compliance with water use restrictions,
- Current and projected water supply conditions,
- Customer outreach activities,
- Customer service inquiries, and
- Operations activities (e.g., water flushing activities, leak repairs, etc.).

Chapter 11
WSCP Refinement Procedures

☑ ***CWC § 10632 (a) (10)*** *Reevaluation and improvement procedures for systematically monitoring and evaluating the functionality of the water shortage contingency plan in order to ensure shortage risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented as needed.*

Cal Water’s Drought Steering Committee utilizes an adaptive management process to regularly assess and determine adjustments and changes to the implementation of the WSCP. These refinements are overseen by the Vice President, Water Resources Planning and Sustainability through the team of functional leads.

Chapter 12
Plan Adoption, Submittal, and Availability

☑ ***CWC § 10632 (c)*** *The urban water supplier shall make available the water shortage contingency plan prepared pursuant to this article to its customers and any city or county within which it provides water supplies no later than 30 days after adoption of the water shortage contingency plan.*

The deadline for public comments on the WSCP was June 6, 2026, three days after the public hearing. The final WSCP was formally adopted by Cal Water's Vice President, Water Resources Planning and Sustainability on MM DD, 2026. The District's 2025 UWMP includes a copy of the signed Resolution of Plan Adoption and contains the following:

- Letters sent to and received from various agencies regarding the UWMP and WSCP; and,
- Correspondence between Cal Water and participating agencies.

The District's 2025 UWMP and WSCP were submitted to DWR within 30 days of adoption and by the July 1, 2026 deadline. The submittal was done electronically through DWR's Water Use Efficiency Data Portal, an online submittal tool. The adopted WSCP was also sent to the California State Library and to the cities and counties listed in Table 10-1 of the District's 2025 UWMP.

On MM DD, 2026, electronic versions of the draft 2025 UWMP and WSCP were made available for review on Cal Water's website:

https://www.calwater.com/conservation/uwmp2025.

Attachment A

Key Drought Response Tool Tables and Charts

Drought Response Tool

Home | Input Baseline Year Water Use | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home

California Water Service - Redwood Valley District

Enter Agency Information	
Agency Name	Redwood Valley
Total Population Served	3,560
Conservation Goal (%)	10%
Drought Shortage Level	Shortage Level 1
Number of Residential Accounts	1,835
Number of Commercial, Industrial, and Institutional (CII) Accounts	64
Number of Dedicated Irrigation Accounts	0
Baseline Year(s)	2024
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	98%
Comments	

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.
6 - DROUGHT RESPONSE TRACKING	Track production and water savings against the conservation target.

1 - Home

California Water Service - Redwood Valley District

For questions about this tool or for additional information, contact:

Anona Dutton, P.G., C.Hg.
adutton@ekiconsult.com
(650) 292-9100

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3 - Baseline Year (2024) Water Use Profile

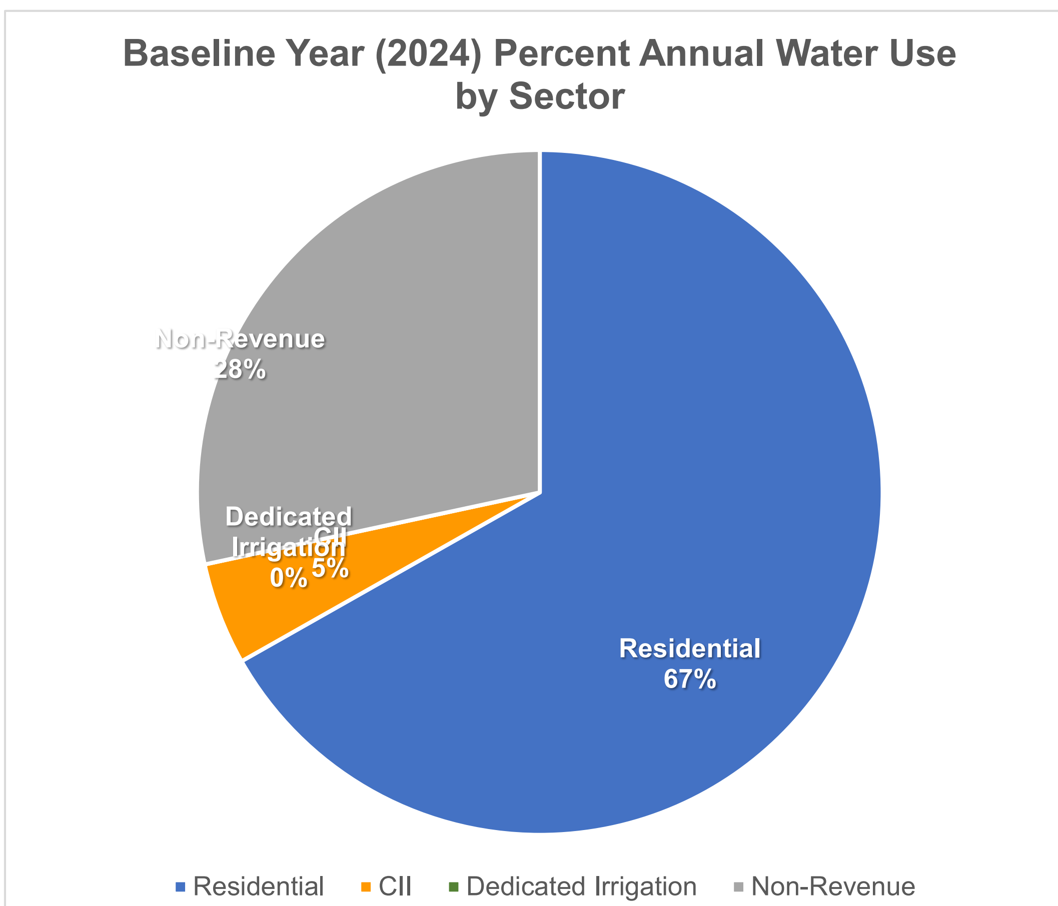
Redwood Valley

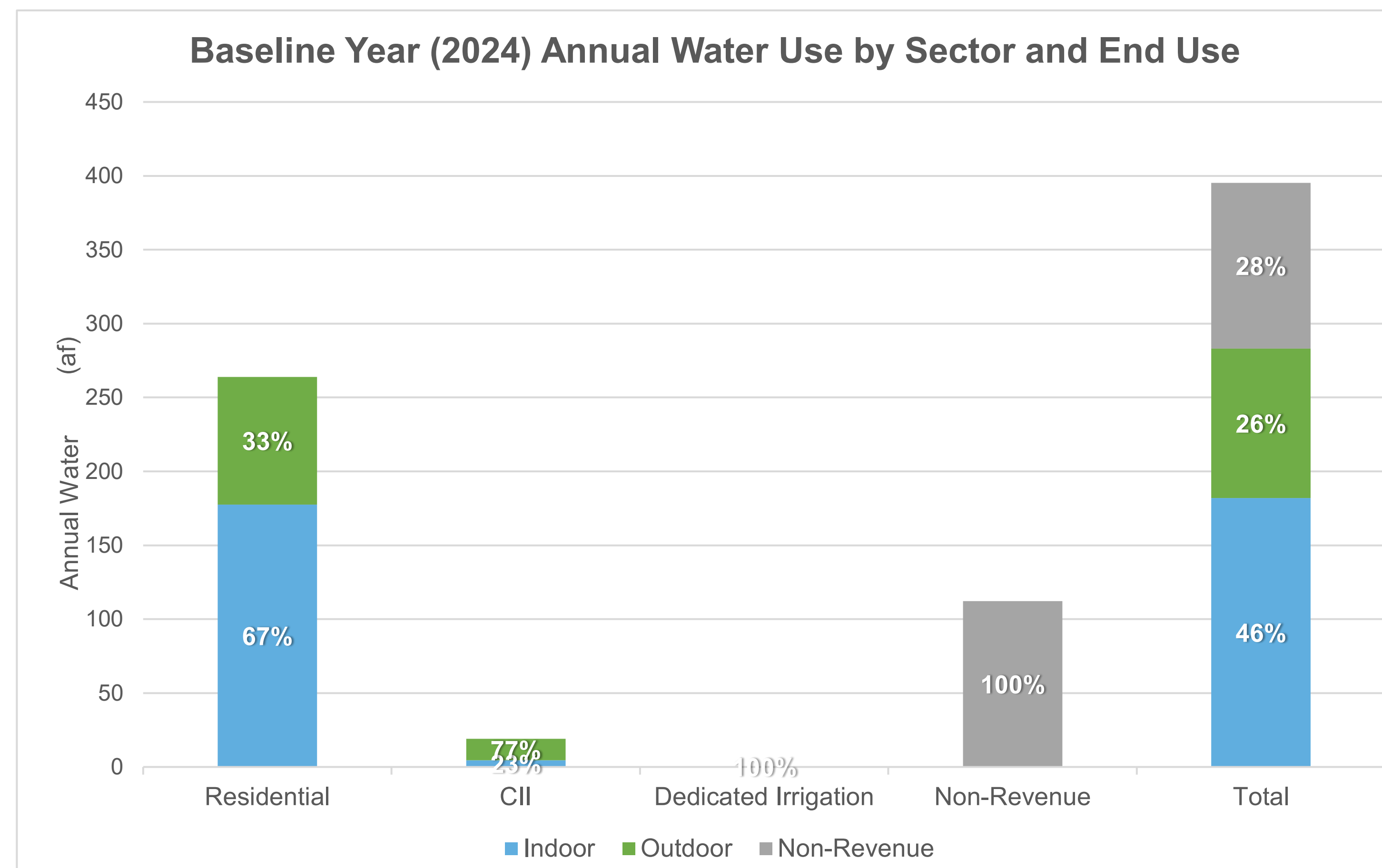
Baseline Year (2024) Annual Water Use Summary

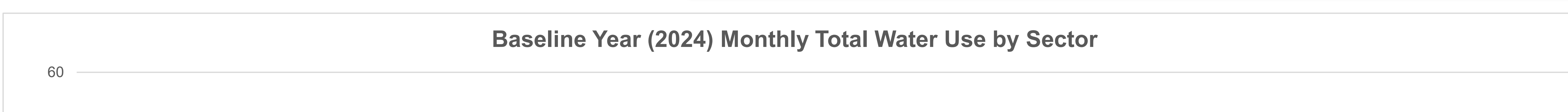
Units: (af)

A summary of your Baseline Year water use by sector and major end use category is shown below. Select the units in which your production and use data are displayed.

Water Use	Total Production (af)	Water Use (af)				Comments
		Residential	CII	Dedicated Irrigation	Non-Revenue	
Total	395	264	19	0	112	
Total Indoor	182	178	4	--	--	
Total Outdoor	101	87	15	0	--	
Total Non-Revenue	112	--	--	--	112	
Total Indoor %	46%	67%	23%	0%	--	
Total Outdoor %	26%	33%	77%	100%	--	
Total Non-Revenue %	28%	--	--	--	100%	





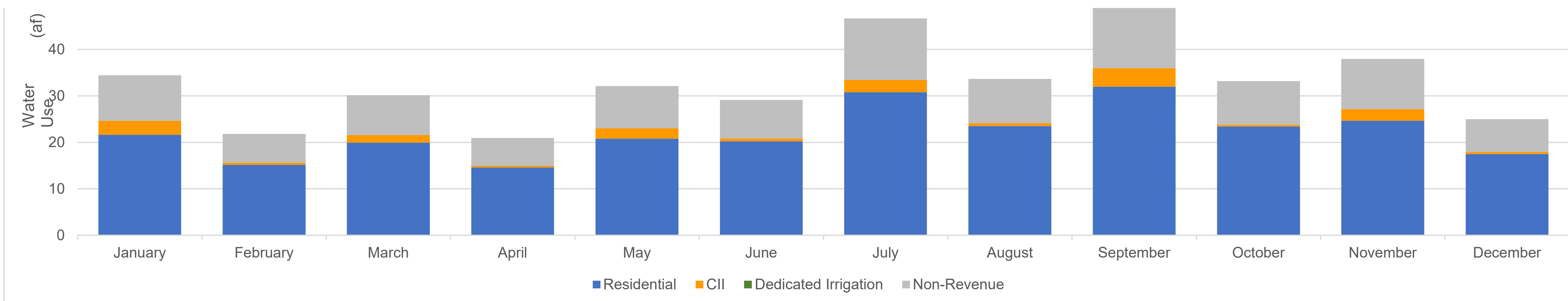


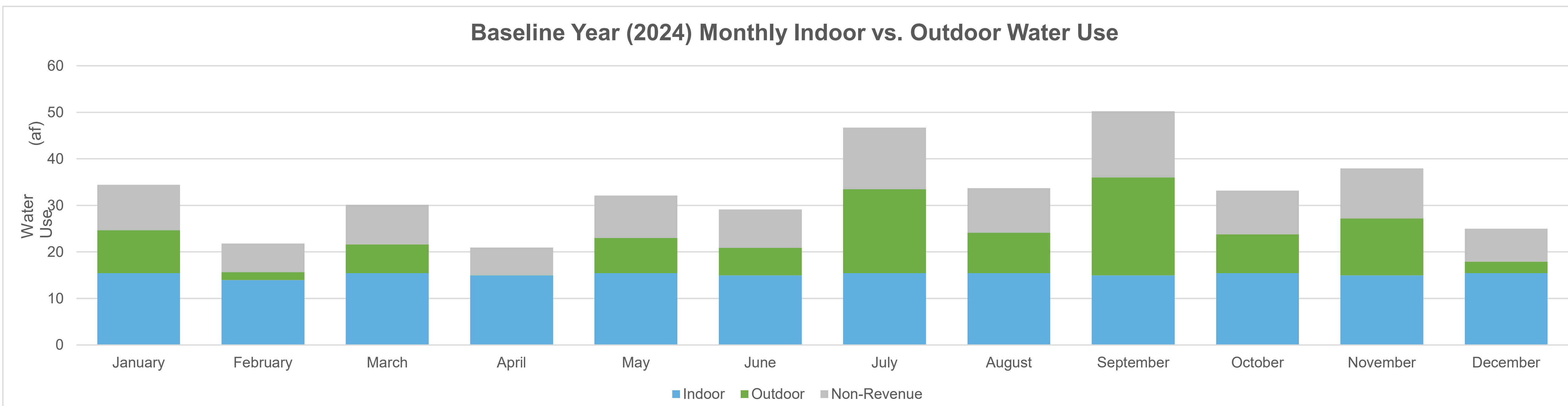
Drought Response Tool

Home | Input Baseline Year Water Use | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

3 - Baseline Year (2024) Water Use Profile

Redwood Valley





5 - Estimated Water Savings - Shortage Level 1

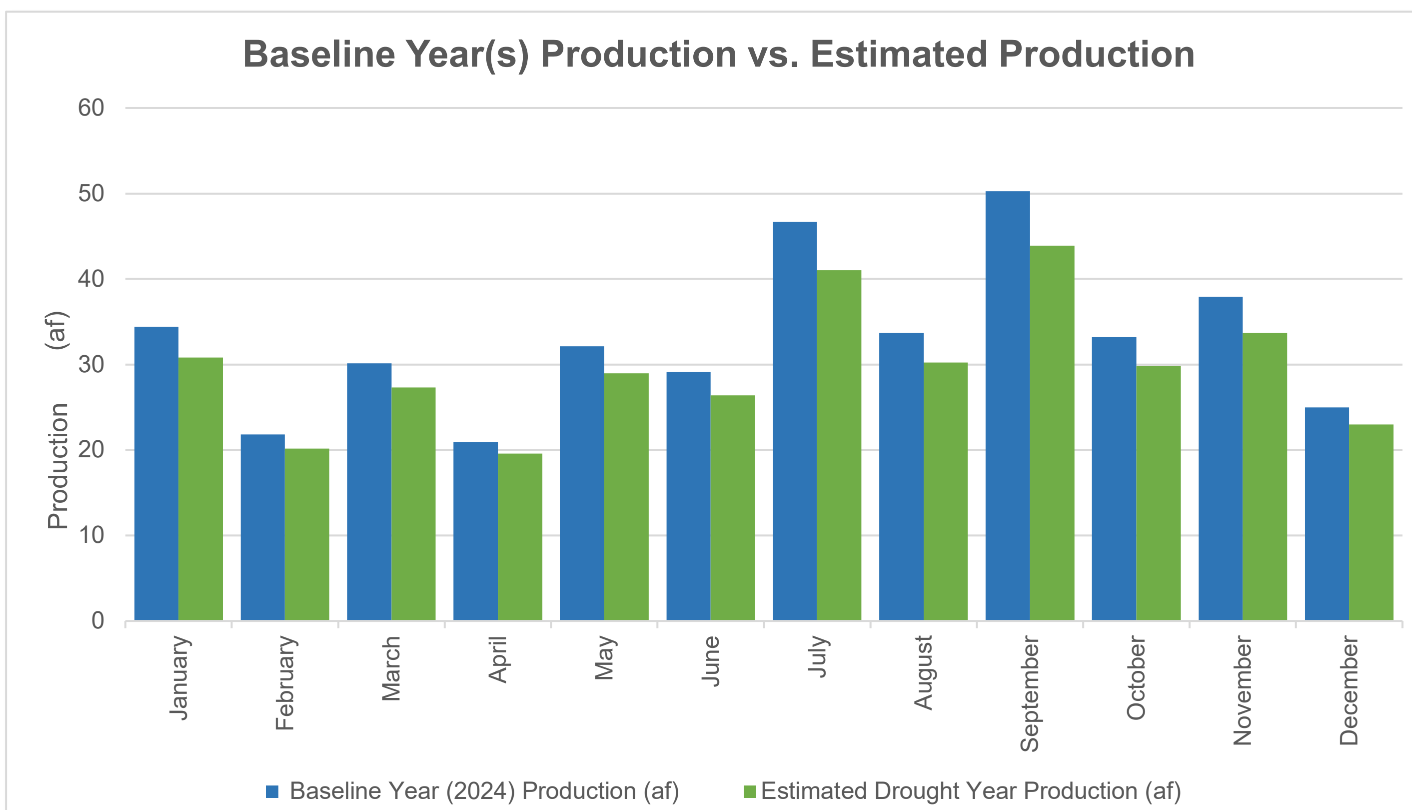
Redwood Valley

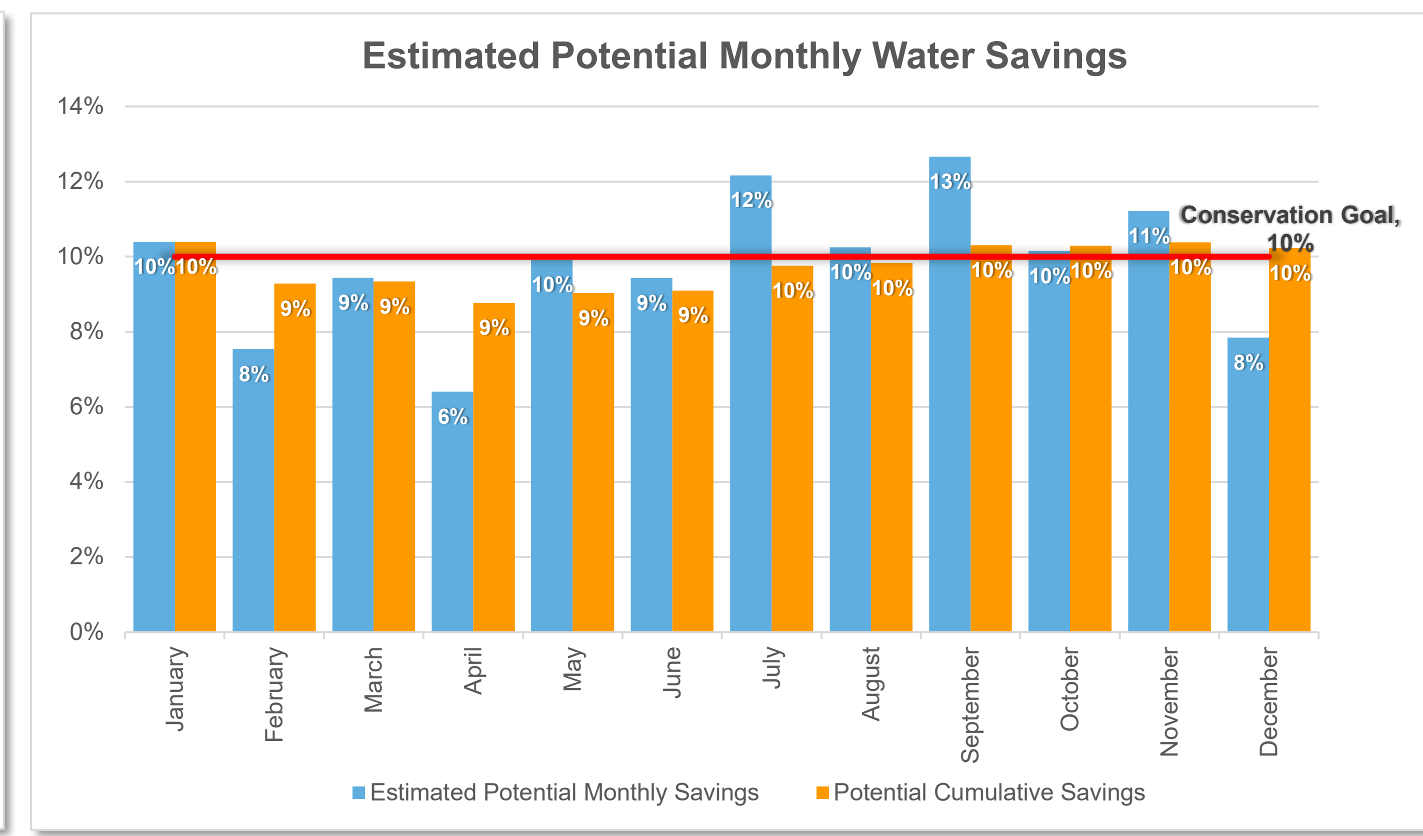
Estimated Monthly Water Use and Savings Summary

Units: (af)

This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.

Month	Baseline Year (2024) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
January	34	31	10%	10%	10%	
February	22	20	8%	9%	10%	
March	30	27	9%	9%	10%	
April	21	20	6%	9%	10%	
May	32	29	10%	9%	10%	
June	29	26	9%	9%	10%	
July	47	41	12%	10%	10%	
August	34	30	10%	10%	10%	
September	50	44	13%	10%	10%	
October	33	30	10%	10%	10%	
November	38	34	11%	10%	10%	
December	25	23	8%	10%	10%	





Drought Response Tool

Home | Input Baseline Year Water Use | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home

California Water Service - Redwood Valley District

Enter Agency Information	
Agency Name	Redwood Valley
Total Population Served	3,560
Conservation Goal (%)	20%
Drought Shortage Level	Shortage Level 2
Number of Residential Accounts	1,835
Number of Commercial, Industrial, and Institutional (CII) Accounts	64
Number of Dedicated Irrigation Accounts	0
Baseline Year(s)	2024
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	98%
Comments	

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.
6 - DROUGHT RESPONSE TRACKING	Track production and water savings against the conservation target.

5 - Estimated Water Savings - Shortage Level 2

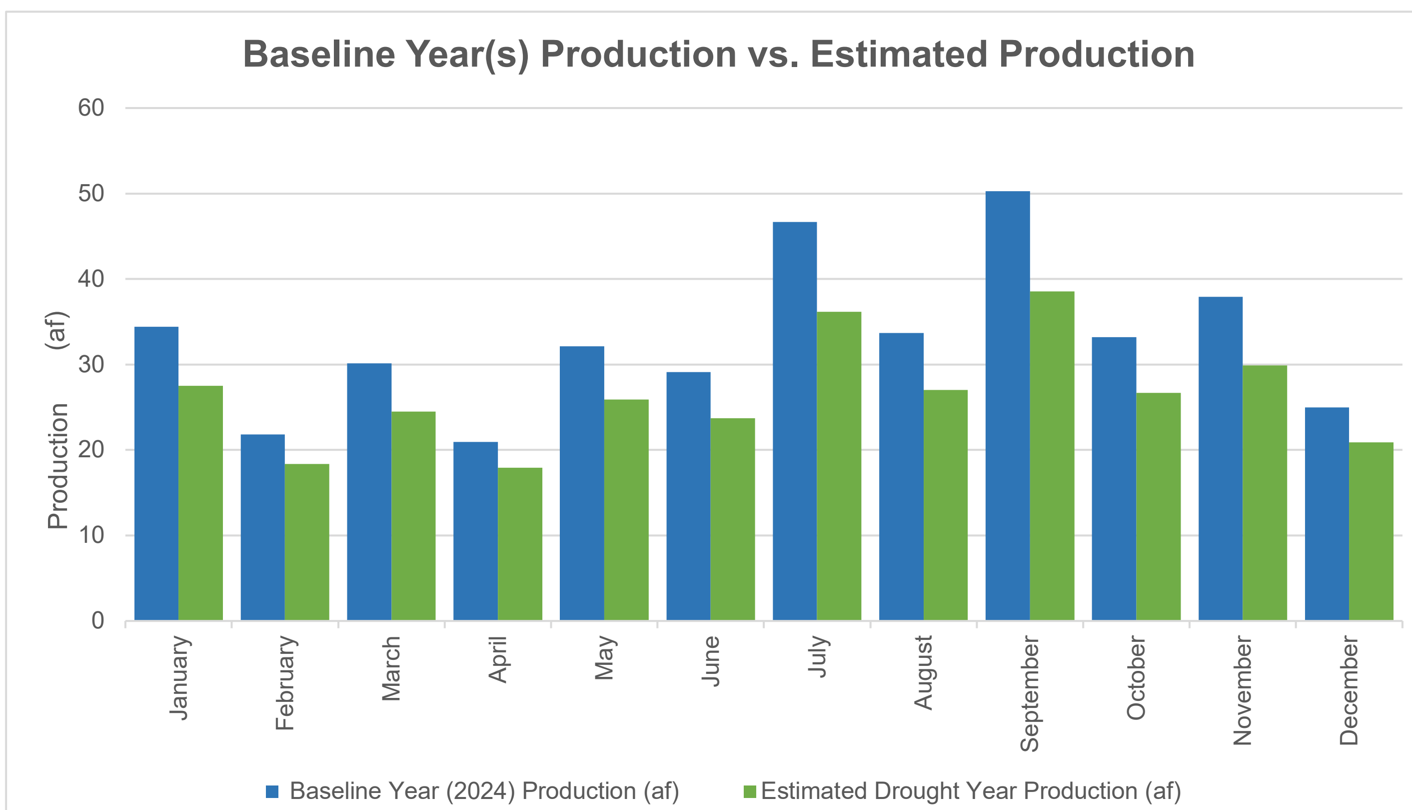
Redwood Valley

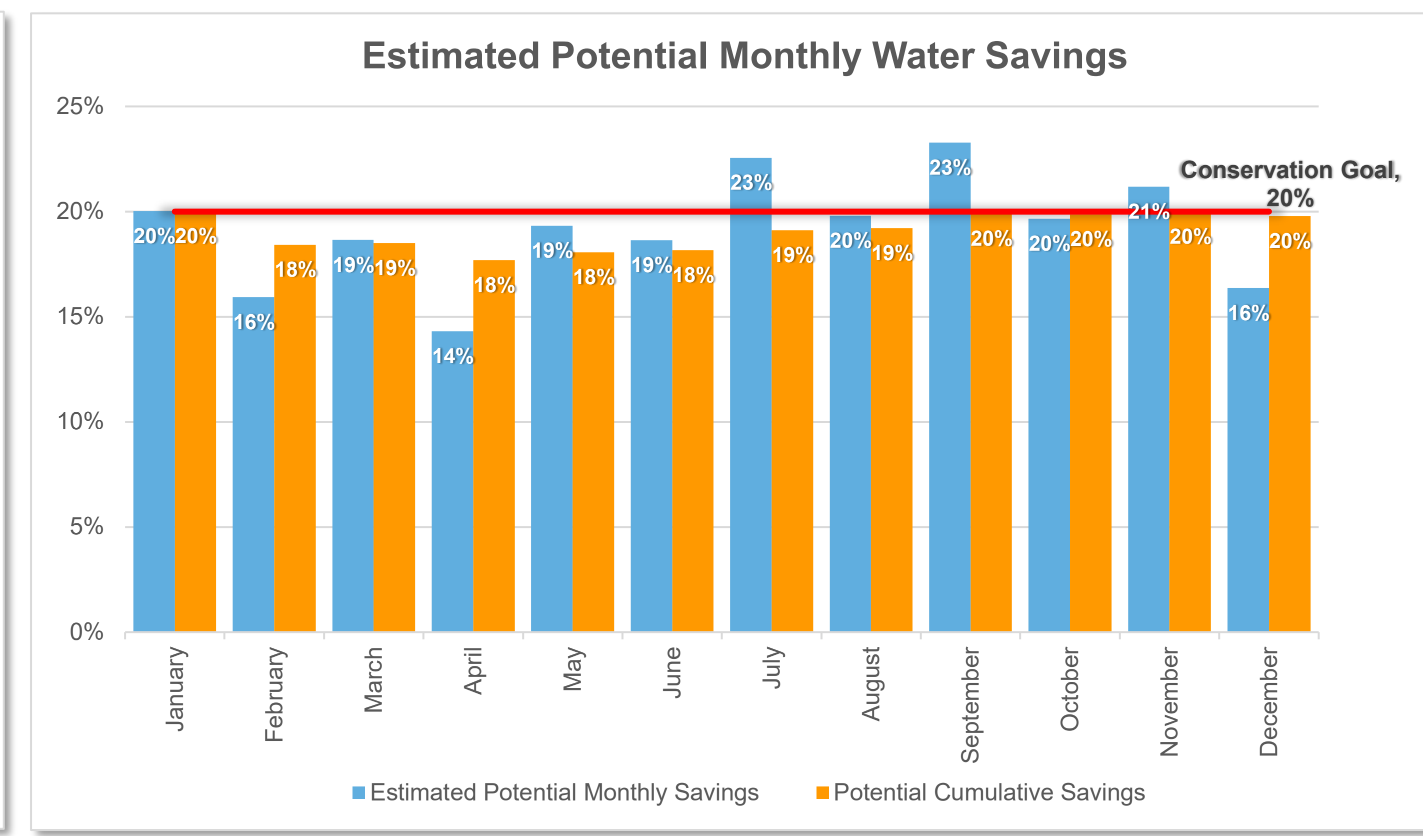
Estimated Monthly Water Use and Savings Summary

Units: (af)

This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.

Month	Baseline Year (2024) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
January	34	28	20%	20%	20%	
February	22	18	16%	18%	20%	
March	30	25	19%	19%	20%	
April	21	18	14%	18%	20%	
May	32	26	19%	18%	20%	
June	29	24	19%	18%	20%	
July	47	36	23%	19%	20%	
August	34	27	20%	19%	20%	
September	50	39	23%	20%	20%	
October	33	27	20%	20%	20%	
November	38	30	21%	20%	20%	
December	25	21	16%	20%	20%	





Drought Response Tool

Home | Input Baseline Year Water Use | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home

California Water Service - Redwood Valley District

Enter Agency Information	
Agency Name	Redwood Valley
Total Population Served	3,560
Conservation Goal (%)	30%
Drought Shortage Level	Shortage Level 3
Number of Residential Accounts	1,835
Number of Commercial, Industrial, and Institutional (CII) Accounts	64
Number of Dedicated Irrigation Accounts	0
Baseline Year(s)	2024
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	98%
Comments	

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.
6 - DROUGHT RESPONSE TRACKING	Track production and water savings against the conservation target.

5 - Estimated Water Savings - Shortage Level 3

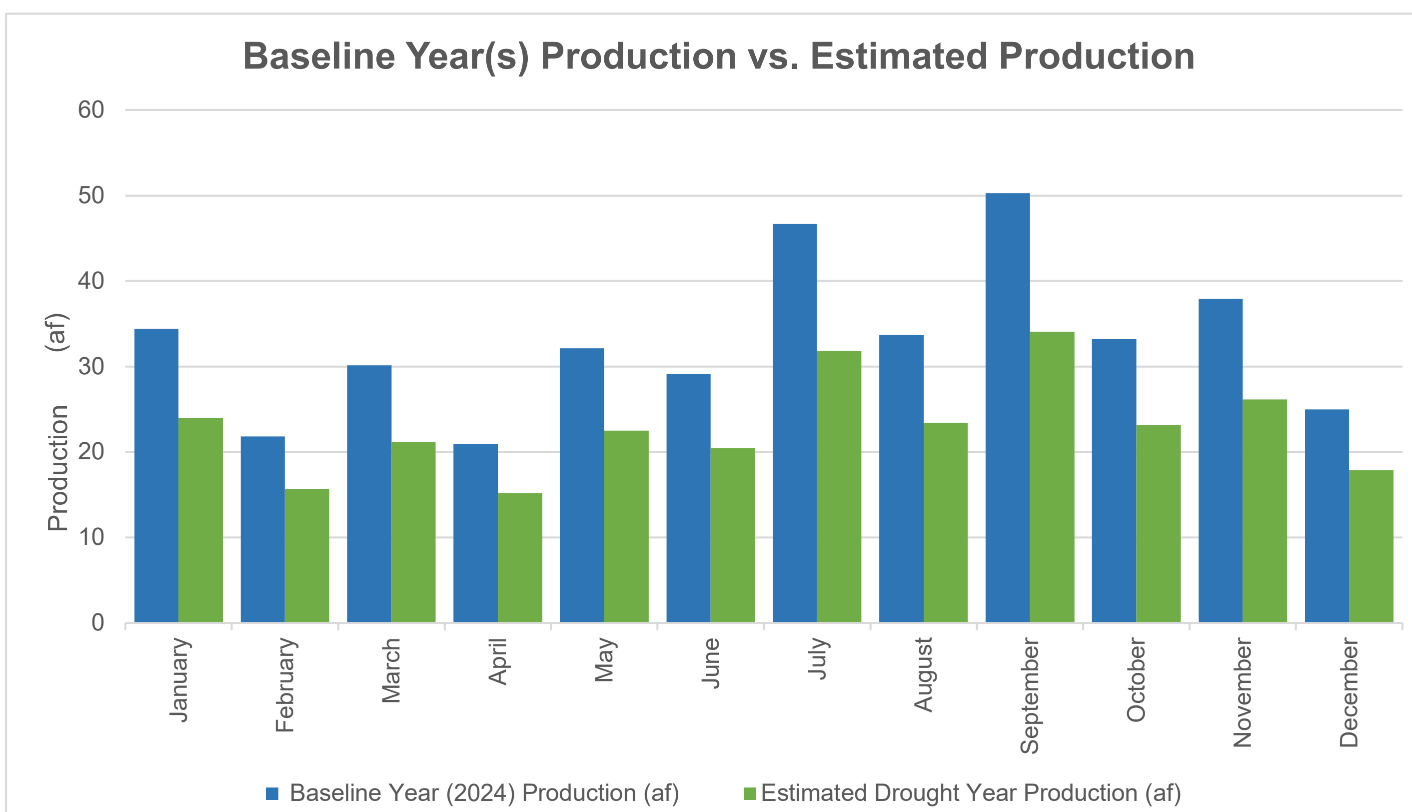
Redwood Valley

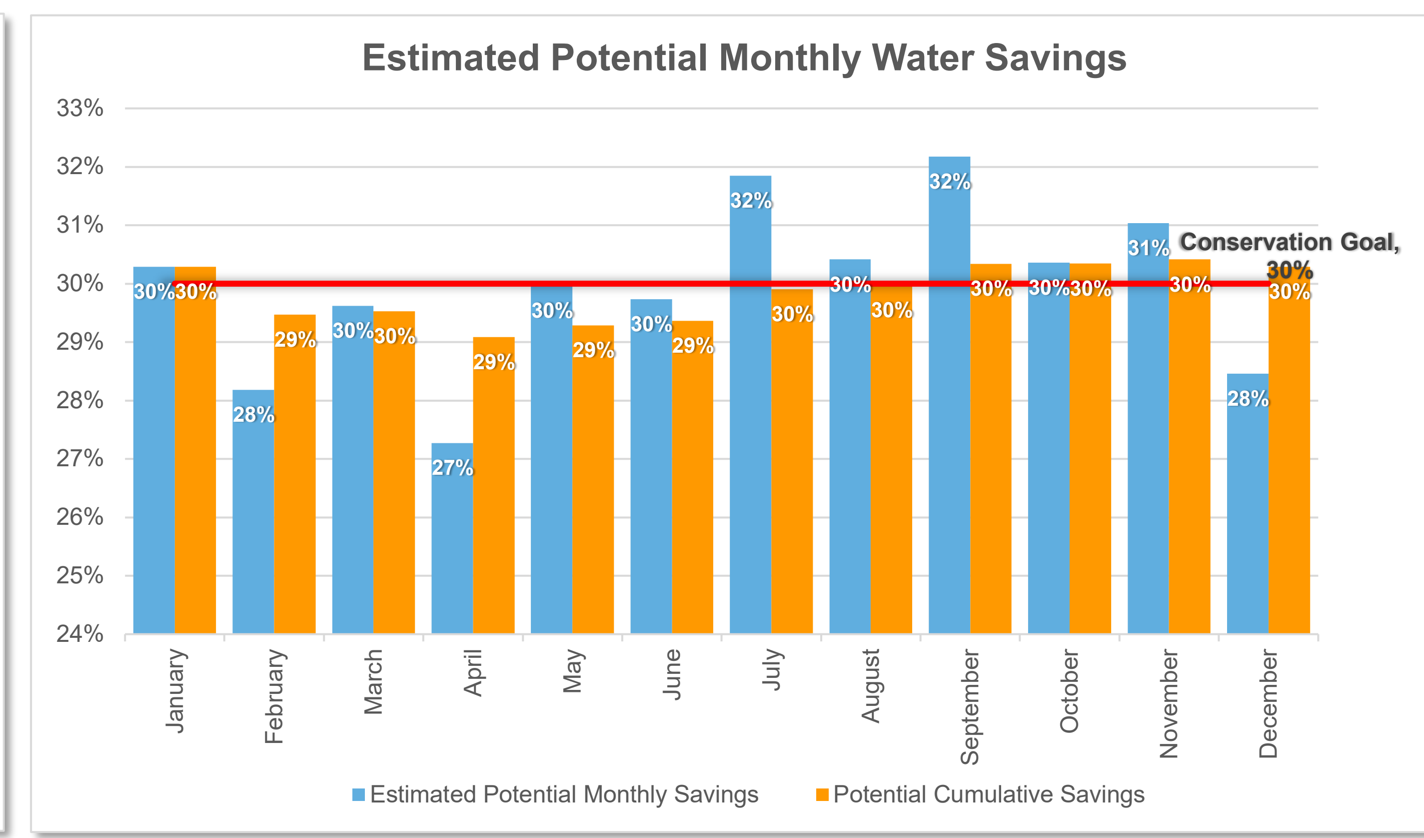
Estimated Monthly Water Use and Savings Summary

Units: (af)

This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.

Month	Baseline Year (2024) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
January	34	24	30%	30%	30%	
February	22	16	28%	29%	30%	
March	30	21	30%	30%	30%	
April	21	15	27%	29%	30%	
May	32	23	30%	29%	30%	
June	29	20	30%	29%	30%	
July	47	32	32%	30%	30%	
August	34	23	30%	30%	30%	
September	50	34	32%	30%	30%	
October	33	23	30%	30%	30%	
November	38	26	31%	30%	30%	
December	25	18	28%	30%	30%	





1 - Home

California Water Service - Redwood Valley District

Enter Agency Information	
Agency Name	Redwood Valley
Total Population Served	3,560
Conservation Goal (%)	40%
Drought Shortage Level	Shortage Level 4
Number of Residential Accounts	1,835
Number of Commercial, Industrial, and Institutional (CII) Accounts	64
Number of Dedicated Irrigation Accounts	0
Baseline Year(s)	2024
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	98%
Comments	

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.
6 - DROUGHT RESPONSE TRACKING	Track production and water savings against the conservation target.

Drought Response Tool

Home | Input Baseline Year Water Use | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

5 - Estimated Water Savings - Shortage Level 4

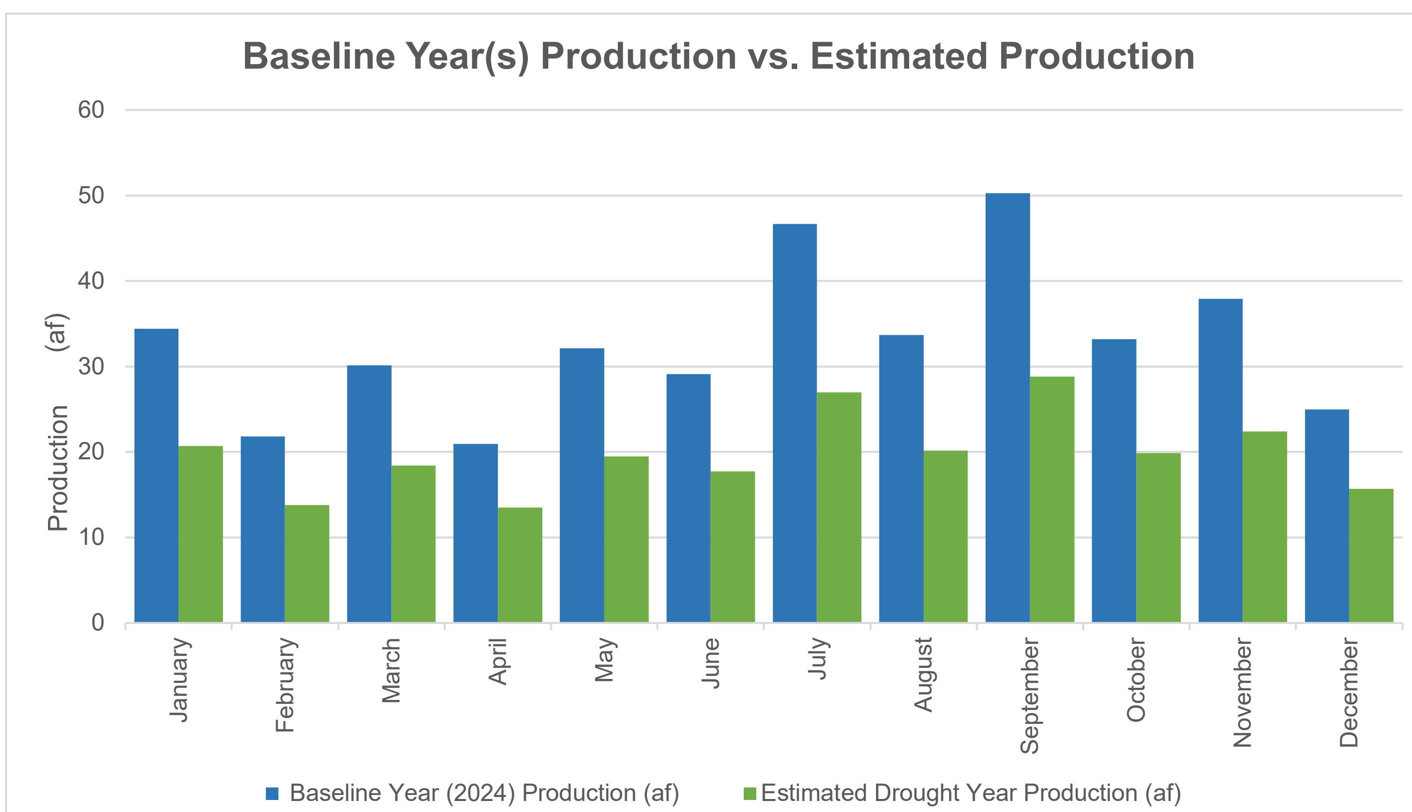
Redwood Valley

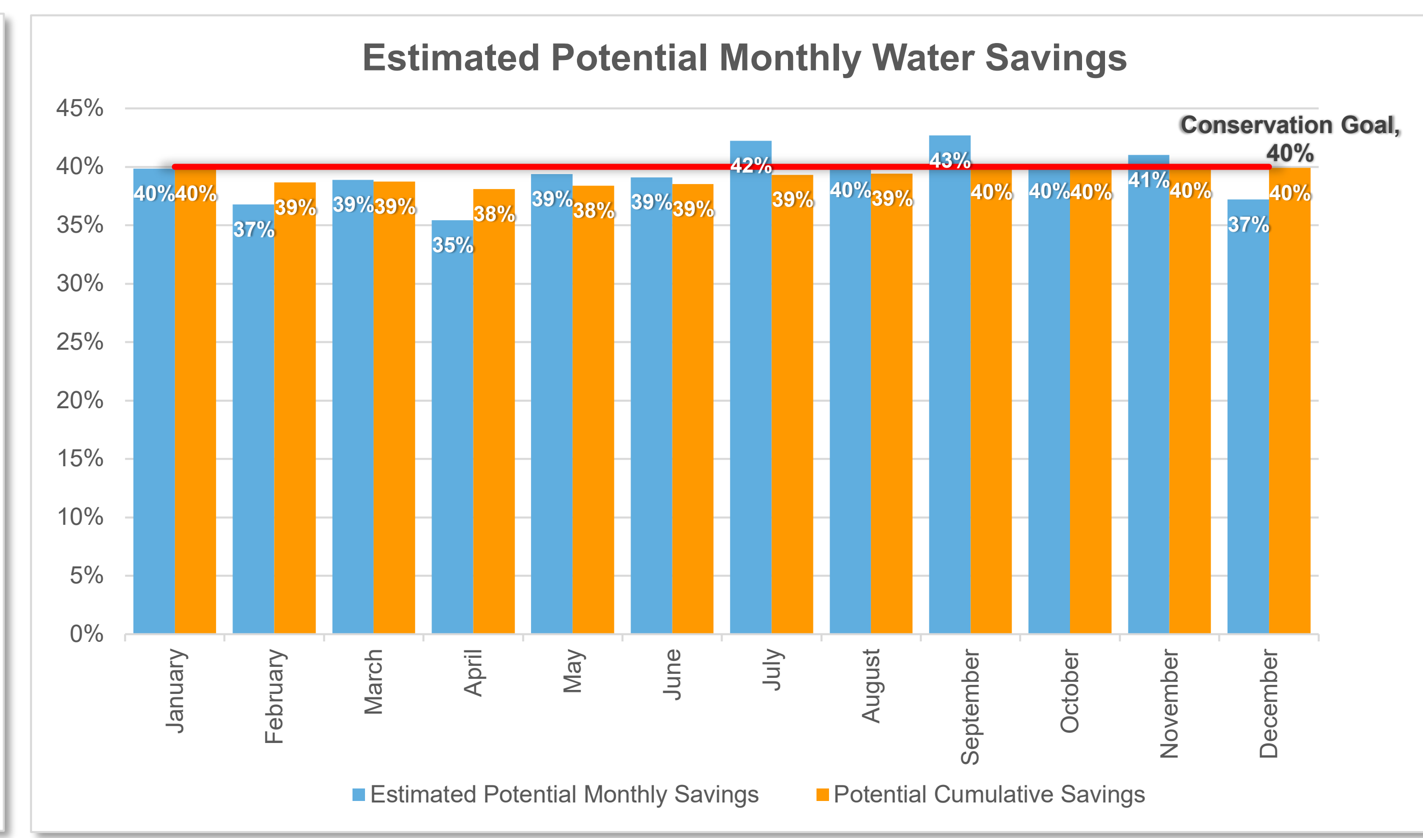
Estimated Monthly Water Use and Savings Summary

Units: (af)

This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.

Month	Baseline Year (2024) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
January	34	21	40%	40%	40%	
February	22	14	37%	39%	40%	
March	30	18	39%	39%	40%	
April	21	14	35%	38%	40%	
May	32	19	39%	38%	40%	
June	29	18	39%	39%	40%	
July	47	27	42%	39%	40%	
August	34	20	40%	39%	40%	
September	50	29	43%	40%	40%	
October	33	20	40%	40%	40%	
November	38	22	41%	40%	40%	
December	25	16	37%	40%	40%	





1 - Home

California Water Service - Redwood Valley District

Enter Agency Information	
Agency Name	Redwood Valley
Total Population Served	3,560
Conservation Goal (%)	50%
Drought Shortage Level	Shortage Level 5
Number of Residential Accounts	1,835
Number of Commercial, Industrial, and Institutional (CII) Accounts	64
Number of Dedicated Irrigation Accounts	0
Baseline Year(s)	2024
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	98%
Comments	

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.
6 - DROUGHT RESPONSE TRACKING	Track production and water savings against the conservation target.

5 - Estimated Water Savings - Shortage Level 5

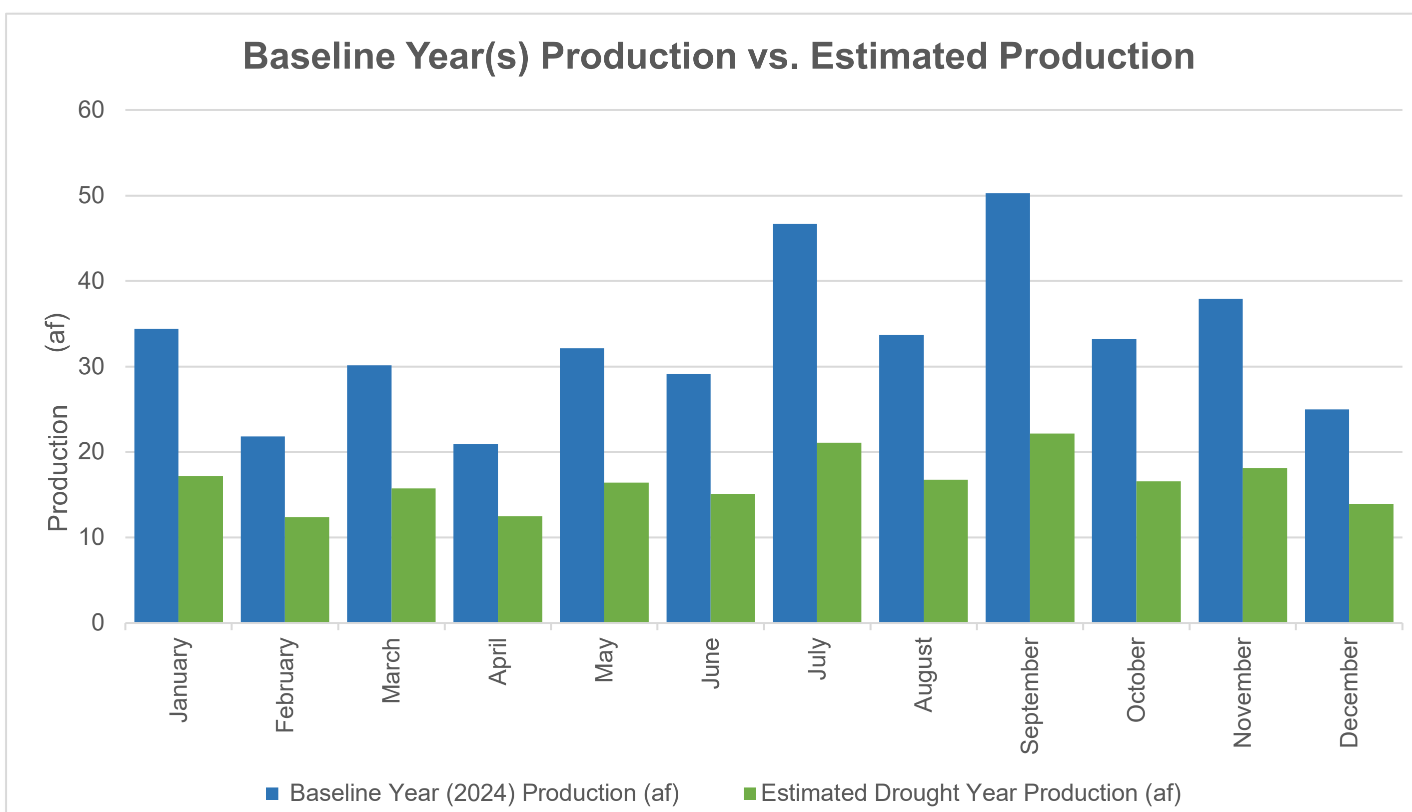
Redwood Valley

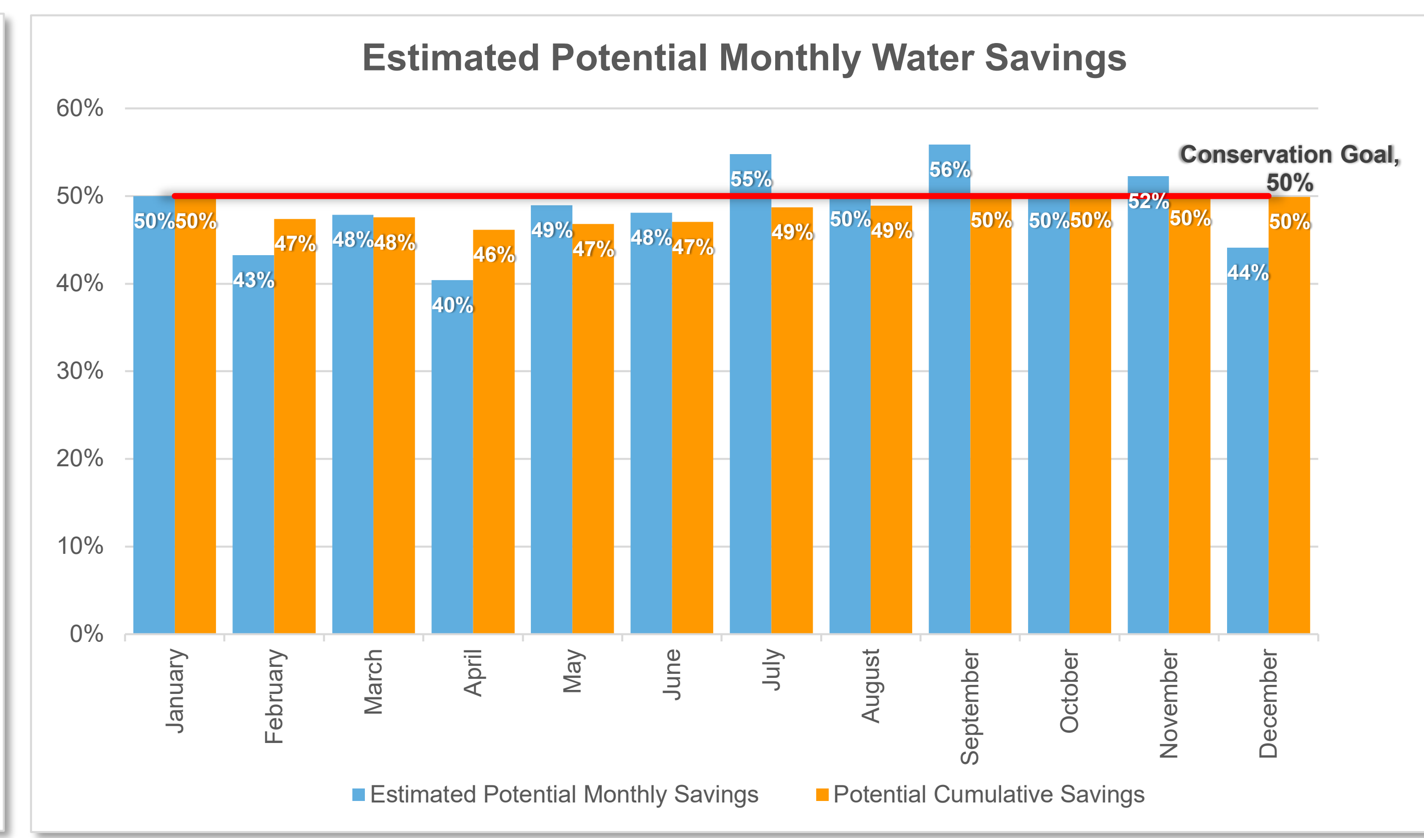
Estimated Monthly Water Use and Savings Summary

Units: (af)

This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.

Month	Baseline Year (2024) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
January	34	17	50%	50%	50%	
February	22	12	43%	47%	50%	
March	30	16	48%	48%	50%	
April	21	12	40%	46%	50%	
May	32	16	49%	47%	50%	
June	29	15	48%	47%	50%	
July	47	21	55%	49%	50%	
August	34	17	50%	49%	50%	
September	50	22	56%	50%	50%	
October	33	17	50%	50%	50%	
November	38	18	52%	50%	50%	
December	25	14	44%	50%	50%	





Drought Response Tool

Home | Input Baseline Year Water Use | Baseline Year Water Use Profile | Drought Response Actions | Estimated Water Savings | Drought Response Tracking

1 - Home

California Water Service - Redwood Valley District

Enter Agency Information	
Agency Name	Redwood Valley
Total Population Served	3,560
Conservation Goal (%)	60%
Drought Shortage Level	Shortage Level 6
Number of Residential Accounts	1,835
Number of Commercial, Industrial, and Institutional (CII) Accounts	64
Number of Dedicated Irrigation Accounts	0
Baseline Year(s)	2024
Percentage of Residential Indoor Use During Minimum Month (%)	100%
Percentage of CII Indoor Use During Minimum Month (%)	98%
Comments	

Navigation	
USER'S GUIDE	Download and read the guide before using this Tool
1 - HOME	Enter agency information
2 - INPUT BASELINE YEAR WATER USE	Enter Baseline Year production and use
3 - BASELINE YEAR WATER USE	Review and confirm entered information
4 - DROUGHT RESPONSE ACTIONS	Select Drought Response Actions and input estimated water savings and implementation rates.
5 - ESTIMATED WATER SAVINGS	Review estimated water production and compare estimated savings to conservation target.
6 - DROUGHT RESPONSE TRACKING	Track production and water savings against the conservation target.

5 - Estimated Water Savings - Shortage Level 6

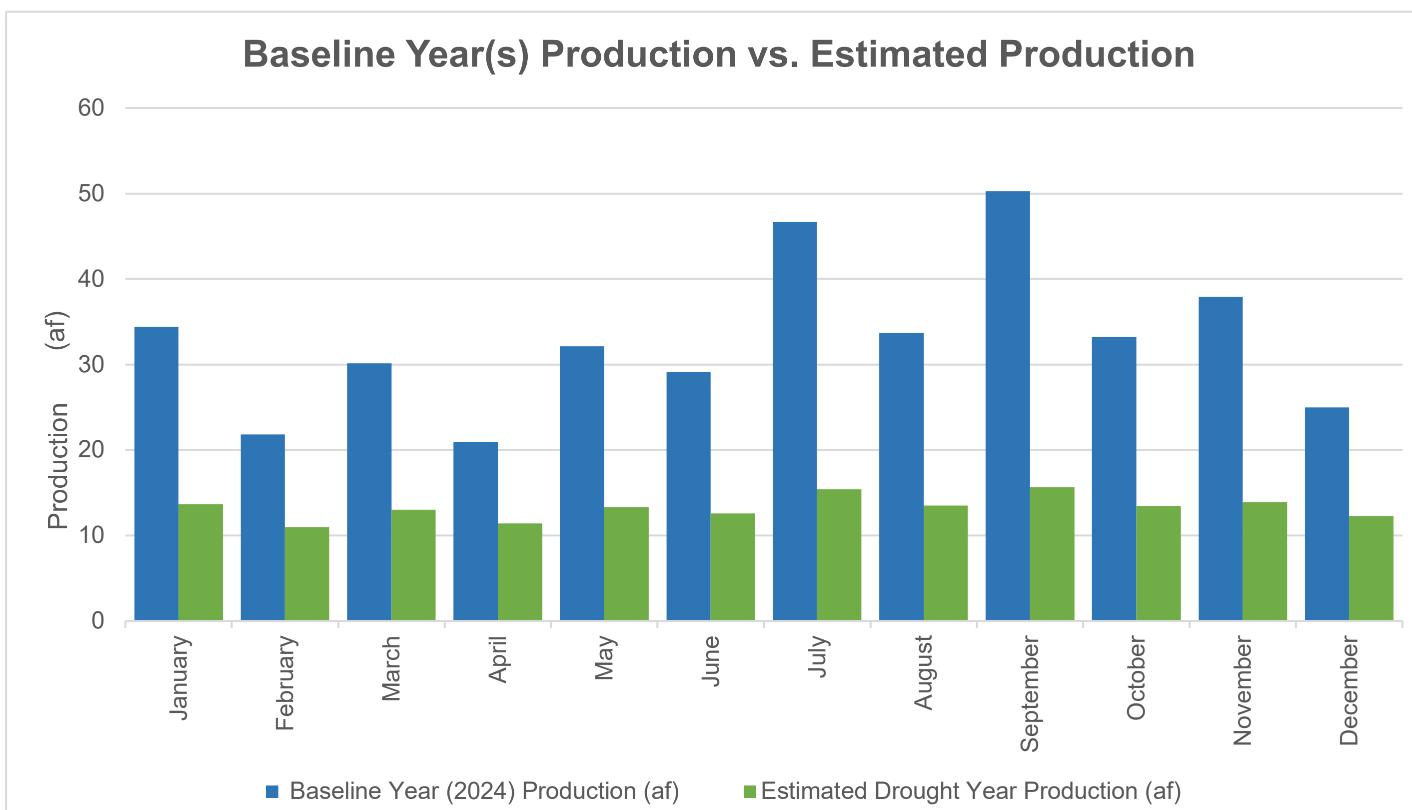
Redwood Valley

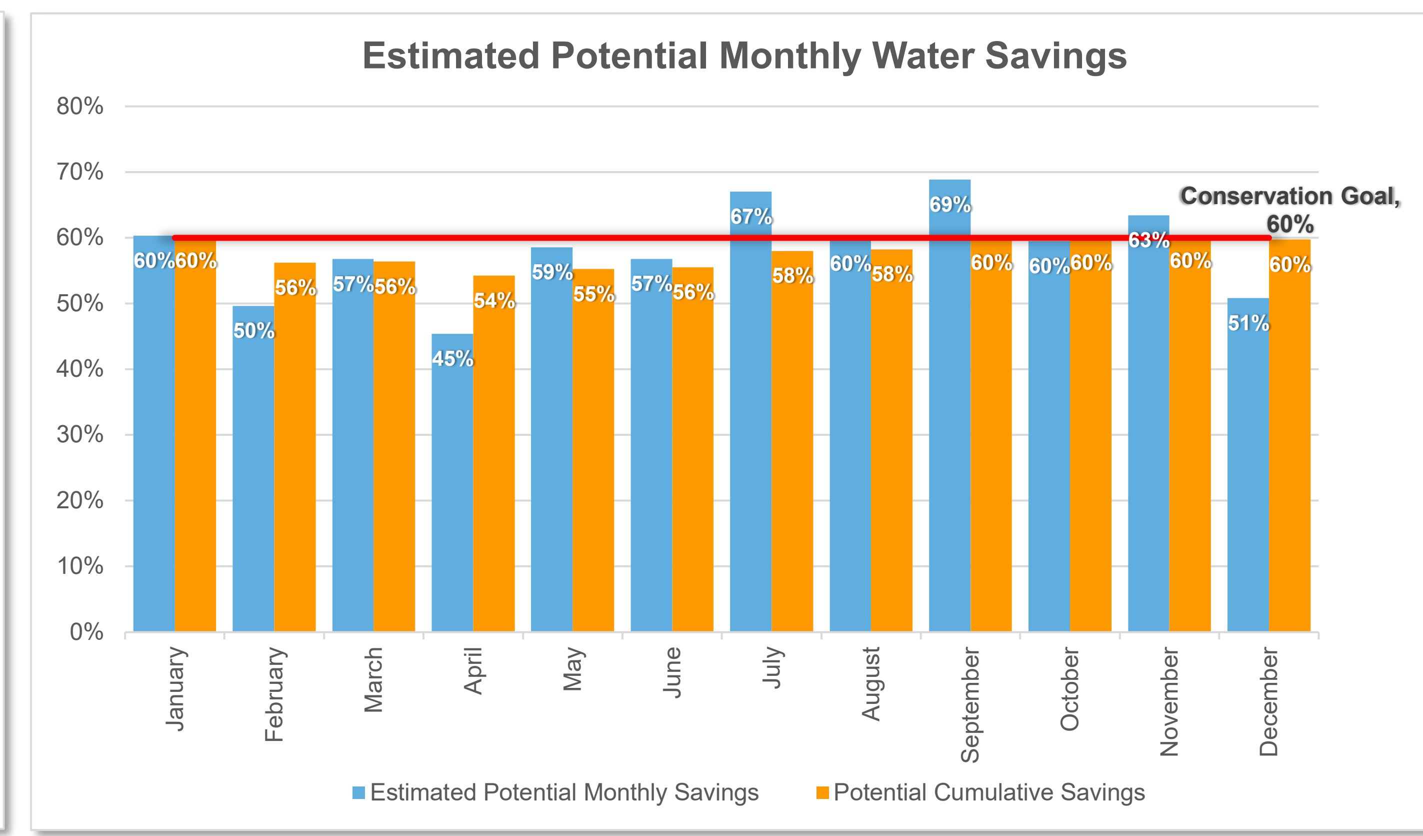
Estimated Monthly Water Use and Savings Summary

Units: (af)

This provides a summary of the estimated production relative to Baseline Year production and potential water savings, assuming implementation of selected actions at the water savings and implementation rates indicated in the Drought Response Actions worksheet. Select the units that your production data are displayed in.

Month	Baseline Year (2024) Production (af)	Estimated Drought Year Production (af)	Estimated Potential Monthly Savings	Potential Cumulative Savings	Conservation Goal	Comments
January	34	14	60%	60%	60%	
February	22	11	50%	56%	60%	
March	30	13	57%	56%	60%	
April	21	11	45%	54%	60%	
May	32	13	59%	55%	60%	
June	29	13	57%	56%	60%	
July	47	15	67%	58%	60%	
August	34	14	60%	58%	60%	
September	50	16	69%	60%	60%	
October	33	13	60%	60%	60%	
November	38	14	63%	60%	60%	
December	25	12	51%	60%	60%	





Attachment B

CPUC Rule and Schedule 14.1

Rule No. 14.1

NON-ESSENTIAL, WASTEFUL USES OF POTABLE WATER (C)

A) APPLICABILITY

1. This rule applies to all of California Water Service's regulated ratemaking areas in California, as well as Grand Oaks Water. (C) (L)

B) GENERAL INFORMATION

1. All expenses incurred by California Water Service to implement Rule 14.1, and Schedule 14.1, that have not been considered in a General Rate Case or other proceeding shall be accumulated by Cal Water in a separate memorandum account, authorized by the Commission, for disposition as directed or authorized from time to time by the Commission. (T) (T)

(D)

C) DEFINITIONS

For the purposes of this Rule, the following terms have the meanings set forth in this section.

1. "Commercial nursery" means the use of land, buildings or structures for the growing and/or storing of flowers, fruit, trees, ornamental trees, vegetable plants, shrubs, trees and similar vegetation for the purpose of transplanting, for use as stock or grafting, and includes the retail sale or wholesale distribution of such items directly from the premises/lot.
2. "Drip irrigation system" means a non-spray, low-pressure, and low volume irrigation system utilizing emission devices with a precipitation or flow rate measured in gallons per hour (GPH), designed to slowly apply small volumes of water at or near the root zone of plants or other landscaping.
3. "Flow rate" means the rate at which water flows through pipes, valves, and emission devices, measured in gallons per minute (GPM), gallons per hour (GPH), inches per hour (IPH), hundred cubic feet (Ccf), or cubic feet per second (CFS).
4. "Flow-restricting device" means valves, orifices, or other devices that reduce the flow of potable water through a service line, which are capable of providing the premise with a (C) minimum flow rate of 0.5 gallons per minute. (C)
5. "High-efficiency sprinkler systems" means an irrigation system with emission devices, such as sprinkler heads or nozzles, with a precipitation or flow rate no greater than on IPH.
6. "Irrigation" means the application of potable water by artificial means to landscape.

(L)

(Continued)

Rule No. 14.1 Page 2

NON-ESSENTIAL, WASTEFUL USES OF POTABLE WATER (C)

C) DEFINITIONS (continued) (L)

7. "Irrigation system" means the components of a system meant to apply water to an area for the purpose of irrigation, including, but not limited to, piping, fittings, sprinkler heads or nozzles, drip tubing, valves, and control wiring.

8. "Landscape" means all of the outdoor planting areas, turf areas, and water features at a particular location.

9. "Measurable rainfall" means any amount of precipitation of more than one-quarter of an inch (0.25"). (C)

10. "Micro spray irrigation system" means a low-pressure, low-volume irrigation system utilizing emission devices that spray, mist, sprinkle, or drip with a precipitation or flow rate measured in GPH, designed to slowly apply small volumes of water to a specific area.

11. "Ornamental landscape" means shrubs, bushes, flowers, ground cover, turf, lawns, and grass planted for the purpose of improving the aesthetic appearance of property, but does not include crops or other agricultural products or special landscape areas.

12. "Ornamental turf" means a ground cover surface of grass that can be mowed and is planted for the purpose of improving the aesthetic appearance of the property, but does not include crops or other agricultural products or special landscape areas.

13. "Plumbing fixture" means a receptacle or device that is connected to a water supply system, including, but not limited to, pipes, toilets, urinals, showerheads, faucets, washing machines, water heaters, tubs, and dishwashers.

14. "Potable water" means water supplied by Cal Water which conforms to the federal and state standards for human consumption.

15. "Properly programmed" means a smart irrigation controller that has been programmed according to the manufacturer's instructions and site-specific conditions.

16. "Real-time water measurement device" means a device or system that provides regularly updated electronic information regarding the customer's water use.

17. "Runoff" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape onto other areas.

18. "Smart irrigation controller" means an automatic device used to remotely control valves that operate an irrigation that has been tested by an American National Standards Institute accredited third-party certifying body or laboratory in accordance with the Environmental Protection Agency's WaterSense program (or an analogous successor program), and certified by such body or laboratory as meetings the performance and efficiency requirements of such program, or the more stringent performance and efficiency requirements of another similar program. (L)

(Continued)

C) DEFINITIONS (continued) (L)

19. "Special landscape area" means an area of landscape dedicated solely to edible plants and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.
20. "Turf" means a ground cover surface of grass that can be mowed.
21. "Water feature" means a design element where open, artificially supplied water performs an aesthetic or recreation feature, including, but not limited to, ponds, lakes, waterfalls, fountains, and streams.
22. "Water use evaluation" means an evaluation of the efficiency of indoor water-using devices, including, but not limited to, measurement of flow rates for all existing showerheads, faucets, and toilets, inspection for leaks, and providing written recommendations to improve the efficiency of the indoor water-using fixtures and devices and/or an evaluation of the performance of an irrigation system, including, but not limited to, inspection for leaks, reporting of overspray or runoff, and providing written recommendations to improve the performance of the irrigation system.

D) ENFORCEMENT

This Rule establishes certain restrictions on the use of potable water. Violating the (T) restrictions set forth is declared a non-essential, wasteful use of potable water. Cal Water is (T) authorized to take the following actions when its personnel verify a customer is using (C) potable water for non-essential, wasteful uses. No person shall have any right or claim in law or in equity against Cal Water because of, or as a result of, any matter or thing done or threatened to be done pursuant to the restrictions on using potable water for non-essential, wasteful uses.

1. FIRST VIOLATION

Cal Water shall provide the customer with a written notice of violation. In addition, Cal Water is authorized to take the following actions: (N)

a) If the customer currently receives service through a metered connection, install a real-time water measurement device on the customer's service line and provide the customer with access to information from the device. The cost of the device, including installation and on-going operating costs, may be billed to the customer, and nonpayment may result in discontinuation of service.

b) (L)(N)

(Continued)

D) ENFORCEMENT (continued) (L)

1. FIRST VIOLATION (continued)

b) If the customer does not currently receive service through a metered connection, install a water meter on the customer's service line, charge the customer for water use pursuant to Cal Water's metered service tariffs and rules, and install a real-time water measurement device on the customer's service line and provide the customer with access to information from the device. The cost of the device, including installation and ongoing operating costs, may be billed to the customer, and nonpayment may result in discontinuance of service. (N)

2. SECOND VIOLATION

If Cal Water verifies that the customer has used potable water for non-essential, wasteful uses after having been notified of the first violation, Cal Water shall provide the customer with a second written notice of violation and is authorized to install a flow-restricting device on the customer's service line. Cal Water shall not be held liable for any injuries, damages, and/or consequences arising from the installation of a flow-restricting device.

3. NOTICES OF VIOLATION:

a) Unless otherwise specified, written notices of violation provided to customers pursuant to this Rule shall document the verified violation and alert the customer to the fact that future violations of the restricted uses of potable water may result in a real-time water measurement device being installed on the customer's service line at the customers expense, the installation of a flow-restricting device on the customer's service line, or the discontinuation of the customer's service. (T)

b) If Cal Water elects to install a flow-restricting device on a customer's service line, the written notice shall document the steps the customer must take in order for the flow-restricting device to be removed, and shall explain that after the flow-restricting device is removed, it may be reinstalled, without further notice, if the customer is again verified by Cal Water to be using potable water for non-essential, wasteful uses. (T)

4. FLOW RESTRICTING DEVICE CONDITIONS

The installation of a flow-restricting device on a customer's service line is subject to the following conditions: (L)

(Continued)

D) ENFORCEMENT (continued) (L)

4. FLOW RESTRICTING DEVICE CONDITIONS (continued)

a) The device shall be capable of providing the premise with a minimum flow rate of 0.5 gallons per minute. (C)

b) The device may only be removed by Cal Water, and only after a minimum three-day period has elapsed.

c) Any tampering with the device may result in the discontinuation of the customer's water service and the customer being charged for any damage to Cal Water's equipment or facilities and any required service visits.

d) After the removal of the device, if Cal Water's personnel verify that the customer is using potable water for non-essential, wasteful uses, Cal Water may install another flow-restricting device without prior notice. This device shall remain in place until water supply conditions warrant its removal. If, despite the installation of the device, Cal Water's personnel verifies that the customer is using potable water for non-essential, wasteful uses, then Cal Water may discontinue the customer's water service, as provided in its Rule No. 11. (T)

5. FLOW RESTRICTING DEVICE REMOVAL CHARGES

The charge to customers for removal of a flow-restricting device installed pursuant to this Rule is $100 during normal business hours, and $150 for the device to be removed outside of normal business hours.

E) WASTEFUL USES OF WATER

Except where necessary to address an immediate health or safety need or to comply with a term or condition in a permit issued by a state or federal agency, customers are prohibited, at all times, from using potable water for the following actions, as each is declared a non-essential, wasteful use of water:

a) Outdoor Irrigation Restrictions (C)

(i) Irrigating ornamental landscape with potable water is prohibited during the hours between 8:00 a.m. and 6:00 p.m.

(ii) The foregoing irrigation restriction does not apply to:

(1) Landscape irrigation zones that exclusively use drip irrigation systems and/or micro spray irrigation systems;

(L) (C)

Rule No. 14.1

NON-ESSENTIAL, WASTEFUL USES OF POTABLE WATER (C)

E) WASTEFUL USES OF WATER (continued) (L)

a) Outdoor Irrigation Restrictions (continued)

(ii) The foregoing irrigation restriction does not apply to: (continued)

. . .

(2) Irrigating ornamental landscapes with the use of a hand-held bucket or similar container, with a continuously monitored hose which is fitted with an automatic shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not it use or monitored, or for the express purpose of adjusting or repairing an irrigation system. (C)

b) Obligation to Fix Leaks, Breaks, or Malfunctions: All leaks, breaks, or other malfunctions in the customer's plumbing fixtures and/or irrigation system must be repaired within five (5) business days of written notification by Cal Water, unless other arrangements are made with Cal Water.

c) Prohibited Uses of Water: Customers are prohibited from using potable water for the following actions:

(i) The application of potable water to landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;

(ii) The use of a hose that dispenses potable water to wash vehicles, including cars, trucks, buses, boats, aircraft, and trailers, whether motorized or not, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

(iii) The application of potable water to driveways and sidewalks;

(iv) The use of potable water in a water feature, except where the water is part of a recirculating system;

(v) The application of potable water to outdoor landscapes during and within forty-eight (48) hours after measurable rainfall (see Definitions);

(vi) Irrigation outside of newly constructed homes and buildings with potable water in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission, the Department of Housing and Community Development, or other state agency.

(vii) The serving or drinking water other than upon request in eating and drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased; (L) (C)

(Continued)

Rule No. 14.1

NON-ESSENTIAL, WASTEFUL USES OF POTABLE WATER (C)

E) WASTEFUL USES OF WATER (continued) (L)

d) Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guest room using clear and easily understood language. (C)

e) Other duly adopted restrictions on the use of potable water as prescribed from time to time by the Commission or other authorized government agencies are incorporated herein by reference. (C)

(D)

F) ADOPTION OF SCHEDULE NO. 14.1 - STAGED MANDATORY REDUCTIONS AND DROUGHT SURCHARGES (T)
(T)

1. Addition of Schedule No. 14.1

If, in the opinion of Cal Water, more stringent water conservation measures are required due to supply conditions or government directive, Cal Water may request the addition of Schedule No. 14.1 – Staged Mandatory Reductions and Drought Surcharges, via a Tier 2 advice letter. (T)

a) Cal Water may not activate Schedule No. 14.1 until it has been authorized to do so by the California Public Utilities Commission, as delegated to its Division of Water and Audits.

b) A Schedule No. 14.1 that has been authorized by the California Public Utilities Commission shall remain dormant until triggered by specific conditions detailed in the Schedule No. 14.1 tariff and Cal Water has requested and received authorization for activating a stage by the California Public Utilities Commission.

c) Notice of the Tier 2 advice letter and associated public participation hearing, if required, shall be provided to customers through a bill insert or a direct mailing, as set forth in Subsection 5 (Public Notice) below.

d) Cal Water shall comply with all requirements of Sections 350-358 of the California Water Code.

e) The Tier 2 advice letter requesting the addition of a Schedule No. 14.1 shall include, but not be limited to:

(i) A proposed Schedule No. 14.1 tariff, which shall include but not be limited to:

(1) Applicability;

(2) Territory applicable to; (L)

(Continued)

F) ADOPTION OF SCHEDULE NO. 14.1 - STAGED MANDATORY REDUCTIONS AND DROUGHT SURCHARGES (continued) (L)

1. Addition of Schedule No. 14.1 (continued)

e) The Tier 2 advice letter requesting the addition of a Schedule No. 14.1 shall include, but not be limited to: (continued)

(i) A proposed Schedule No. 14.1 tariff, which shall include but not be limited to: (continued)

. . .

(3) A detailed description of each stage (the number of stages requested for a ratemaking area may vary depending on the specifics of the water shortage event); (T)

(4) A detailed description of the trigger(s) that activates each stage; (T)

(5) A detailed description of each water use restriction for each stage of water budgets;

(6) Water use violation levels, written warning levels, associated penalties, if applicable, and exception procedures; (T)

(7) Conditions for the installation of a flow-restricting device; (T)

(8) Charges for the removal of a flow-restricting device; and (T)

(9) Special conditions.

(ii) Justification for, and documentation and calculations in support of the water budgets.

2. Conditions for Activating Schedule No. 14.1

Cal Water may file a Tier 1 advice letter to request activation of a particular stage of Schedule No. 14.1 tariff if:

a) Cal Water, the California Public Utilities Commission, wholesale water supplier, or other government agency declares an emergency requiring mandatory water budgets, mandatory water rationing, or mandatory water allocations; or

b) A government agency declares a state of emergency in response to severe drought conditions, earthquake or other catastrophic event that severely reduces Cal Water's water supply; or

c) Water supplies are projected to be insufficient to meet normal customer demand by Cal Water; or (C)

d) A water supply shortage or threatened shortage exists; or

e) Cal Water is unable to achieve water conservation targets set by itself or a governing agency; or (L)(C)

(Continued)

F) ADOPTION OF SCHEDULE NO. 14.1 - STAGED MANDATORY REDUCTIONS AND DROUGHT SURCHARGES (continued) (L)

2. Conditions for Activating Schedule No. 14.1 (continued)

. . .

f) Water conservation targets set by itself or a governing agency are insufficient; or (C)

g) Cal Water chooses to subsequently activate a different stage of the Schedule No. 14.1 tariff.

3. Activating Schedule No. 14.1

The Tier 1 advice letter requesting activation of a stage of the Schedule No. 14.1 tariff shall:

a) Include, but not be limited to, a justification for activating the particular stage of Staged Mandatory Reductions and Drought Surcharges, as well as the period during which the particular stage will be in effect. (C)

b) Be accompanied by the customer notification measures detailed in sub-section 5 (Public Notice) below.

4. De-Activating Schedule No. 14.1

When Schedule No. 14.1 is activated and Cal Water determines that water supplies are again sufficient to meet normal demands, and mandatory water use reductions are no longer necessary, Cal Water shall seek the approval of the California Public Utilities Commission, via a Tier 1 advice letter, to de-activate the particular stage of mandatory water use reductions that had been authorized.

5. Public Notice

a) When Cal Water requests the addition of Schedule No. 14.1 via a Tier 2 advice (T)
letter, it shall provide notice of the Tier 2 advice letter and associated public hearing (T)
to customers through bill inserts or direct mailing, and it shall comply with all (T)
requirements of Sections 350-358 of the California Water Code (CWC), including but not limited to the following:

(i) In order to be in compliance with both General Order 96-B and CWC, notice shall be provided via both newspaper and bill insert or direct mailing; (T)

(ii) One notice shall be provided for each advice letter filed that includes both notice of the filing of the Tier 2 advice letter as well as the details of the public hearing (date, time, place, etc.); (L)

(Continued)

F) ADOPTION OF SCHEDULE NO. 14.1 - STAGED MANDATORY REDUCTIONS AND DROUGHT SURCHARGES (continued) (L)

5. Public Notice (continued)

a) When Cal Water requests the addition of Schedule No. 14.1 via a Tier 2 advice letter, it shall provide notice of the Tier 2 advice letter and associated public hearing to customers through bill inserts or direct mailing, and it shall comply with all requirements of Sections 350-358 of the California Water Code (CWC), including but not limited to the following: (continued)

. . .

(iii) The public meeting shall be held after the Tier 2 advice letter is filed, and before the Commission authorizes the addition of Schedule No. 14.1 to the tariff, except in cases of emergency water shortages approved by the Commission; (C)

(iv) Cal Water shall consult with Division of Water and Audits staff prior to filing advice letter, in order to determine details of the public meeting.

b) In the event that Schedule No. 14.1 is triggered, and Cal Water requests activation through the filing of a Tier 1 advice letter, Cal Water shall notify its customers and provide each customer with a summary of Schedule No. 14.1 by means of bill insert or direct mailing. Notification shall take place prior to imposing any penalties associated with this plan. If activation of Schedule No. 14.1 occurs one year or more since the public hearing associated with adding Schedule No. 14.1 to its tariffs, then Cal Water shall conduct a public hearing pursuant to California Water Code Section 351 prior to activating a stage of the tariff. (T)

c) During the period that a stage of Schedule No. 14.1 is activated, Cal Water shall provide customers with updates in at least every other bill regarding its water supply status and the results of customers' conservation efforts. (L)

Appendix G: Conservation Master Plan

CONSERVATION MASTER PLAN 2026 – 2030

April 2026

Redwood Valley District

California Water Service

Prepared by M.Cubed

Executive Summary

This Conservation Master Plan presents California Water Service's (Cal Water's) strategy for managing water demand in the Redwood Valley District over the 2026–2030 planning period. The plan describes historical conservation performance, emerging regulatory and resource drivers, the District's conservation program framework, and the funding needed to support expanded conservation efforts.

Historical Progress

The Redwood Valley District has made extraordinary progress in reducing water use over the past two decades. Per capita water use has declined by more than 50 percent, reflecting the combined effects of universal metering, conservation-oriented pricing, expanded customer programs, and state and federal plumbing and appliance efficiency standards. These sustained reductions have enabled the District to meet or exceed historical conservation requirements—including compliance with the Water Conservation Act of 2009 and CPUC conservation goals—while continuing to provide reliable service in a high-desert environment.

Need for Continued Conservation

Although the Redwood Valley District is not subject to the State's Making Conservation a California Way of Life (MCCWL) regulations due to its size, and the Sustainable Groundwater Management Act (SGMA) does not currently impose binding demand reduction requirements on the groundwater basins serving the District, continued conservation remains prudent and strategically important. The District relies on local groundwater and purchased surface water supplies, and while these sources are projected to be adequate under normal and dry-year conditions, some basins exhibit localized capacity and water quality constraints. The District's UWMP reliability assessment indicates that supplies are sufficient to meet projected demands, including during extended drought conditions; however, small-system characteristics, hydrologic variability, and infrastructure limitations heighten the value of maintaining efficient water use and operational flexibility.

In this context, conservation functions less as a regulatory mandate and more as a risk-management and cost-control strategy for the District.

Conservation Program Strategy

Cal Water's conservation strategy integrates multiple demand-management tools within a centrally administered program framework designed to maximize consistency, cost-effectiveness, and regulatory compliance. Key elements include:

- Residential and non-residential conservation programs

- Increased emphasis on outdoor landscape efficiency and high-water-use customers
- Universal metering and conservation-oriented rate design
- Proactive water loss management
- Water waste prevention under CPUC Rule 14.1
- Ongoing program tracking, empirical savings evaluations, and regulatory reporting

Together, these components position conservation as a long-term resource strategy that supports compliance with state efficiency standards, groundwater sustainability objectives, and cost-effective service delivery.

Budget and Implementation

Cal Water is proposing an approximately 23 percent reduction in the Redwood Valley District's conservation budget in the 2024 General Rate Case. This adjustment reflects a targeted recalibration rather than a retreat from conservation. Because the District falls below the size threshold for MCCWL applicability, it is not formally subject to those requirements, and long-term projections indicate that regulated demand would remain below the District's UWUO even if it were. The requested budget therefore maintains core program delivery while reducing support components to improve cost efficiency.

Conclusion

Conservation will remain a central long-term resource strategy for the Redwood Valley District. Continued, disciplined investment in demand management will help moderate future demand growth, support supply reliability, and manage long-term service costs for customers. This Conservation Master Plan provides the framework for guiding those efforts over the 2026–2030 planning period and for adapting to evolving regulatory and hydrologic conditions in the years ahead.

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List of Acronyms

AB	Assembly Bill
AF	Acre-feet (one AF equals 325,851 gallons)
AMI	Advanced metering infrastructure
AMR	Automatic meter reading
AWE	Alliance for Water Efficiency
BCR	Benefit Cost Ratio
BMP	Best Management Practice
CalWEP	California Water Efficiency Partnership
CII	Commercial, industrial, and institutional
CPUC	California Public Utilities Commission
CUWCC	California Urban Water Conservation Council
EO	Executive Order
GPCD	Gallons per capita per day
GPF	Gallons per flush
GPM	Gallons per minute
GRC	General Rate Case
HET	High efficiency toilet
HEU	High efficiency urinal
HEW	High efficiency clothes washer
IOU	Investor-owned utility
MaP	Maximum performance toilet testing program
MCCWL	Making Conservation a California Way of Life
MGD	Million gallons per day
MOU	Memorandum of Understanding Regarding Urban Water Conservation in California
SB	Senate Bill
SB X7-7	Senate Bill X7-7 Water Conservation Act of 2009
ULFT	Ultra low flow toilet
UWMP	Urban Water Management Plan
WF	Water Factor
WSCP	Water Shortage Contingency Plan

1 Introduction

1.1 Master Plan Scope and Objectives

Cal Water is committed to helping its customers use water efficiently and has developed a broad portfolio of water conservation programs to support this objective. To ensure that these programs represent an appropriate and cost-effective mix, Cal Water routinely conducts comprehensive conservation program analysis and planning. This planning is undertaken on a five-year cycle in coordination with the Urban Water Management Plan (UWMP). The results of this planning effort for the Redwood Valley District are summarized in this report, which covers the period from 2026 through 2030.

New State regulations, rising water supply costs, and increasing competition for limited water supplies are driving the need for expanded conservation programs. Although Cal Water and its customers have made substantial progress in improving water-use efficiency and managing demand over the past two decades, additional conservation will be required going forward.

The recently adopted *Making Conservation a California Way of Life* (MCCWL) regulations establish a new set of conservation requirements and performance targets for urban water suppliers. In addition, the Sustainable Groundwater Management Act (SGMA) requires groundwater basins to be brought into long-term sustainability, with increased conservation expected to play a central role. At the same time, rising water supply costs in many parts of the State are making conservation an increasingly cost-effective means of narrowing the gap between water supply and demand.

Together, these regulatory, hydrologic, and economic factors underscore the need to expand conservation programming in the Redwood Valley District.

The primary purposes of this Conservation Master Plan are to:

- Serve as a high-level guidance document to inform annual conservation activities, including program implementation levels, staffing requirements, and budget needs, for both internal planning and stakeholder coordination.

- Summarize the portfolio of conservation measures that Cal Water plans to implement, including estimated water savings, program costs, and anticipated effects on water demand.

- Describe the evaluation process and criteria used to assess and select conservation measures.

- Provide an update to the 2016–2020 Conservation Master Plan as part of Cal Water's five-year review cycle, including an assessment of program performance and identification of any needed adjustments.

- Ensure that Cal Water districts are positioned to comply with the State's *Making Conservation a California Way of Life* (MCCWL) regulations.

1.2 Relationship to GRC and UWMP

Cal Water's operations are regulated by the California Public Utilities Commission (CPUC), which approves district-level budgets and rates through a triennial General Rate Case (GRC) proceeding. Conservation programs and associated expenditures are reviewed and authorized as part of each GRC.

The most recent completed GRC was initiated in 2021 and covered the three-year period from 2023 through 2025 (the 2021 GRC). Conservation programs and budgets reflected in this plan are those authorized under the 2021 GRC.

A subsequent GRC covering the period from 2026 through 2028 was initiated in 2024 (the 2024 GRC). In that proceeding, Cal Water has requested authorization for increased conservation program expenditures in the Redwood Valley District to support compliance with state conservation and groundwater regulations. At the time this plan was prepared, a final decision in the 2024 GRC had not yet been issued. As a result, it remains uncertain whether the requested level of conservation program funding needed to support compliance with state conservation requirements will be approved.

This plan updates the Conservation Master Plan completed by Cal Water in 2021, which covered the 2021–2025 planning period. It serves as the primary source of information on the historical and planned implementation of conservation programs reported in the Redwood Valley District's 2025 Urban Water Management Plan (UWMP). A copy of this Conservation Master Plan is included as an appendix to the UWMP.

1.3 Relationship to Water Shortage Contingency Plan

The Water Conservation Master Plan is distinct from Cal Water's Water Shortage Contingency Plan (WSCP), which is also included as part of each district's UWMP. The primary purpose of the WSCP is to provide a framework for responding to water shortage emergencies, such as those caused by drought or other events that temporarily disrupt water supplies.

In contrast, the purpose of the Water Conservation Master Plan is to establish a long-term framework for education, assistance, and incentive programs designed to help customers use water efficiently on an ongoing basis. Regardless of drought conditions, water in California is an increasingly scarce resource, and investments in water use efficiency have consistently been shown to be a cost-effective means of ensuring reliable water supplies over the long term.

While conservation programs become especially important during periods of water shortage, their primary objective is to support Cal Water's ability to reliably meet customer water needs well into the future.

1.4 Plan Organization

This Conservation Master Plan is organized to describe the context for conservation in the Redwood Valley District, assess regulatory and resource drivers, outline the District's conservation strategy, and present the funding and implementation framework for the 2026–2030 planning period.

- **Section 2** describes the Redwood Valley District service area, including population, customer characteristics, and historical water use trends.
- **Section 3** explains the need for expanded conservation, including new state efficiency requirements, groundwater sustainability considerations under SGMA, and the role of conservation in managing long-term cost of service.
- **Section 4** summarizes the District's performance relative to past and emerging conservation goals and regulatory targets, including SB X7-7, CPUC conservation goals, and Urban Water Use Objective (UWUO) requirements.
- **Section 5** presents the District's water conservation program strategy, including program administration, water waste prevention, metering and conservation pricing, water loss management, customer conservation programs, staffing, and program monitoring and reporting.
- **Section 6** describes the current and requested conservation budget, including budget components, proposed adjustments, and comparisons of authorized and requested funding levels.
- **Section 7** provides conclusions regarding the District's conservation progress, future needs, and the role of conservation as a long-term resource management strategy.

Together, these sections provide a comprehensive framework for understanding how conservation supports regulatory compliance, groundwater sustainability, water supply reliability, and cost-effective water service in the Redwood Valley District.

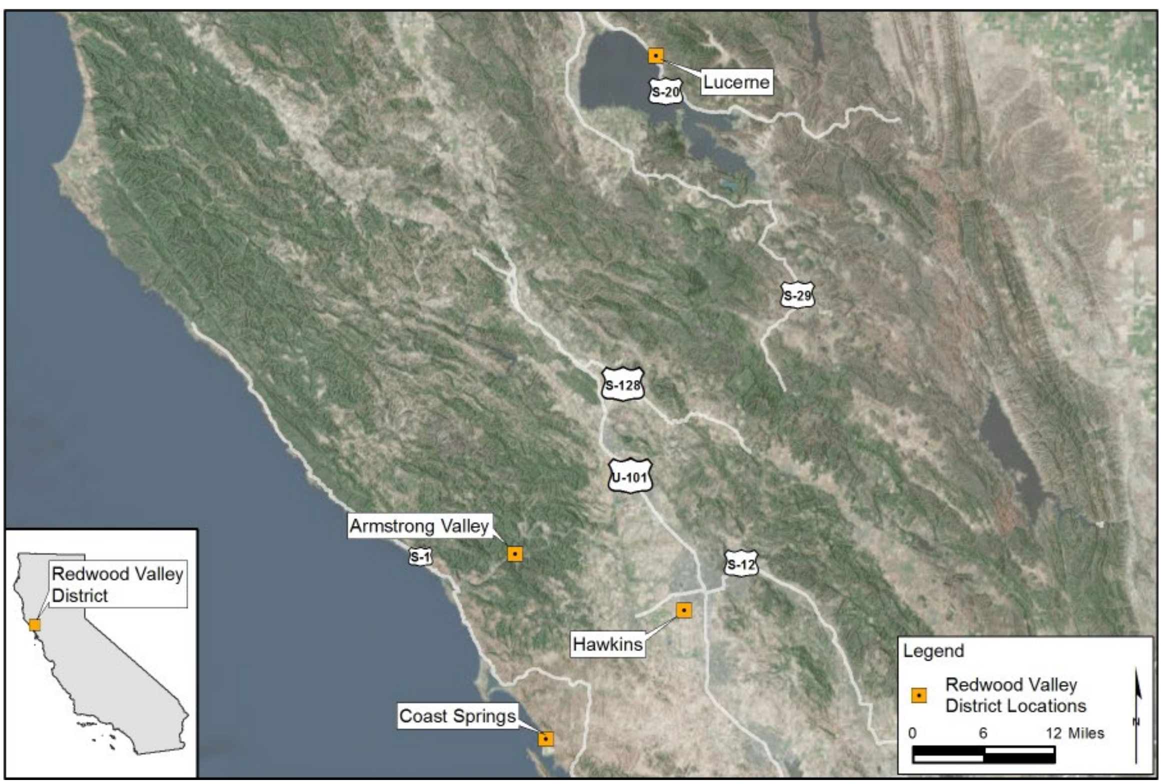
2 District Overview

District Quick Facts:

- Communities Served: Residential communities in Marin, Sonoma, and Lake Counties, including Dillon Beach, neighborhoods surrounding Guerneville, and the community of Lucerne on Clear Lake.
- Population served in 2025: 3,583
- Residential Customers: 96% of total services and 93% of total use
- Sources of Supply: local groundwater and purchased surface water
- Average Annual Water Deliveries Last Five Years: 380 AF
- Average Per Capita Water Use Last Five Years: 94 GPCD

The Redwood Valley District is a collection of six individual water systems spread throughout northern California in Marin, Sonoma, and Lake Counties. The District was formed in 2000 with the purchase of the Redwood Valley Water Company. On average, the District delivers 0.3 million gallons of water per day to 1,900 service connections. The District's water supply is a combination of groundwater and surface water. Surface water is purchased from the Sweetwater Springs Water District and the Yolo County Flood Control and Water Conservation District to supply the District's Lucerne and Rancho del Paradiso systems. The Coast Springs, Armstrong Valley, Noel Heights, and Hawkins get their supply from locally pumped groundwater. A map of the service area boundaries is shown in Figure 1.

Figure 1. Redwood Valley District Service Area Boundaries



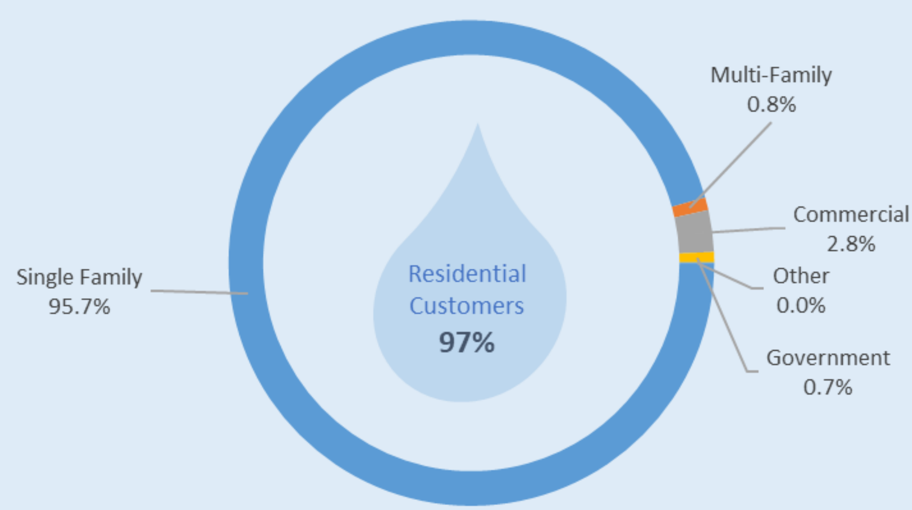
Service area population has held steady over the past decade and was estimated to be 3,583 in 2025. The District provides water service to residential, commercial, and governmental customers. Residential customers account for approximately 97 percent of service connections and 93 percent of total water use within the District. The distribution of service connections and water sales by customer category is shown in Figures 2 and 3.

On a per capita basis, water use in the District has declined steadily since the early 2000s. Between 2000 and 2025, water use per person decreased by 52 percent (Figure 4), falling from 197 gallons per capita per day (GPCD) to 96 GPCD. Despite population increasing by 14 percent during this period, total demand decreased by 45 percent—from 696 AF in 2000 to 383 AF today.

Several factors have contributed to this long-term reduction in use. Tiered residential pricing was adopted in 2009, strengthening incentives for efficient household water use. Additionally, beginning in 2012, Cal Water tripled conservation program expenditures, expanding customer access to tools and resources that support water-use efficiency. Lastly, state and federal efficiency standards have significantly reduced water use from toilets, showers, clothes washers, and other plumbing fixtures.

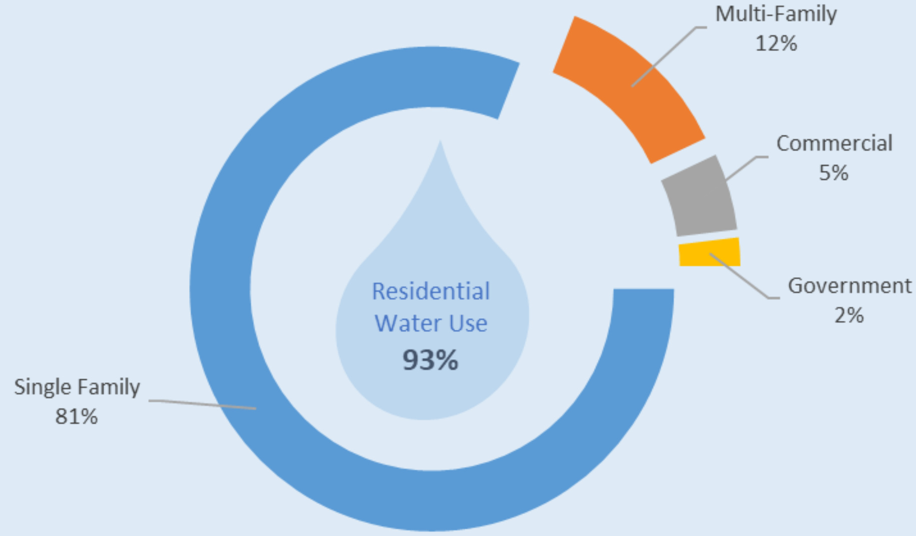
Collectively, these actions have resulted in a sustained reduction in water use across the service area.

Figure 2. Share of Services in 2025 by Customer Category



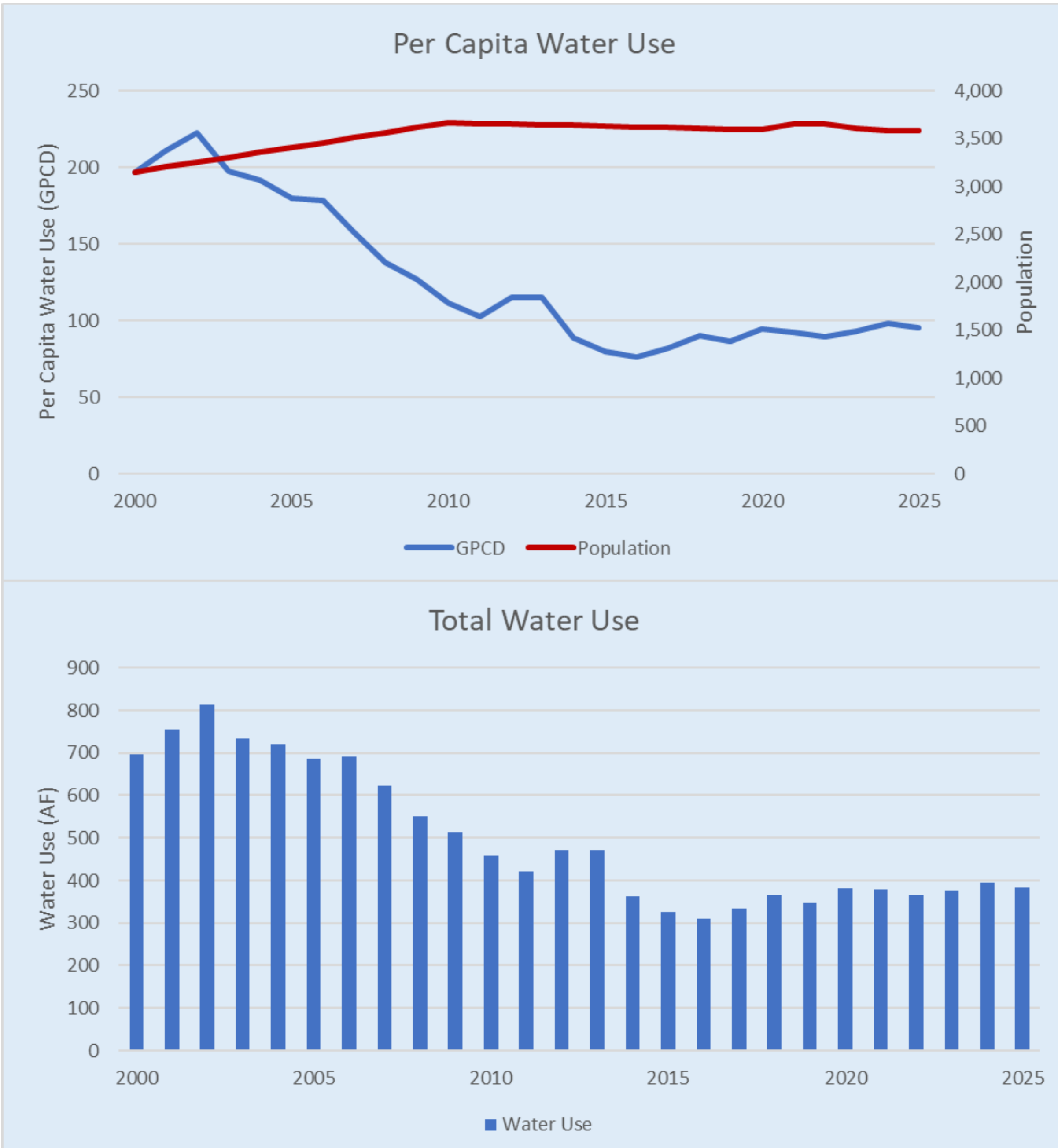
Note: values may not sum to 100% due to independent rounding.

Figure 3. Share of Water Sales by Customer Category: 2021-2025



Note: values may not sum to 100% due to independent rounding.

Figure 4. Total and Per Capita Water Use: 2000 - 2025



3 Need for Expanded Conservation

While the Redwood Valley District has achieved substantial reductions in per capita water use over the past two decades, evolving regulatory requirements, groundwater sustainability challenges, and rising water supply costs are increasing the need for additional conservation. Expanded conservation efforts will play a central role in meeting new state efficiency standards, supporting long-term groundwater reliability, and managing the cost of service for customers. The following sections describe these drivers in greater detail and explain how they shape the District's conservation planning priorities.

3.1 New State Regulations for Urban Water Use

In 2018, the California State Legislature enacted Senate Bill 606 and Assembly Bill 1668 to enhance the state's resilience against droughts and climate change. These laws – collectively referred to as the *Making Conservation a California Way of Life* legislation -- set stringent water efficiency standards that retail water suppliers must meet within an accelerated timeline. Starting in 2027, these suppliers are mandated to keep their water consumption within the limits of an Urban Water Use Objective (UWUO). The UWUO encompasses the aggregate efficient use of indoor and outdoor residential water uses, commercial landscape irrigation, and distribution system water loss. Furthermore, the regulations stipulate that water suppliers implement comprehensive commercial performance measures and substantially increase their reporting to the state on their progress in meeting these new requirements.

3.1.1 UWUO Compliance Requirements

An urban retail water supplier's UWUO represents the cumulative volumes of water shown in Figure 5.

Figure 5. Components of UWUO Standards

Residential Indoor Standard

The Residential Indoor Standard sets the maximum allowable indoor water use, measured in gallons per capita per day (GPCD). Initially, Assembly Bill 1668 established a statewide standard of 55 GPCD until January 1, 2025, then reducing to 52.5 GPCD until January 1, 2030, when it drops further to 50 GPCD. However, adjustments were made with the enactment of Senate Bill 1157 in 2022, which now sets the indoor standard at 55 GPCD in 2024, decreasing to 47 GPCD in 2025, and further to 42 GPCD by 2030.

It has been estimated that indoor residential use in California currently averages about 50 GPCD.[1] Thus, meeting the 2030 standard implies a 16 percent reduction from current indoor usage levels.

Residential Outdoor Standard

The outdoor standard is tailored to the efficient water use required for residential landscaping within each district's climate. It involves an aggregate water budget calculated as follows:

Outdoor Residential Budget = LAM x LEF x (ETo – Peff) x 0.62

In this equation:

- **LAM** is the measured residential landscape area in square feet.
- **ETo** represents the reference evapotranspiration, measured in inches per year.[2]
- **Peff** is the effective precipitation, also in inches per year.[3]
- **LEF** (Landscape Efficiency Factor) is a regulatory factor that dictates the overall water budget.

The LEF poses significant compliance challenges due to its stringent reduction targets. Initially set at 0.80, the LEF will decrease to 0.63 starting July 1, 2035, and further to 0.55 by July 1, 2040.

For new residential landscapes, the standard is immediately more stringent, set at a LEF of 0.55 from the outset. This means that all new residential landscaping must meet this lower efficiency factor regardless of the current LEF enforced for existing landscapes. This regulation ensures that new developments contribute to water conservation efforts from their inception.

[1] See Results of the Indoor Residential Water Use Study prepared by the California Department of Water Resources.
[2] The amount of water needed to maintain cool season turf grass in a healthy condition.
[3] The portion of annual rainfall available for plant water requirements thereby reducing the amount needing to come from irrigation.

The introduction of progressively lower LEF values for existing landscapes, combined with the standard for new developments, presents a considerable challenge. Maintaining the health of turf grass will be particularly difficult when the LEF drops below 0.8. Many communities may need to significantly reduce or even eliminate turf grass, a change that will transform the visual and functional aspects of residential outdoor spaces.

CII Dedicated Irrigation Meter Standard

The water budget for CII Dedicated Irrigation Meters (DIMs) is calculated similarly to residential landscaping but adheres to a stricter standard. Starting July 1, 2040, the required efficiency factor for these meters will be set at 0.45, making the maintenance of landscapes with significant amounts of turf nearly unattainable. It is the responsibility of each retail water agency to accurately measure and map the landscape area for their dedicated irrigation accounts. These measurements are then incorporated into a landscape water use equation to establish a supplier-specific CII landscape budget.

For retail water suppliers, including Cal Water, that do not currently have a CII DIM customer classification, the regulations impose additional requirements. These suppliers are mandated to identify all CII Mixed Use Meters (MUMs) within their service areas that serve landscapes of half an acre or more of irrigated area. They must either install DIMs for these landscapes or implement at least two equivalent in-lieu technologies designed to measure and enhance landscape water-use efficiency at these sites. This aspect of the legislation ensures that all significant landscape areas, regardless of their current meter classification, are brought under stringent water use monitoring and management. The actions Cal Water will be required to take to satisfy these requirements are described in a subsequent section of this plan.

Water Loss Standard

The Water Loss Standard, established by Senate Bill 555, sets rigorous criteria for managing "real" water loss, which includes actual physical leakage from a water supplier’s distribution system. The standard specifies the maximum allowable water loss per connection per day for each urban water retailer's service area. This is determined using system-specific validated baseline water loss audit data.

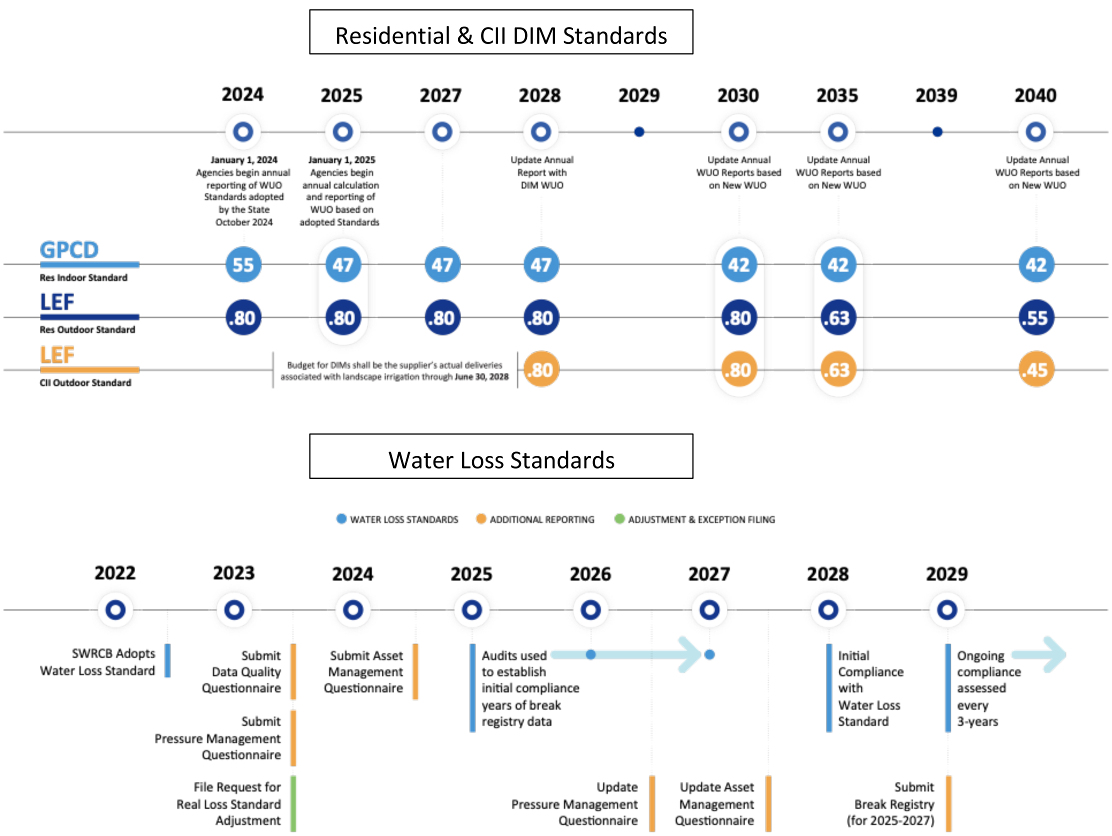
Every year, water suppliers must conduct a detailed audit of their distribution systems to pinpoint where and how water losses occur—whether through leaks, meter inaccuracies, unauthorized consumption, or other inefficiencies. The primary objective is to accurately gauge the extent of water loss and to develop effective strategies to reduce it, thereby enhancing the overall efficiency of the water supply system and conserving water resources.

It is crucial to note that compliance with the Water Loss Standard is mandatory for all suppliers, regardless of their total water use relative to their UWUO. Even if a supplier’s aggregate water usage falls below their designated UWUO, they must still meet their specific water loss standards. This separate and independent compliance requirement underscores the importance of including water loss monitoring, management, and reporting tasks in the plan.

WUO Compliance Timeline

Compliance with these standards will require rigorous documentation and adherence to evolving guidelines, underscoring the escalating complexities water suppliers face under the UWUO compliance framework. Figure 6 outlines the compliance timelines for these regulatory components.

Figure 6. Compliance Timeline for Meeting WUO Standards



3.1.2 Mixed-Use Meter Requirements

As discussed above, the regulations mandate that each retail water agency must identify all CII MUM accounts with landscaped areas of half an acre or more by June 30, 2027. These sites must either be converted to dedicated irrigation meters by 2039 or be equipped with at least two approved in-lieu water management technologies. By June 30, 2040, suppliers are required to achieve and maintain a 95% conversion rate to dedicated irrigation meters or equivalent interventions annually.

For water suppliers opting to implement in-lieu water management technologies on CII large landscapes, they have until June 30, 2029, to identify all sites that will require treatment. Acceptable in-lieu water management technologies include:

1. Water budget-based management programs without a specific rate structure.
2. Water budget-based rate structures.
3. Installation of technologies that support detailed monitoring and analysis of outdoor water use, such as Advanced Metering Infrastructure.
4. Use of remote sensing or similar technologies to monitor and analyze outdoor water usage.
5. Other technologies that assist in water use analysis or enhance outdoor water use efficiency, pending Board approval.

Additionally, the proposed regulations require water suppliers managing large landscapes without Dedicated Irrigation Meters to implement the following water management practices:

1. Regular communications with users about water efficiency.
2. Maintenance of irrigation systems to ensure optimal performance.
3. Adherence to efficient irrigation scheduling practices to minimize waste.

These requirements are designed to ensure more precise water use monitoring and management, helping these sites to meet conservation goals and comply with regulatory standards.

3.1.3 CII Performance Measures

For CII properties, the state has not set efficiency standards per se but has mandated specific performance measures due to the high variability and insufficient data on water use across commercial properties. The proposed measures aim to identify high water users and promote efficiency within this sector.

These new requirements entail substantial utility staff efforts to analyze the water usage of CII customers. One such task requires categorizing all CII accounts into 19 Energy Star Portfolio Manager property types, in addition to three specialized water-centric business categories: water recreation, vehicle washes, and laundries.

Additionally, suppliers are required to identify all buildings within their service area that are 50,000 square feet or larger by June 30, 2024, or when the regulations take effect—whichever is later. The regulations require water suppliers to provide an aggregate water use report to each of these properties upon request from the building owner or their representative.

Water suppliers are also tasked with identifying their Top Water Users in CII and choosing from three tracks of Best Management Practices (BMP) compliance to address the highest water users. Full implementation for all tracks must be finalized by June 30, 2039. Each track is detailed as follows:

- **Track 1**: By June 30, 2025, identify both the top 2.5% and top 20% of all CII water users. Implement a conservation program that includes at least two BMPs from each of five BMP categories for the top 2.5% (10 BMPs in total), and one BMP from the same categories for the top 20% (5 BMPs in total).

- **Track 2**: By June 30, 2027, identify the top 2.5% and top 20% of water users within each of the 22 CII classification categories. Implement a conservation program that includes at least two BMPs from each of five BMP categories for the top 2.5% users, and one BMP from the same categories for the top 20% in each category.

- **Track 3**: By June 30, 2029, identify existing CII connections deemed inefficient based on Key Business Activity Indicators (KBAI) developed for each of the 22 CII categories. Implement a conservation program that includes at least one BMP from each of the five BMP categories.

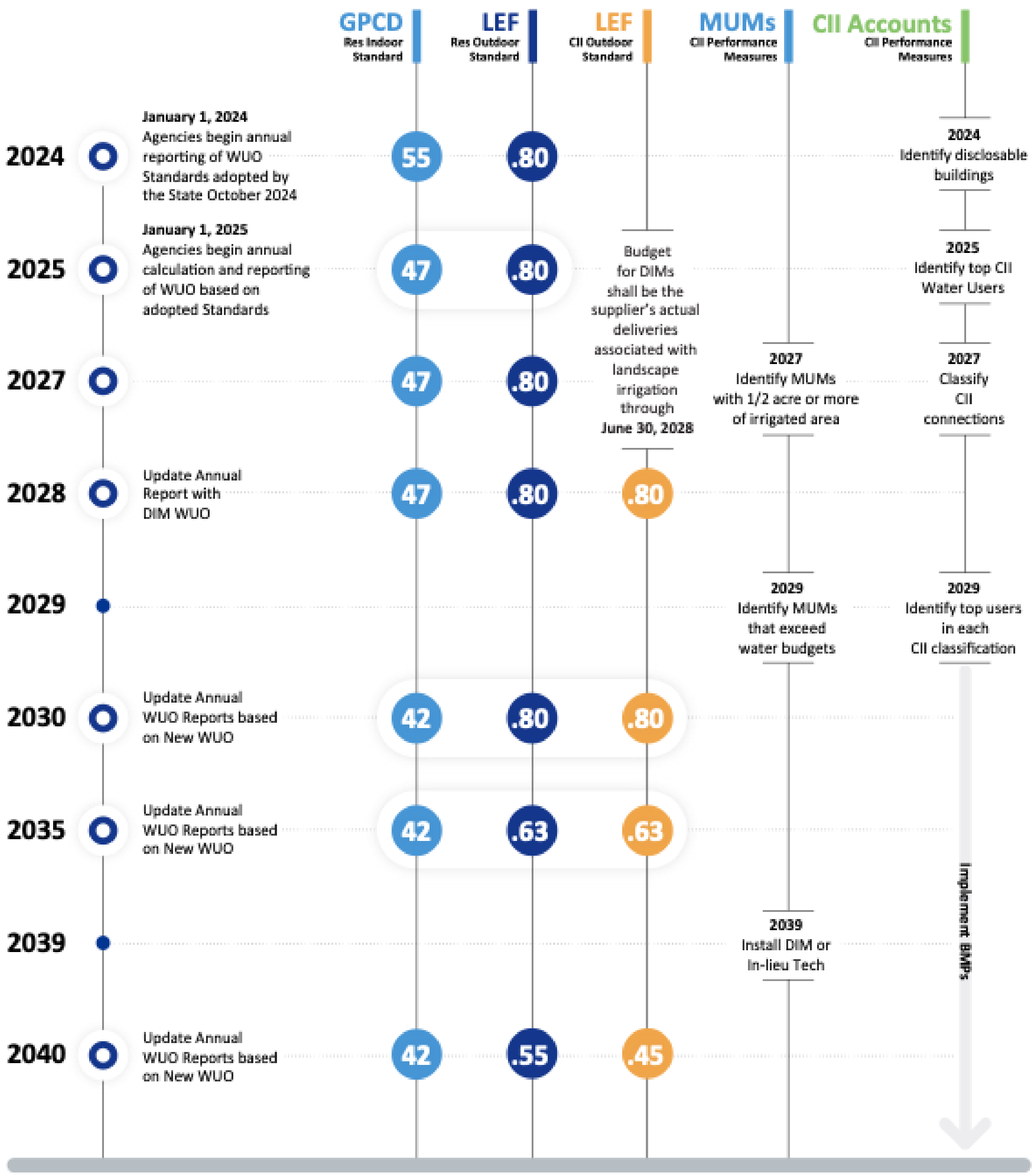
CII Performance Measures and UWUO Compliance

Despite the comprehensive nature of these measures, it is important to note that none of the savings achieved through these efforts will count towards a water agency's compliance with their UWUO. Although these measures are a legally mandated and significant undertaking, they do not directly contribute to UWUO compliance, presenting a challenging scenario for suppliers who must fulfill these obligations without them counting towards their UWUO compliance requirements.

3.1.4 Overall Compliance Timeline and Enforcement Provisions

Figure 7 outlines the critical reporting dates and compliance milestones associated with the *Making Conservation a California Way of Life* regulatory framework. This schedule details the progressive tightening of standards from 2025 to 2040. Starting on January 1, 2027, water suppliers are required to demonstrate compliance with the UWUO on an annual basis.

Figure 7. Making Conservation a California Way of Life Regulatory Framework Timeline



Beginning in 2027, under the new regulations, retail water suppliers are mandated to maintain their actual water use at or below the levels specified by their UWUO. After November 1, 2027, the State Water Board is empowered to enforce civil penalties for non-compliance. These penalties can reach up to $1,000 per day in non-drought years and escalate to $10,000 per day during drought conditions. In addition to monetary fines, the State Water Board may issue informational orders demanding specific data and information needed for assessing compliance, as well as conservation orders that mandate actions to be taken by the water supplier to enhance water resource conservation.

Although the State Water Board has indicated a possible delay in enforcement to allow water suppliers adequate time to adhere to these standards, it is important to acknowledge that the 2018 legislation codifies these deadlines. Consequently, water suppliers remain at risk of third-party lawsuits grounded on claims of waste and unreasonable use if they do not achieve UWUO compliance by the stipulated dates.

3.1.5 Non-Functional Turf Watering Ban

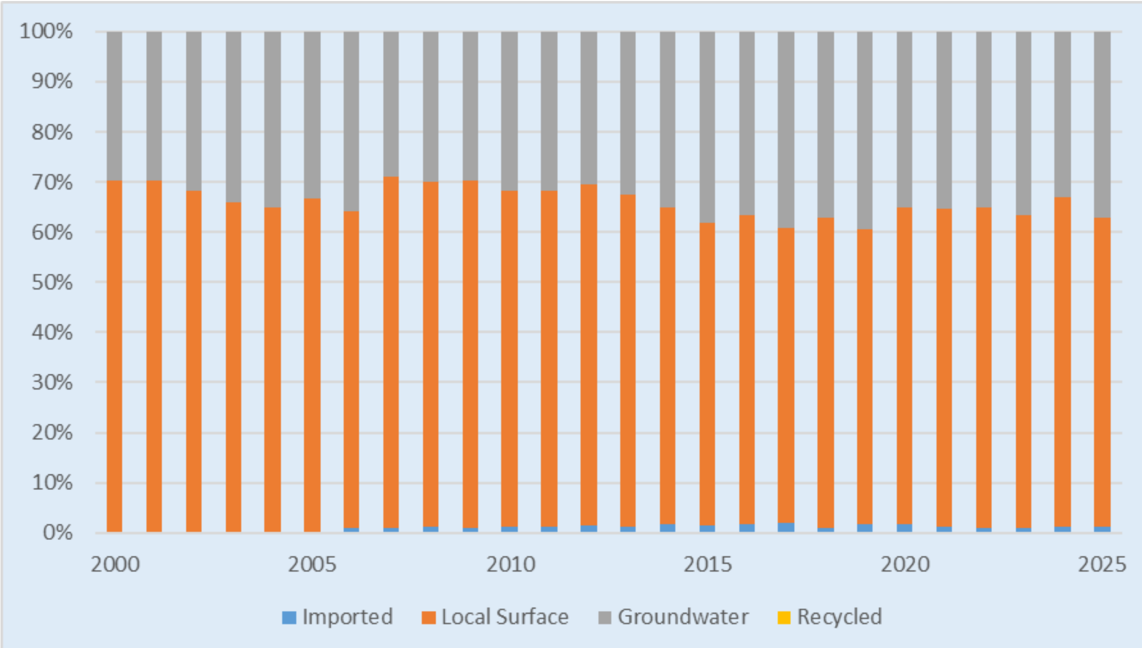
Alongside the *Making Conservation a California Way of Life* framework, a separate regulation now exists that restricts the use of potable water for watering "non-functional" turf. Drawing inspiration from a similar initiative in Nevada, the California Legislature enacted Assembly Bill 1572 in October 2023. This law prohibits the irrigation of non-functional turf on CII properties using potable water. Although property owners retain autonomy to determine what qualifies as "functional" versus "non-functional" turf, water suppliers are tasked with updating their ordinances and communicating the prohibitions to customers. Additionally, suppliers may choose to provide technical or turf replacement program support to customers facing turf removal, necessitating further allocation of staff and budgetary resources.

3.2 Addressing Supply Reliability

The District relies on a combination of purchased surface water and local groundwater supplies. While these sources are projected to be adequate under normal and dry-year conditions, certain groundwater basins exhibit localized capacity and water quality constraints. The District's UWMP reliability assessment concludes that available supplies are sufficient to meet projected demands; however, hydrologic variability, small-system characteristics, and infrastructure limitations underscore the importance of maintaining efficient water use and operational flexibility.

Historically, approximately 60 to 70 percent of the District's total supply has been provided through purchased water, with the remaining 30 to 40 percent derived from local groundwater. Two of the District's six water systems—Lucerne and Rancho del Paradiso—are fully dependent on purchased supplies, while Armstrong Valley, Coast Springs, Hawkins Ridge, and Noel Heights rely exclusively on local groundwater. Each of these systems operates independently and depends on a single primary source of supply, increasing vulnerability to localized disruptions, infrastructure outages, or short-term hydrologic constraints. In this context, conservation plays an important role in moderating peak demand, preserving operational flexibility, and enhancing overall system reliability.

Figure 8. Purchased Surface Water as Share of Total District Supply



3.3 Managing Cost of Service

In addition to meeting regulatory and groundwater sustainability requirements, expanded conservation plays an important role in managing the long-term cost of water service. Many of Cal Water's conservation programs are able to generate verified water savings at a cost in the range of approximately $500 to $1,000 per acre-foot (AF), placing conservation among the lower-cost water resource options available to the District. By comparison, purchased surface water supplies often cost more than $1,000 per AF, and the development of new supply sources—such as recycled water, groundwater remediation, desalination, or new surface storage—can exceed $2,000 per AF when capital, treatment, conveyance, and operating costs are considered.

Because conservation can reduce the volume and timing of higher-cost supply acquisitions, it helps moderate upward pressure on rates while also improving supply reliability. In many situations, enhanced conservation represents one of the lowest-cost sources of incremental water supply available to the District and plays an important role in managing future cost-of-service impacts for customers, even as additional supply investments may still be required over the long term.

3.4 Summary of Conservation Drivers

Taken together, regulatory, hydrologic, and economic factors create a strong and continuing need for sustained conservation in the Redwood Valley District. In parallel with these regulatory and resource challenges, the cost of water supply development and long-term system investments continues to rise. Compared with developing new supplies or expanding system capacity, conservation often represents the least-cost resource available to meet incremental demand and preserve reliability margins. Sustained conservation therefore serves multiple objectives: supporting compliance with State efficiency standards, strengthening resilience to supply variability, and helping manage long-term cost-of-service impacts for customers. For these reasons, conservation will remain a central component of the District’s resource management strategy over the 2026–2030 planning period and beyond.

4 Progress Towards Conservation Goals and Targets

This section summarizes the Redwood Valley District's progress toward key state and regulatory conservation requirements and assesses the District's outlook for compliance with new state conservation requirements. It reviews performance relative to the Water Conservation Act of 2009 (SB X7-7) and the California Public Utilities Commission (CPUC) conservation goals, both of which reflect historical reductions in per capita water use. It then evaluates future compliance with the State's Urban Water Use Objective (UWUO) framework under the *Making Conservation a California Way of Life* regulations, which establish increasingly stringent efficiency requirements beginning in 2027.

Together, these measures provide a bridge between past conservation achievements and the additional reductions that will be required in the coming decades. The analysis highlights that while the District has met or exceeded prior conservation targets, further conservation beyond currently authorized levels will likely be necessary to maintain compliance with post-2030 state efficiency standards.

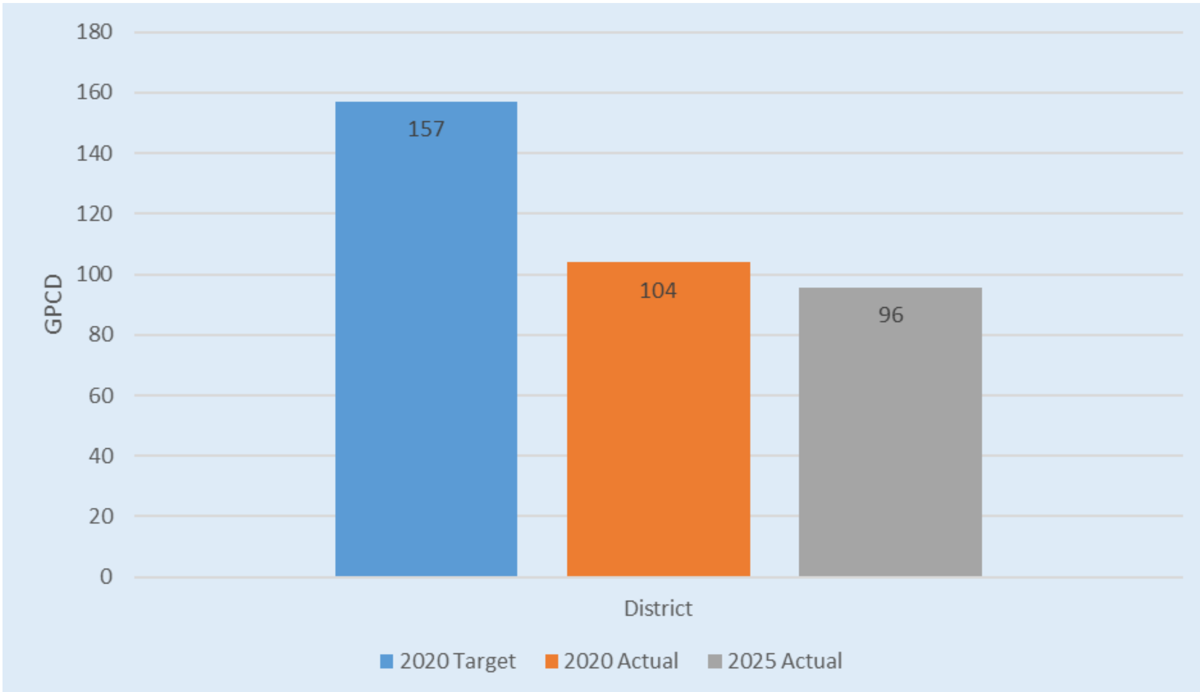
4.1 Compliance with Water Conservation Act of 2009

The Water Conservation Act of 2009 (SB X7-7) required urban retail water suppliers to achieve a 20 percent reduction in per capita water use by 2020. To comply, each supplier was required to establish a 2020 per capita water use target based on historical water use. The statute also allowed suppliers to meet the requirement through participation in a Regional Alliance with other urban retail water suppliers.

Cal Water districts within the same hydrologic region formed Regional Alliances for compliance purposes. However, because the Redwood Valley District is partially within the San Francisco Bay and North Coast hydrologic regions it was unable to form a regional alliance with other Cal Water districts. Therefore, it demonstrated compliance with SB X7-7 based solely on its individual district target.

As shown in Figure 9, the Redwood Valley District has maintained compliance with the Water Conservation Act of 2009. In 2025, the District's per capita water use remained well below its compliance target, reflecting ongoing improvements in water-use efficiency by both the District and its customers.

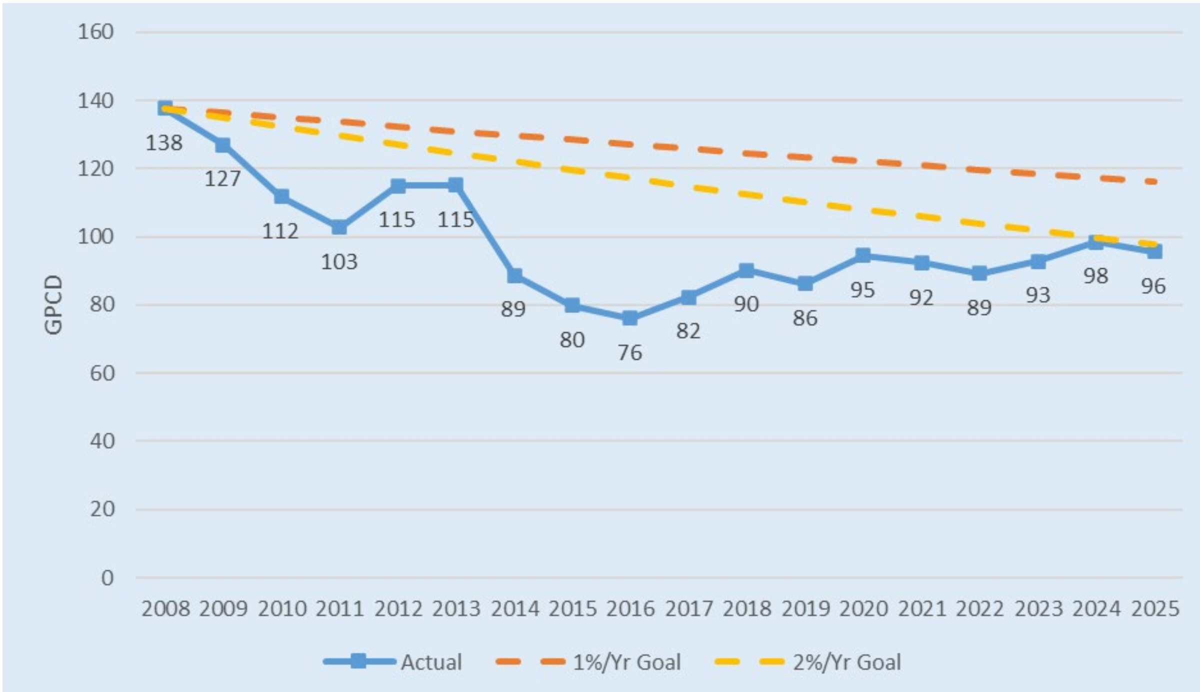
Figure 9. 2020 Target and Actual Per Capita Water Use



4.2 Compliance with CPUC Conservation Goals

In 2008, the CPUC established a water conservation goal of 1 to 2 percent per annum for Class A water utilities, including California Water Service Company. As shown in Figure 10, the Redwood Valley District has consistently exceeded this goal. Since adoption of the CPUC's conservation goal, District per capita water use has declined by approximately 31 percent.

Figure 10. District Per Capita Water Use Relative to CPUC Conservation Goals



4.3 UWUO Compliance Assessment

As described in Section 3, the UWUO establishes an aggregate water-water budget calculated from: (1) a residential indoor water use standard; (2) a residential outdoor water budget; (3) a CII landscape outdoor water use budget for landscapes served by dedicated irrigation meters; (4) a water loss budget; (5) allowable variances; and (6) a potable reuse bonus. Beginning in 2027, the District must annually assess whether the sum of its regulated water uses—residential indoor and outdoor use, dedicated irrigation meter use, and distribution system water loss—is at or below its UWUO. Additionally, starting in 2028, the District must demonstrate that real and apparent distribution system water loss rates are less than their corresponding standards.[4] As noted in Section 3, compliance with the water loss standards is required even if the District's total regulated water use is below its UWUO.

The state standards underlying the residential indoor, residential outdoor, and CII outdoor components of the UWUO will become increasingly stringent over time. As a result, compliance is expected to require continued reductions in water use beyond those achieved under the SB X7-7 framework.

[4] Real losses refer to physical loss of water through leaks, spills, and seeps, while apparent losses refer to unaccounted for water due to meter inaccuracies, administrative or record keeping errors, or theft.

Cal Water has evaluated how projected regulated water use in the Redwood Valley District compares to anticipated UWUO requirements over the UWMP 2025-2050 planning horizon. The assessment is predicated on levels of conservation that are currently authorized by the CPUC, together with anticipated passive conservation savings. These passive savings include continued turnover of plumbing fixtures and appliances subject to state and federal efficiency standards and customer behavioral responses to conservation-oriented rate structures.

Under this baseline demand scenario, regulated water use in the Redwood Valley District is projected to remain below the applicable UWUO requirements through around 2030. Beyond that point, as state standards for residential indoor use, residential outdoor use, and CII outdoor use become more stringent, regulated demands are projected to exceed UWUO levels in the absence of additional conservation beyond what is currently authorized and assumed in the baseline forecast, as shown in Table 1 and Figure 11.

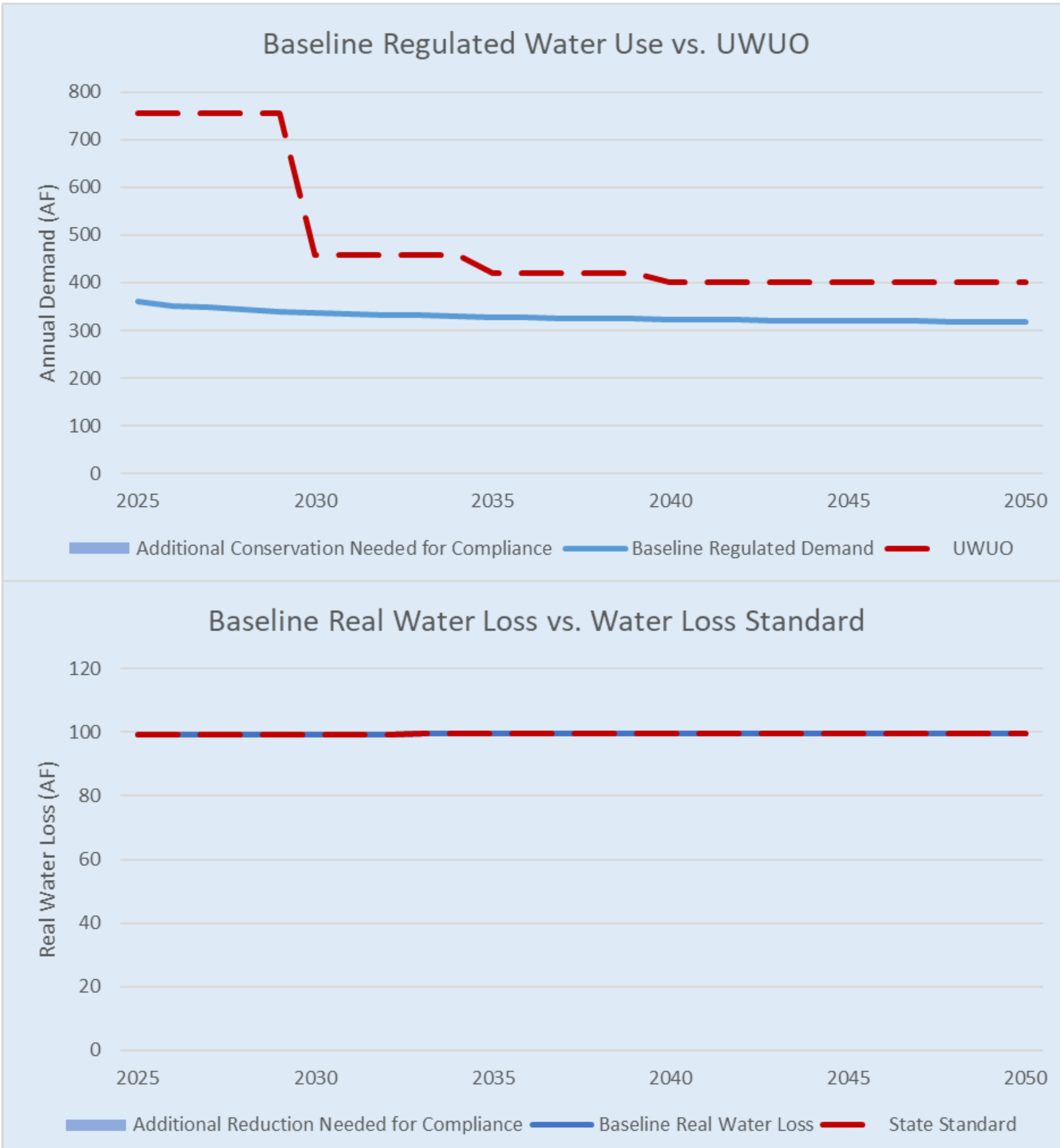
Based on this evaluation, both regulated water uses and distribution system water losses are projected to remain below their respective targets over the planning horizon. In the case of distribution system water loss, the State Water Resources Control Board (SWRCB) has yet to establish system-specific water loss performance standards for the District's six water systems. In the absence of adopted standards, the District's interim performance threshold effectively defaults to its reported level of real water loss. Accordingly, the analysis reflects compliance under current regulatory conditions. This assumption may change in future planning cycles if the SWRCB adopts formal water loss standards applicable to the District.

Table 1. Redwood Valley District Projected Regulated Demands vs UWUO

Regulated Water Use					
Year	Service Area Population (a)	Water Demand Subject to UWUO Compliance (b)	UWUO Projections	Over (+)/Under (-) UWUO	
		(AF)	(AF)	(AF)	(GPCD)
2025	3,583	361	755	-394	-98
2030	3,583	336	458	-122	-30
2035	3,583	328	419	-91	-23
2040	3,583	323	401	-78	-19
2045	3,583	320	402	-81	-20
2050	3,583	317	402	-85	-21
Distribution System Real Water Loss					
Year	Service Area Population (a)	Baseline Real Water Loss Projections	Real Water Loss Standard Projections	Over (+)/Under (-) Standard	
		(AF)	(AF)	(AF)	(GPCD)
2025	3,583	99	99	0	0
2030	3,583	99	99	0	0
2035	3,583	99	99	0	0
2040	3,583	100	100	0	0
2045	3,583	100	100	0	0
2050	3,583	100	100	0	0

NOTES:
(a) From 2025 UWMP Table 3-1.
(b) Water demand subject to UWUO compliance includes single family, multi-family, dedicated irrigation meter, and water loss sectors (excluding unbilled authorized consumption) and is detailed in 20205 UWMP Table 4-2.

Figure 11. Redwood Valley District Projected Regulated Demand vs. UWUO



4.4 Summary of Progress Toward Goals and Targets

The Redwood Valley District has demonstrated strong performance relative to historical conservation requirements. Per capita water use has declined substantially over the past two decades, enabling the District to maintain compliance with the Water Conservation Act of 2009 and to consistently exceed CPUC conservation goals for Class A water utilities. These results reflect the combined effects of conservation programming, metering, conservation-oriented pricing, and state and federal plumbing and appliance efficiency standards.

Looking forward, the District's baseline demand projections—reflecting currently authorized conservation and anticipated passive efficiency gains—indicate that regulated water use is expected to remain below UWUO and water loss requirements throughout the planning horizon.

5 Water Conservation Program Strategy

This section describes the strategy Cal Water uses to manage water demand in the Redwood Valley District and to support compliance with state conservation, groundwater sustainability, and cost-of-service objectives. Rather than relying on any single measure, the District's approach combines regulatory tools, pricing signals, system efficiency improvements, and customer-focused conservation programs to achieve sustained reductions in water use.

The strategy is implemented within a centrally administered program framework that promotes consistency, cost-effectiveness, and regulatory compliance across Cal Water's service areas. Within this structure, the District applies a coordinated set of actions that include water waste prevention and enforcement, universal metering and conservation-oriented pricing, water loss management, residential and non-residential conservation programs, and expanded efforts to transform outdoor landscape water use in response to emerging state efficiency standards. The subsections that follow describe how these elements work together to form an integrated long-term demand management strategy.

5.1 Program Administration

Cal Water administers its conservation programs on a centralized basis across its service districts. This structure reflects both operational and regulatory considerations. Because Cal Water operates as a single regulated utility, conservation program budgets, designs, and performance are reviewed and authorized through statewide CPUC General Rate Case proceedings. Centralized administration helps ensure that programs are implemented consistently with CPUC authorizations and reporting requirements while allowing Cal Water to maintain standardized tracking, evaluation, and compliance processes.

Central administration also creates important efficiencies. By offering a core set of programs across multiple districts, Cal Water can leverage economies of scale in program design, marketing, rebate fulfillment, data management, and vendor contracting. These scale advantages reduce per-unit program costs and improve overall cost-effectiveness. Consistent program offerings also simplify customer communications and expectations, as customers across districts have access to a similar suite of rebates, services, and educational resources.

While program administration is centralized, implementation is informed by local conditions. Marketing emphasis, customer targeting, and outreach strategies are adjusted to reflect district-specific conservation drivers, such as groundwater sustainability requirements, UWUO compliance needs, and customer water use characteristics. This structure allows Cal Water to balance systemwide efficiency with responsiveness to the Redwood Valley District's particular conservation needs.

5.2 Water Waste Prevention

Cal Water's authority to enforce water waste prevention measures and water use restrictions is established and overseen by the CPUC through Rule 14.1 or Schedule 14.1. In addition, local governments within Cal Water districts may adopt ordinances regulating water use. Cal Water coordinates its water waste prevention efforts with applicable local jurisdictions. For the Redwood Valley District, this coordination includes Lake and Sonoma Counties.

CPUC Rule 14.1 defines the District's Water Shortage Contingency Plan, including, but not limited to, permanent prohibitions on water waste and restrictions on water use. Prohibited water waste practices include, but are not limited to, the following:

- Use of potable water through a broken or defective plumbing fixture or irrigation system after Cal Water has provided written notice to repair the condition and the customer has failed to complete repairs within seven business days of receipt of the notice.

- Application of potable water to landscapes in a manner that results in runoff onto adjacent property, non-irrigated areas, sidewalks, roadways, parking lots, or structures.

- Use of a hose to wash vehicles—including cars, trucks, buses, boats, aircraft, and trailers—unless the hose is equipped with a shut-off nozzle or similar device that immediately stops water flow when not in use.

During water shortage conditions, Schedule 14.1 also authorizes Cal Water to implement additional water use restrictions, which may include the following:

- Limitations on outdoor irrigation, including restrictions on time of day and frequency of watering.

- Requirements to repair leaks, breaks, or malfunctions following written notification by Cal Water.

- Application of potable water to driveways, sidewalks, and other hardscapes.

- Use of potable water in water features unless the feature operates as a recirculating system.

- Application of potable water to outdoor landscapes during and within 48 hours following measurable rainfall.

- Serving drinking water in eating or drinking establishments unless requested by the customer.

- Irrigation of ornamental landscaping on public street medians.

- Irrigation of landscapes at newly constructed homes or buildings using potable water in a manner inconsistent with requirements established by the California Building Standards Commission or the Department of Housing and Community Development.

- Requirements for hotels and motels to provide guests with the option to decline daily laundering of towels and linens, with clear and prominent notice provided in each guest room.

- Limitations on filling ornamental lakes or ponds.

- Use of potable water for street cleaning, except for initial wash-down associated with construction activities.

- Use of potable water for construction-related purposes, such as dust control or backfill consolidation, unless no alternative water source or method is available.

These measures are a component of the District's overall demand management strategy and support compliance with state water conservation regulations.

5.3 Metering and Conservation Pricing

Metering provides the measurement needed to track usage, identify leaks and high-use patterns, and manage demand effectively—because water use cannot be managed if it is not measured—while volumetric and tiered pricing structures create clear financial incentives for customers to use water efficiently.

Metered Service

All services in the District are metered and routinely calibrated and tested for accuracy. Metering water use provides improved customer awareness of water use, stronger price signals under volumetric billing, and the identification and repair of leaks. Metered households typically use 10 to 30 percent less water than similar unmetered households. [5]

Advanced Metering Infrastructure

Cal Water is also piloting automatic meter reading (AMR) and advanced metering infrastructure (AMI). If deployed more broadly in the future, AMI would enhance the District's ability to detect leaks and other system issues and to notify customers of potential problems. AMI would also allow the provision of more timely and detailed

[5] Tanverakul, S. A., & Lee, J. (2015). *Impacts of Metering on Residential Water Use in California.* Journal of the American Water Works Association, 107(2).

water use information, supporting customer engagement as well as enabling customers to more closely monitor their own water usage and take appropriate actions to improve their water use efficiency.

Conservation Pricing

The District uses a four-tier increasing block rate structure for residential water use and a single-tier uniform rate for non-residential customers. Under the residential rate design, the unit price of water increases as usage rises, providing progressively stronger financial incentives for customers to use water efficiently and to limit discretionary outdoor use. The District also offers rate assistance to lower-income households through its Customer Assistance Program (CAP). All District water rates are reviewed and authorized by the CPUC through the General Rate Case process conducted every three years.

5.4 Water Loss Management

The District conducts annual distribution system water loss audits using the American Water Works Association (AWWA) Free Water Audit Software and reports the results to the California Department of Water Resources.[6]

To guide ongoing water loss management, Cal Water has developed a Water Loss Control Compliance Plan and a Water Loss Control Policy. These documents provide a framework for:

- Meeting current and future CPUC and state water loss standards and regulatory requirements;
- Improving audit data quality and validation scores; and
- Identifying and implementing cost-effective water loss control actions.

Cal Water has also conducted a comprehensive assessment comparing each district's current and projected distribution system water loss to applicable water loss standards. The results show that the Redwood Valley District is currently on track to comply with the state-established efficient water loss standards pursuant to Senate Bill 555.

5.5 Customer Conservation Programs

Cal Water has a long-standing water-use efficiency program designed to reduce water use across residential and non-residential customer classes. The program includes landscape conversion incentives, irrigation equipment rebates, indoor device rebates,

[6] Completed water audits may be accessed at: https://wuedata.water.ca.gov/

and customer education resources. Core programs available to residential customers are summarized below. Additional programs are offered to non-residential customers, and program offerings may be adjusted over time based on district-specific needs and program performance.

5.5.1 Current Customer Conservation Programs

Cal Water currently offers residential customers a range of water-use efficiency rebates, support services, and educational resources, including the following:

Turf Replacement

- Turf replacement rebates of up to $3 per square foot for removal of turf and conversion to California-friendly, low-water-use landscaping with efficient irrigation.

Irrigation Equipment Rebates

- Smart Landscape Tune-Up: A free, site-specific irrigation assessment that includes approved repairs to existing irrigation systems and installation of high-efficiency sprinkler nozzles and smart irrigation controllers, as appropriate.

- Smart irrigation controllers: Rebates of $125 per controller for weather- and soil-based irrigation controllers that adjust watering schedules based on site conditions.

- High-efficiency sprinkler nozzles: Rebates of $5 per nozzle for replacing conventional spray nozzles with high-efficiency nozzles that apply water more uniformly.

Indoor Device Rebates

- High-efficiency clothes washers: Rebates of $150 per washer for eligible models that use substantially less water than standard washers.

- MaP Premium high-efficiency toilets: Rebates of $50 per toilet for models using 1.1 gallons per flush or less.

- Conservation kits: Free kits containing water-saving plumbing devices, such as high-efficiency showerheads, faucet aerators, hose nozzles, leak detection tablets, and educational materials.

Online Resources

- Cal Water maintains a suite of online water-use efficiency resources to help customers understand and adopt water-saving practices.

School Education

- Cal Water's school education program includes the Aqua Adventures, A Splash of Creativity, H2Oath, and Water Smart Grant programs. Cal Water's Teacher Toolkit provides teachers with practical guidance and teaching rubrics for helping students learn about resource sustainability and the importance of using water wisely.

In addition to these core offerings, Cal Water may implement non-core programs in select districts to address specific local needs or emerging opportunities. For example, in recent years Cal Water implemented a direct-install bathroom retrofit program targeting lower-income households and multifamily properties in several of its districts.

Cal Water's customer conservation programs are implemented through a combination of in-house staff and contracted service providers. Cal Water conducts ongoing outreach and customer engagement to promote awareness and participation. In addition, customer service representatives are trained to assist customers with high water use or billing concerns by directing them to appropriate conservation programs and educational resources.

5.5.2 Future Customer Conservation Programs

Cal Water understands that its conservation programming must be adapted to the new MCCWL regulatory requirements. For instance, meeting the rigorous outdoor water use standards will require transitioning substantial amounts of turf area to more water efficient landscaping. Therefore, outdoor conservation measures, including turf replacement incentives and support services, will need to be further prioritized to drive future water savings. While targeted indoor efficiency measures have also been retained to maximize water savings, the focus remains heavily on outdoor improvements.

Achieving Landscape Transformation

Achieving the required level of water savings in the Redwood Valley District requires a rapid market transformation towards landscape efficiency. Typically, market transformations can span decades as they require shifting both consumer behaviors and supply chain dynamics, even with incentives. Early adopters have already made necessary adjustments, but many property owners have not yet embraced this change. Landscape transformation represents a significant departure from traditional practices, often perceived as complex and undesirable by many. Overcoming this resistance and encouraging participation will be challenging.

A crucial aspect is convincing customers that embracing landscape efficiency enhances, rather than detracts from, the value of their property. The traditional view equates lush, green lawns with success and economic status. Therefore, changing this deep-seated perception to appreciate the aesthetics and benefits of water-sustainable landscaping is essential.

Given the urgency to transform landscapes without the luxury of time, Cal Water faces several challenges that require:

- Robust customer education.
- High levels of customer motivation.
- Accessibility to landscape design and plant knowledge.
- Considerable labor investment.
- Significant financial resources.

To increase customer engagement, Cal Water's programs must offer compelling incentives, clear communication about the required processes, and substantial support to guide customers through these changes. Table 2 outlines the key barriers to successful deployment of landscape transformation programs.

Many water users currently do not prioritize landscape water efficiency, lacking both understanding of its urgency and motivation to implement drastic changes.

Cal Water's strategy is to significantly enhance education about the need for outdoor water use reduction and how to achieve it. Fortunately, studies indicate a growing customer interest in aesthetically pleasing, water-efficient landscaping. Many property owners consider turf removal but require assistance to proceed. Time and cost are significant barriers.

To effectively encourage this shift, Cal Water must not only convince customers of the necessity of these changes but also provide them with extensive support—from design assistance to continuous engagement and resources. Additionally, incentives must be compelling enough to convince customers of the value of investing in these changes.

Success will depend on expanding education, services, and incentives to accelerate market transformation. To support this enhanced program structure, Cal Water must accordingly increase its staff, marketing efforts, operational support, and budget to meet these elevated service demands.

Table 2. Barriers and Customer Requirements of Landscape Transformation Programs

Landscape Transformation Barriers	Customer Requirements
• Customers lack motivation to reduce their water use. • Most customers are unaware of, or overwhelmed by, landscape efficiency programs. • Landscape efficiency solutions must be "customized" for each property. • Water suppliers do not currently have a deep understanding of their customers. • Agencies do not possess the resources to uniquely target and engage their customers.	• Customers desire to have a beautiful landscape. • Each customer has a different vision of what comprises landscape beauty. • Most customers have considered converting their lawn, but they need help to accomplish this. • Customers confirmed that design support is the most important need. • Incentives are necessary to pull the trigger on converting their lawn. • There are a number of misperceptions that disconnect the customer from their actual water usage. They believe most water is used indoors; that they already have efficient equipment; and saving money is the main driver.

Beyond Landscape Transformation

In addition to turf replacement, Cal Water has identified a suite of customer conservation programs with demonstrated water-saving potential and meaningful market impact. Together, these measures represent a comprehensive portfolio that—subject to adequate staffing and funding—is intended to support achievement of the water use reduction levels required under the MCCWL regulations. The measures summarized in Table 3 are representative of Cal Water's current conservation approach. As program performance is evaluated and technologies evolve, Cal Water may refine this portfolio by modifying, replacing, or adding measures to ensure continued program effectiveness.

Table 3. Representative Conservation Measures with Significant Savings Potential

Conservation Measure	Remaining Potential	Reasoning for Selecting
Home Water Budgets	All single-family homes	• Identifies customers with inefficient usage, thus allowing better targeting of programs and assistance. • Provides a foundational step in educating customers with powerful and personal information that identifies site-specific efficiency opportunities. • As an educational tool alone, shown to reduce water use.
Outdoor Efficiency		
Turf Replacement	All properties with remaining turf	• Required measure for meeting landscape and irrigation standards. • Huge remaining opportunity. • Long lifespan measure.
Sprinkler Tune-up	All properties with remaining turf	• Nearly all irrigation systems need repair. • Repairs are necessary before efficiency upgrades are made otherwise new products will not work as designed. • High customer demand.
Smart Controllers	All properties with irrigation	• High customer receptivity due to technical aspect of device. • Reduces overwatering by providing the appropriate amount of water based on the local weather.
Pressure Regulating Spray Heads	All properties with popup spray heads	• Millions of non-pressure regulating spray heads. • Reduces water use due to high water pressure and low head drainage.
High Efficiency Sprinkler Nozzles	All properties with popup spray heads	• Millions of high flow nozzles are available for retrofit. • Solution for customers electing to keep turf. • Reduces runoff. • High cost effectiveness. • Generally easy retrofit.
Indoor Efficiency		

Conservation Measure	Remaining Potential	Reasoning for Selecting
Premium Efficiency Toilets	Nearly 50% of existing fixtures are 1.6 GPF or above	• Reliable 25-year life of water savings. • Easy retrofit.
High Efficiency Clothes Washers	All single-family homes and multi-family in-unit washers	• Customers prefer high efficiency models. • Easy to administer. • Washers have 10–12-year life

5.5.3 CII BMPS

The MCCWL regulations require that the District implement CII BMPs for non-residential customers with very high usage.

The regulations specify that the District must implement at least one BMP from each of the following categories for customers with usage above the 80th percentile, while it must implement at least two BMPs from these categories for customers with usage above the 97.5th percentile.

Outreach, Technical Assistance, and Education BMPs

1. Direct contacts via site visits or phone calls
2. Informative or educational bill inserts
3. Conducting workshop or developing training videos
4. Webpage portals to access information, tools, and rebates
5. Cost-effectiveness analysis tools
6. Commercials or advertisements
7. Grass roots marketing
8. Community based social marketing
9. Other CII-best management practices derived from additional innovation and technology advancement that can be taken by suppliers, subject to Water Board approval

Incentives BMPs

1. Rebates and cost-sharing for replacing inefficient fixtures, equipment, irrigation systems or landscapes with water efficient ones
2. Certification or branding programs that recognize customers as water efficient
3. Incentives for technologies that enable customers to identify, measure, and analyze indoor and outdoor water use

4. Other CII-best management practices derived from additional innovation and technology advancement that can be taken by suppliers, subject to Board approval

Landscape BMPs

1. Landscape and irrigation management practices to promote improved water use efficiency
2. Irrigation system inspections, audits, or surveys
3. Training or guidance on irrigation scheduling and maintenance
4. New development landscape inspection, workshops, and training
5. Programs to remove turf and replace it with climate-ready vegetation
6. Programs to decrease urban heat and reduce turf water use by planting trees
7. Programs to install green infrastructure such as swales or rain gardens that offset irrigation needs
8. Other CII-best management practices derived from additional innovation and technology advancement that can be used by suppliers, subject to Water Board approval

Collaboration and Coordination BMPs

1. Coordination with "green" building certification or recognition programs to promote water use efficiency
2. Coordination with land use authorities to check new landscapes design and implementation
3. Collaboration with non-governmental organizations on outreach and education
4. Collaboration with municipal arborists and tree planting organizations to expand and maintain urban forests
5. Collaboration with stormwater agencies to install green infrastructure such as swales or rain gardens to also offset irrigation needs
6. Other CII-best management practices derived from additional innovation and technology advancement that can be taken by suppliers, subject to Water Board approval

Operational BMPs

1. Infrastructure changes (for example, smart meter replacement programs)
2. Billing or data collection procedures (for example, data tracking, analysis, and reporting improvements)
3. Other operational best management practices to facilitate CII best management practices program implementation and evaluation
4. Other CII best management practices derived from additional innovation and technology advancement that can be taken by suppliers, subject to Water Board approval

Table 4 shows the key tasks and milestones related to these new CII BMP requirements.

Table 4. Tasks and Milestones for Regulatorily Prescribed CII BMPs

Task	Frequency	Timing
Identify the top 2.5% and the top 20% of CII water users	One time and on-going	June 30, 2025
Identify the top 2.5% of CII water users and top 20% of connections in each water use classification	One time and on-going	June 30, 2029
Identify existing CII connections that appear to be inefficient according to key business activity indicators	One time and on-going	June 30, 2029
Implement at least 2 programs from each BMP category for top 2.5% of CII water users	Annually	June 30, 2039
Implement at least 1 program from each BMP category for top 20% of accounts in each water use classification	Annually	June 30, 2039
Conduct marketing and outreach to targeted commercial customers	Annually	Continuous
Administer Commercial Rebate and Support Programs	Annually	Continuous

5.6 Program Monitoring and Reporting

Ongoing monitoring, evaluation, and reporting are central components of Cal Water's conservation program strategy. These activities ensure that programs are performing as intended, that water savings estimates are supported by empirical evidence, and that the District meets CPUC and state regulatory requirements. Together, these efforts provide accountability, support continuous program improvement, and inform future program design and funding decisions.

Program Tracking

Cal Water uses the Alliance for Water Efficiency (AWE) Water Conservation Tracking Tool to systematically track program participation, expenditures, and estimated water savings across conservation programs. This system allows Cal Water to track implementation activity, evaluate program cost-effectiveness, identify participation trends, and assess progress toward water savings targets. The tracking data also support demand forecasting, program planning, and regulatory reporting.

Savings Evaluations

In addition to routine tracking, Cal Water conducts periodic savings evaluations to assess the actual water use impacts of its conservation programs. These evaluations typically use statistical and econometric methods to compare water use patterns before and after program participation, often relative to control groups. Recent and ongoing evaluations include:

- Toilet, showerhead, faucet, and complete bathroom retrofit water savings evaluations
- Lawn-to-Garden Program turf replacement water savings evaluation
- Smart Landscape Tuneup Program water savings evaluation
- Flume Rebate Program water savings evaluation

CPUC and State Reporting

Cal Water fulfills multiple conservation-related reporting requirements at both the CPUC and state levels. These include:

- **CPUC reporting:** Annual reports detailing conservation program activities, expenditures, and estimated water savings by district. These reports support regulatory oversight and future budget authorizations.
- **State reporting:**
    - Annual distribution system water loss audits and reporting to the California Department of Water Resources
    - Annual Urban Water Use Objective (UWUO) compliance assessments
    - Annual Commercial, Industrial, and Institutional (CII) performance measure compliance reporting

These monitoring and reporting functions require substantial data management, analytical support, and regulatory coordination, and are a key driver of the administration and research budget described in Section 6.

5.7 Water Conservation Program Staffing

Cal Water's Conservation Department is currently staffed by nine full-time equivalent (FTE) positions. A prior staffing evaluation by Cal Water indicated that the industry standard staffing ratio is 12 FTEs per million people served. At present, Cal Water has only 9 FTEs serving a customer base of 2 million people, or roughly one-third the standard level. This evaluation, conducted before the *Making Conservation a California Way of Life* regulations were introduced, already demonstrated a stark understaffing issue. The additional responsibilities introduced by the new regulations will undoubtedly intensify this challenge.

In light of mandated UWUO reductions, SGMA-related impacts, and the extensive reporting and performance requirements associated with the MCCWL regulations, Cal Water has identified a need to expand its conservation program staffing.

While the use of consultants could provide short-term support, the ongoing and long-term nature of the regulatory requirements makes exclusive reliance on temporary staffing impractical. In particular, the data analysis, program tracking, and reporting obligations associated with the MCCWL framework require sustained institutional knowledge and continuity that are best supported through permanent staff.

Cal Water's staffing strategy therefore emphasizes strengthening internal capacity to manage conservation programs, lead outreach and customer engagement efforts, support customers, oversee ongoing CII activities, and fulfill reporting and compliance obligations. Consultants are expected to continue to play a targeted role by providing short-term, specialized expertise as needed, allowing flexibility while maintaining a strong in-house program foundation.

Consistent with this strategy, Cal Water has proposed in its 2024 GRC an increase in Conservation Department staffing from nine to fifteen positions. The six requested positions and their primary responsibilities are summarized in Table 5. At the time this plan was prepared, a final decision in the 2024 GRC had not yet been issued. As a result, it remains uncertain whether the CPUC will authorize the requested staffing increases necessary to support compliance with state conservation requirements.

Table 5. Proposed New Conservation Staff Positions

New Position	Responsibilities
Conservation Manager	• Program development/implementation/management • Budgeting • Staff oversight
Regional Conservation Coordinator (2 positions)	• Regional program implementation • District coordination • Customer engagement
Water Resource Sustainability Analyst	• Program tracking/analysis • Compliance assessment/reporting • Data management
Water Resource Sustainability Assistant	• Data entry • Analysis support • Compliance reporting support
Conservation Assistant	• Program application/rebate processing • Customer assistance • Data entry/processing

5.8 Summary of Water Conservation Program Strategy

Cal Water's conservation strategy for the Redwood Valley District integrates regulatory tools, pricing signals, system efficiency measures, customer-focused programs, and rigorous monitoring and reporting to achieve sustained reductions in water demand. This multi-layered approach reflects the need to meet evolving state conservation standards, support groundwater sustainability, and manage long-term cost-of-service impacts while maintaining reliable service.

Centralized program administration provides consistency, economies of scale, and strong cost-effectiveness, while district-level implementation focuses outreach and resources where they are most needed. Foundational elements of the strategy include water waste prevention and enforcement, universal metering and conservation-oriented rate design, and proactive water loss management. These structural measures create the conditions for efficient water use and system performance.

Building on this foundation, customer conservation programs deliver direct savings through rebates, technical assistance, education, and market transformation initiatives. In response to *Making Conservation a California Way of Life* requirements, increasing emphasis is being placed on outdoor landscape efficiency and support for high-water-use residential and commercial customers. Ongoing program tracking, empirical savings evaluations, and CPUC and state reporting ensure that program performance is documented, savings assumptions remain evidence-based, and the District can demonstrate compliance with UWUO, CII, and water loss standards.

Together, these elements position conservation as a long-term resource management strategy that supports regulatory compliance, groundwater sustainability, water supply reliability, and cost-effective water supply planning for the District.

6 Current and Requested Conservation Budget

The Redwood Valley District is projected to remain below its UWUO and water loss standards through the planning horizon under currently authorized conservation levels and anticipated passive efficiency gains.

Although Redwood Valley falls below the size threshold used by the State to designate Retail Urban Water Suppliers and is therefore not formally subject to the Making Conservation a California Way of Life (MCCWL) regulations, Cal Water evaluates all of its districts—regardless of size—using a consistent analytical framework. This ensures long-term resource planning remains aligned with statewide efficiency objectives and best management practices.

In the 2024 General Rate Case, Cal Water proposed a reduction in the District's conservation budget. The requested budget maintains funding for core program implementation while reducing expenditures for public information and administrative support. This approach preserves direct customer-facing conservation activities while achieving efficiencies in support functions.

6.1 Conservation Program Budget Components

The District's conservation budget consists of four primary components: (1) program implementation, (2) public information, (3) school education, and (4) administration and research. The program implementation budget is the largest component and covers the costs of delivering conservation programs, excluding marketing and internal staffing costs. The public information budget supports program marketing as well as broader conservation outreach and customer communications. The school education budget funds school-based conservation education programs offered within the District. The administration and research budget covers the District's allocated share of conservation staffing costs, along with expenditures for external consultants performing research, program evaluation, and water savings verification.

6.2 Conservation Program Budget Adjustments

In its 2024 GRC, Cal Water proposed three key adjustments to the currently authorized conservation program budget to address evolving regulatory and operational needs:

1. UWUO Compliance Budget Adjustment:

To support compliance with UWUO requirements, Cal Water conducted a detailed cost analysis using a representative portfolio of conservation measures. This analysis identified the measures and activity levels needed to achieve projected savings, estimated associated annual and cumulative water savings, and calculated the corresponding costs required to meet UWUO targets.

2. Adjustments for SGMA-Impacted and High-Cost Districts:

Additional adjustments were proposed for districts affected by SGMA and for those facing high incremental water supply costs. These adjustments allocate additional conservation resources to address groundwater sustainability requirements and to pursue conservation as a cost-effective alternative to higher-cost supply development.

3. Adjustments to Mitigate Potential Implementation Feasibility and Cost-of-Service Concerns:

Because the first two adjustments resulted in substantial budget increases in some districts, a moderating adjustment was applied to limit potential cost-of-service impacts. This constraint effectively capped proposed program budget increases at no more than five times a district's currently authorized conservation budget, balancing regulatory compliance needs with affordability and implementation feasibility.

6.3 Conservation Program Budget Comparison

Figures 12 and 13 compare the Redwood Valley District's currently authorized conservation budget with the budget requested in the 2024 General Rate Case (GRC). Overall, total conservation funding decreases from $23,404 to $18,066, representing an approximately 23 percent reduction in annual funding.

This adjustment reflects a targeted recalibration rather than a retreat from conservation. Because the District falls below the size threshold for MCCWL applicability, it is not formally subject to those requirements, and long-term projections indicate that regulated demand would remain below its UWUO even if it were. The requested budget therefore maintains core program delivery while reducing support components to improve cost efficiency.

The program implementation budget remains unchanged at $10,145. Because other components decline or are rebalanced, the share of total funding devoted to direct customer programs increases from 43 percent to 56 percent, reflecting a clear prioritization of on-the-ground conservation measures.

The public information budget decreases from $5,992 to $2,029, reducing its share from 26 percent to 11 percent. This reduction reflects lower planned expenditures for marketing and outreach while maintaining baseline customer communication efforts.

The administration and research budget decreases from $5,946 to $3,881, with its share declining from 25 percent to 21 percent. This change reflects streamlined administrative support and reduced program overhead under the requested funding level.

By contrast, the school education budget increases from $1,321 to $2,011, raising its share from 6 percent to 11 percent. While modest in absolute dollars, this increase supports continued school-based education and long-term community engagement.

Taken together, the requested budget represents a focused reduction that preserves core program implementation capacity while improving cost efficiency. Direct program funding is maintained, support costs are reduced, and the District's longer-term demand outlook will continue to be monitored to assess whether additional conservation investment may be warranted beyond 2030.

Figure 12. Redwood Valley District Conservation Budget: Authorized and Requested

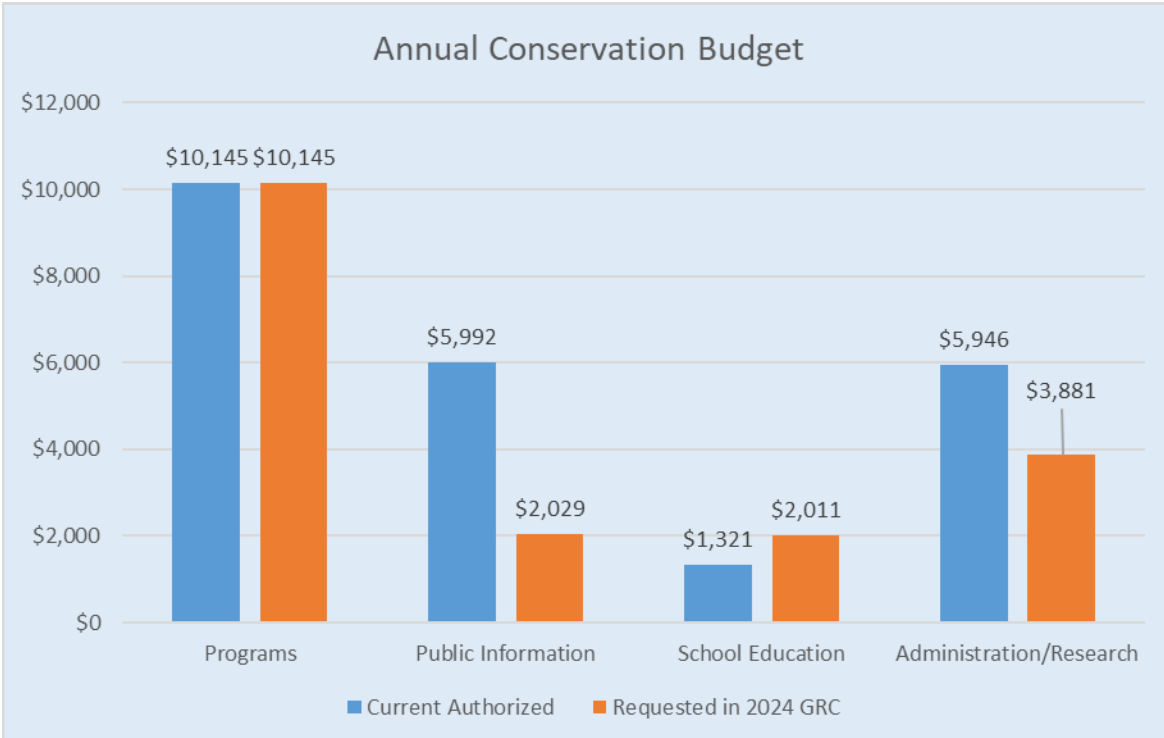
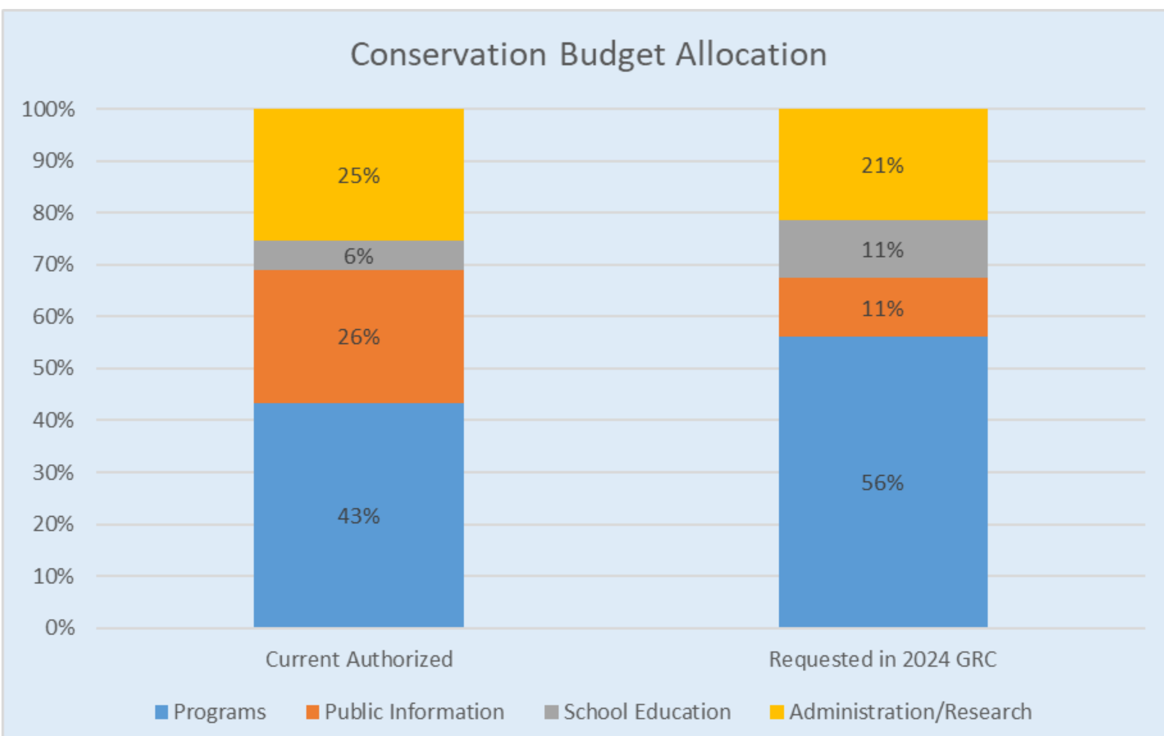


Figure 13. Redwood Valley District Conservation Budget Shares



7 Conclusion

The Redwood Valley District has achieved meaningful and sustained reductions in water use over the past two decades through universal metering, conservation-oriented pricing, customer programs, and state and federal plumbing and appliance efficiency standards. These efforts have enabled the District to meet historical conservation requirements—including compliance with the Water Conservation Act of 2009 and CPUC conservation goals—while maintaining reliable service across its small, hydrologically distinct systems.

Looking ahead, continued demand management remains prudent even though the District is not formally subject to the State's Making Conservation a California Way of Life (MCCWL) regulations due to its size. Under currently authorized conservation levels and anticipated passive efficiency gains, regulated water use is projected to remain below the District's Urban Water Use Objective (UWUO) throughout the planning horizon. While long-term supply projections in the District's UWMP indicate overall adequacy under normal and dry conditions, localized groundwater capacity and water quality constraints, along with small-system characteristics, underscore the value of maintaining efficient water use and operational flexibility.

The conservation budget proposed in the 2024 General Rate Case reflects a calibrated and cost-conscious approach. Core program implementation funding is maintained, while efficiencies are achieved in public information and administrative components. This structure preserves direct customer program delivery and measurable water savings while aligning expenditures with the District's compliance outlook and cost-of-service considerations.

Conservation will therefore remain an important component of the Redwood Valley District's long-term resource strategy. Continued, disciplined investment in demand management will help moderate future demand growth, support local supply reliability across independent systems, and help to manage long-term service costs for customers. This Conservation Master Plan provides the framework for guiding those efforts during the 2026–2030 planning period and for adapting to evolving conditions in future updates.

Appendix H: Resolution to Adopt